Contra Costa County
Public Works
Department

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April 19, 2016

James Gray
c/o Wrenetta and Richard Dortzbach
12801 Marsh Creek Road
Clayton, CA 94517

RE: Marsh Creek Road Bridge 141 Replacement Project (28C-141)
County Project No.: 0662-6R4079
CEQA Project No.: CP 15-39

Dear Mr. Gray:

Thank you for providing comments on behalf of the Dortzbach family on the Marsh Creek Road Bridge 141 (Bridge 28C-0141) Replacement Project California Environmental Quality Act (CEQA) document (CP# 15-39). As you are aware, staff from the Contra Costa County Public Works Department recognizes the Dortzbach family's concerns regarding the Marsh Creek Road Bridge 141 Replacement Project.

This letter is intended to address your comments submitted on February 26, 2016. Our responses to your comments are enclosed in the form of a matrix that follows the order of your comments.

Please feel free to contact me at (925) 313-2022 or hillary.heard@pw.cccounty.us if you have any further questions on our responses to your comments.

Sincerely,

Hillary Heard
Planner II
Environmental Services

HH:sr
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Enclosures:
Comment letter received from James Gray on February 26, 2016
Comment response matrix Hydrologic Investigation
c: N. Leary, Design
L. Chavez, Environmental

Comment No.	Text Commented On	Comment	CCCPWD Response
1	Dewatering would occur in the work area extending approximately 150 feet upstream and 200 feet downstream of the existing bridge.	How will this water be re-routed around the construction site? The cofferdam method(s) considered “acceptable to CDFW” needs to be described in sufficient detail to correctly determine if locally significant impacts to the biological community. This community exists year round due to inflow from underground spring, located within 100' north of existing bridge. Biological study conducted on August 30, 2013, didn’t make note of the upstream dry, but down stream had water flow. Commenter notes that most of the dewatering zone in the downstream (north direction) is outside of the county right-away; therefore encroaching (on order of 150-ft) into the property of private residence (12801) adjacent to the project.	As discussed in the project description, water within the creek would be rerouted using cofferdams. The specifics regarding dewatering will be determined during the permitting phase of the project; however, minimum components of the dewatering system will include an upstream and downstream cofferdam to isolate the work area, as well as a silt filtering area for work area water to be treated prior to release. Cofferdams would be made of clean materials and creek flows would be allowed to bypass the work area at all times (no water impoundment would occur). The cofferdam method was adequately assessed in the analysis presented in the IS/MND. A hydrogeologic analysis of Marsh Creek in the area of the bridge was performed to investigate the source of the water feeding a pool within the creek downstream of the work area and right of way. General mineral, boron, and specific conductance analysis did not reveal a spring; however, given elevated base flow volume, results are not sufficiently discriminating to rule out minor spring flow at the bridge location. Subsequent field verification will be conducted during lower (spring or summer) flows to determine whether additional consideration is necessary to accommodate groundwater flow. Please refer to subsequent responses to comments for additional detail regarding these possible accommodations. A copy of the hydrogeologic report is attached. The existence of a possible spring and presence of a pool downstream of the project area does not change the impact determinations in the IS/MND. As noted in the project description, construction may require right of way or temporary construction easements from several adjacent parcels. No permanent land acquisitions are anticipated to be needed.
2	The changes in both the horizontal and vertical alignments require reconstruction of Marsh Creek Road on both sides of the bridge (900 feet total).	According to the NES (Natural Environmental Study, March 2015) only 800’ on both sides of the bridge will be needed. Please explain this 100’ of discrepancy.	As discussed in the IS/MND, the Natural Environment Study (NES) is one of a number of studies developed and used during project impact analysis and design. The project design has been refined based on additional considerations. Approximately 900 feet of the road requires reconstruction or overlay/widening.
3	The final design of these walls will be determined prior to construction. The widening and realignment of Marsh Creek Road to construct the new bridge may require right-of-way or temporary easements from several adjacent parcels.	What is the alternative plan if the right-of-way or temporary easements are not agreed upon?	The County's Real Estate Division will follow the appropriate industry standards and procedures to obtain necessary property rights.
4	The project will not have a significant effect on the environment. The recommendation is based on the following: There is no substantial evidence that the project or any of its aspects may cause a significant effect on the environment, pursuant to 15063 (b) (2) of the CEQA Guidelines.	“Significant effect” on the environment will definitely be a factor. Removal of 36 trees, several bushes/ shrubs and personal landscape. Change to the entire scenic environment. Not to mention the wildlife habitat not taken into study for the nocturnal wildlife.	The findings presented in the IS/MND are correct as reported. The IS/MND used the California Environmental Quality Act (CEQA) Guidelines, as well as established and applicable CEQA thresholds, to determine impact findings. Responses to comments regarding specific findings are addressed and conclusions are substantiated throughout this matrix. Based on further analysis of the project design relative to trees along the north side of the roadway, it has been determined that 11 trees along the north side of the bridge that were identified as being removed will now be retained. A final tree removal plan is underway and will be provided to commenter as soon as it is available.
5		This conclusion is rebuttable. Evidence provided in following sections in many cases do not provide sufficient evidence/analyses to support this document statement. Comments addressing specific items are presented in the following section.	The findings and significance conclusions presented in the IS/MND are correct as reported. This comment is addressed (and conclusion substantiated) through specific responses provided throughout this matrix.

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6	Does It appear that any feature of the project will generate significant public concern?	Please explain question 3. "No" has been marked and this There is significant public concern. SAFETY Two residence families will be directly impacted, they are part of the public.	Please see discussions presented in the IS/MND impact analyses. No significant impacts were identified using established CEQA guidelines and thresholds. Please see the responses to comments 22, 36, 82, 93, and 97.
7	The existing bridge has been deemed structurally deficient and functionally obsolete in recent Caltrans bridge inspection reports.	Please reconcile this statement with the public record "Caltrans Bridge inspection maintenance report(CSMIR) "Dated July 2015, page 90, 4th item identified as Bridge # 28C0141. Column "SD/FO" rates this bridge as "FO" NOT "SD"	The rating has changed since the County originally applied for federal funds in August 2010. The application in 2010 used the inspection dated 8/26/2008, which defined the bridge as structurally deficient. The most recent bridge inspection report, dated 7/24/14, defines the bridge as functionally obsolete.
8	The proposed bridge would be an approximately 90-foot-long, single-span bridge.	Please confirm that ENTIRE project description is accurate. For instance retaining walls on 65% plans are different from this description.	The project description as presented in the IS/MND is accurate with exceptions discussed in responses to comments 28 and 31. These changes do not affect the findings of the IS/MND. Specific to the comment on the retaining wall, that change (as described in the IS/MND) was made to avoid impacts on private property and lessen the need for property acquisitions.
9	Two retaining walls may also be necessary: the first retaining wall would be along the north side of the roadway (west of the bridge), would have an average approximate height of 10 feet, and would be 183 feet long; the second smaller retaining wall would be set back from the roadway on the north side of the road (west of the bridge) and would be approximately 7 feet high and 90 feet long. The final design of these walls will be determined prior to construction. The widening and realignment of Marsh Creek Road to construct the new bridge may require right of way or temporary easements from several adjacent parcels.	Please clarify the parcels involved in this acquisition of right-of-way whether temporary or permanent; and alternate plan if these acquisitions are not obtained.	Please see page 66 of the IS/MND (Population and Housing, item B) for a list of parcel numbers requiring temporary construction easements. Please see the response to comment 3 regarding the easement process.
10	Overhead electric, phone, and cable lines cross the creek along the south side of the road. An underground water line is attached to the downstream (north) side of the bridge. The overhead electric line poles and the water line attached to the existing bridge will be relocated.	Who pays for these utilities to be relocated? Who will be reimbursing the private residence adjacent to the project for the install and all cost of the existing fire hydrant mandated by the county for fire protection because of a house fire? Hydrant is ""Blue Collared"- For Fire use only" not construction, rehabilitation, or relocation of bridge/roadway.	Per agreements for operating in the County right of way, utility companies will pay for the necessary relocations to accommodate the project, including all costs to relocate the fire hydrant.

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11	The HCP/NCCP complies with Section 10(a)(l)(B) of the federal Endangered Species Act (ESA) and California Natural Community Conservation Planning Act of 2003 and as such covered activities are authorized incidental take of HCP/NCCP-covered special status species subject to mitigation fees for both permanent and temporary impacts to species habitats and implementation of specific conditions and conservation measures to avoid or minimize potential effects to species and/or its habitats.	Please quantify what the "incidental take" is expected, with respect to the local habitat destruction/wildlife killed or displaced that will result from the project as planned.	As described in the IS/MND and the HCP/NCCP Planning Survey Report (PSR), "incidental take" refers specifically to impacts on special status species. Habitat avoidance and minimization measures, listed as mitigation measures in the Biological Resources section, are built into the project to be consistent with the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP).
12		Provide specific citation of what HCP/NCCP actually allows, authority/jurisdiction for the East Contra Costa County Habitat Conservancy to authorize special species take on private property without specific permits from CDFW, compensation to property owners for said takings, and fees paid to a government agency will compensate for wiping out a year round creek channel population/habitat primarily located on private property.	The HCP/NCCP is a Federal Endangered Species Act Section 10 incidental take permit and a California Endangered Species Act Section 2081 incidental take permit as long as appropriate avoidance and minimization measures are followed and appropriate fees are paid. California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) are signatory agencies to the HCP/NCCP. As noted in the IS/MND, the County fully intends to implement appropriate avoidance and minimization measures and pay all required fees to obtain take coverage for HCP/NCCP-covered species that may be impacted as a result of project construction. Impacts to Marsh Creek are addressed in subsequent responses. Please see the responses to comments 55 and 66 regarding compensation.
13		Please clarify where this document describes mitigation measures for this impact on private property.	The wildlife of the state is under the jurisdiction of the California Fish and Game Code and is regulated by both CDFW and USFWS (where species are federally listed). Waters of the state and waters of the U.S. are under the jurisdiction of the state and federal government and are regulated by the U.S. Army Corps of Engineers and the Regional Water Quality Control Board (Water Board). These are public resources and will be protected as such under relevant laws and regulations. The Mitigation Monitoring and Reporting Plan (MMRP) outlines all mitigation measures proposed as part of the project.
14	The HCP/NCCP requires reporting and fee payment to the HCP/NCCP Implementing Entity, the East Contra Costa County Habitat Conservancy, a joint exercise of powers authority formed by the Cities of Brentwood, Clayton, Oakley, and Pittsburg and Contra Costa County (Jones & Stokes Associates 2006).	Residents of 12801 were first notified of this project in mid- October 2015 by letter informing them of the need to relocate their driveway due the project defined in its current scope. Residents contend that delaying formal description of all local agencies effectively precluded sufficient time to perform fact finding, seek professional opinions, and prepare more specifically directed comments pertaining to regulatory agency authority.	The CEQA Guidelines allow for 30 days for public review and comment. The County has followed these guidelines for notification.

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15	A drainage ditch and a perennial stream channel are in the project area. There would be temporary and permanent impacts to these resources during construction.	Please explain what specific impacts to the stream are, both temporary and permanent impacts to these resources. There is a significant possibility of permanent impact from disruption of natural springs in the creek adjacent to the existing bridge. Commenter notes that NES failed to identify groundwater source of perennial wetland downstream of bridge, and significance of this water source not only locally, but in the surrounding region. This information needs further study and professional evaluation relative to its potential significant impact on the environment. Commenter contends this is another issue warranting preparation of a full EIR, not a mitigated Negative Declaration.	Areas of temporary and permanent impacts (broken down by habitat type in accordance with the HCP/NCCP) to Marsh Creek are presented in the IS/MND and PSR. As discussed in the IS/MND, the County will mitigate for permanent and temporary impacts to the stream in accordance with the HCP/NCCP. An Environmental Impact Report (EIR) is required for significant impacts that cannot be reduced to less than significant levels with mitigation. All of the proposed project's adverse impacts will be reduced to less than significant levels with appropriate mitigation. Qualified staff from Balance Hydrologics have conducted field reconnaissance, collected site and surrounding area samples, and analyzed these data in an effort to characterize the source of the summer water in the channel and to determine whether bridge construction would have any lasting impact on the pool downstream of the bridge. A detailed discussion of the results of the study is included in the responses to comments 67 and 75.
16	As noted above, a drainage ditch and seasonal wetland adjoin the project area, and would sustain minimal temporary impacts during construction.	Characterization of adjacent wetland as "seasonal" is not correct. Commenter has supplied information regarding natural spring activity which sustains a year round wetland just north of the present bridge. As such, this wetland will sustain major damage from construction activities (especially dewatering) and likely permanent damage from disruption of the groundwater source sustaining the wetlands.	Comment noted. The text is incorrect as written; there is not a seasonal wetland in the project area. The text should indicate that a drainage ditch and perennial stream (Marsh Creek) are within the project area. Stream impacts due to bridge construction including dewatering are included in the calculations of the HCP/NCCP impact fees. Please see the responses to comments 67 and 75 for further discussion.
17		See previous comment-conclusion that impacts are minimal and temporary are inconsistent with actual site conditions present at the project site	Please see the responses to comments 15 and 16.
18	Therefore, a waiver certification will be requested from the State Water Resources Control Board.	Commenter notes that active construction will be occurring over two seasons and portions of the work are actually within the creek bed. The tributary watershed at this proposed project is over 23 square miles. Special measures are needed to protect the downstream creek features as well as disturbed areas within the construction. Given these issues, commenter notes that waiver may not be appropriate for disturbed areas within the creek and adjacent areas that may be subject to erosion/sedimentation from seasonal stream flows.	Comment noted. The County will present the project details to the Water Board and follow the appropriate procedures to obtain either an erosivity waiver or permit coverage. Regardless of whether the project qualifies for an erosivity waiver, appropriate best management practices will be implemented to ensure the potential for erosion and sedimentation is addressed.
19	Therefore, a Lake and Streambed Alteration Agreement will be obtained from CDFW for the proposed project.	Whom will be obtaining this agreement and how will it be monitored, and how often?	The County will obtain a permit from CDFW and comply with permit conditions.
20		Commenter requests status of consulation to date and concrens/input provided by CDFW revelent to present scope. If, not performed, provide written statement why this was not considered necessary in reaching conclusions expressed in this document. Commenter contends this communication would be material to conclusions expressed in this document and recommendation for adoption of the Mitigated Negative Declaration	A permit application to CDFW is not considered complete by that agency until the CEQA process is complete. The County will obtain a Streambed Alteration Agreement from CDFW and comply with permit conditions. No advance consultation regarding wildlife is warranted or necessary given that the project is covered by the HCP/NCCP and measures to avoid, minimize, and mitigate impacts are pre-determined by the HCP/NCCP.
21	The proposed project will comply with all provisions of the California Fish and Game Code.	This statement needs to address each specific provision of the fish and game code explicitly; explaining how the proposed project will be in compliance and whether the measures proposed have obtained concurring opinion of CDFW prior to formally certifying this document	The CEQA process must be completed in order for CDFW to consider the permit application for the project complete. Compliance with the California Fish and Game Code will be determined by CDFW during the permitting phase of the project. Please also refer to the responses to comments 12 and 20.

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22	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	Commenter contends that factual information pertaining to environmental conditions available or readily obtainable with due diligence was not considered in making this determination. Further review of factual information, especially relative to the permanent wetland immediately to the north of existing bridge is expected to show that there will be a significant impact to the environment and that an EIR would be required as CURRENTLY PROPOSED. Information relating to pre-design feasibility studies conducted by project proponent and reviewed by commenter suggest that a design for bridge replacement essentially in-situ using a southerly alignment shift to gain additional lane and shoulder width be reconsidered. Flood study could be re-evaluated for a lower frequency (50 year recurrance period) which should allow deck elevation be lowered and reduce length of roadway grade and geometry changes. Design speed could be revised downward to be consistent with adjacent roadway conditions and in consideration of long term plan for the portion of Marsh Creek Road system within Mt. Diablo foothill zone.	Per the response to comment 15, and as discussed in the response to previous and subsequent comments, an EIR is not required for the project, as no significant impacts were identified. The County has selected a design for the new bridge that maximizes public safety while minimizing private harm. The alignment that was ultimately chosen for the new road/bridge was the result of a detailed alternatives analysis that considered many factors including cost, design speed, safety, constructability, environmental impacts, right of way impacts, staging, and traffic handling. The selected bridge alignment best meets the relevant requirements. The design speed is different from the speed limit; it incorporates a buffer to ensure that safety is maintained. The County has analyzed reducing the design speed and has determined that it is inappropriate to do so due to the road classification, average daily traffic, and the posted speed of the road. County policy is to design improvements on roadways with a safety factor or buffer (from 5 to 10 mph) to the posted speed. Because Marsh Creek Road is currently posted at 45 mph, the appropriate design speed for improvements is a minimum of 50 mph in accordance with County policy.
23	Have a substantial adverse effect on a scenic vista?	Mitigation possible by alignment redesign to avoid destroying most of habitat on North side of existing bridge; otherwise commenter contends this is a potentially significant impact.	The County has selected the bridge alignment that meets relevant requirements and project goals. Alternative alignments are not feasible due to additional cost, reduced design speed, reduced safety, and more difficult construction methods. Using CEQA guidelines, the aesthetics analysis assesses potential impacts to scenic vistas. As noted in the IS/MND, the project will result in impacts to trees; however, it will not result in impacts to scenic ridges, hillsides, or rock outcroppings, which are the noted scenic vistas in the County. Further, CEQA case law has established that public views, not private views, require analysis under CEQA. Case law has noted that the question is whether a project will affect the environment of persons in general, rather than particular persons. The Marsh Creek Road alignment is dominated by oak savanna, oak woodland, scrub, and native grasslands. After construction, the scenic environment would not be significantly changed.
24	Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	Commenter contends that damage will occur to habitat noted above unless redesign to move alignment away from north side is implemented as mitigation.	Please see the response to comment 23. Marsh Creek is not designated or eligible as a State Scenic Highway. Please see the response to comment 4 regarding refinement (reduction) of the project's tree impacts.
25	Substantially degrade the existing visual character or quality of the site and its surroundings?	Commentor notes same concern as previous comments-Removal of most trees (approx. 36+ of aprox 46 trees along north side of bridge) will signifantly degrade view; both to motorists and to 12801 MCR residents.	As noted in the response to comment 23, the CEQA Guidelines require assessment of a project's impacts on the broad environment, not a specific view from a specific residence. The Marsh Creek Road alignment is dominated by oak savanna, oak woodland, scrub, and native grasslands. After construction, the visual character and surrounding scenic environment would not be significantly changed. As noted in the response to comment 4, design plans have been refined since the IS/MND was published. Based on this refinement, 11 trees along the north side of the bridge that were identified as being removed will now be retained. A final tree removal plan will be provided to the commenter as soon as it is available.
26	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	Please explain how the Aesthetics to the scenic rual backdrop of the area at the project is not substantially impacted when all of the mature vegetation is going to be removed within project area?	Although bridge construction will require removal of some mature vegetation, removal of several trees in the vicinity of the bridge will not remove all of the mature vegetation in the project area, nor will it significantly change the visual character and surrounding scenic environment.

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27	There are no designated or eligible cultural, historical, or natural resources that could be considered important visual resources within the project area as reported in the technical studies prepared for this project (LSA Associates 2015; Contra Costa County 2015a).	This conclusion is rebuttable. Commenter contends that large number of trees adjacent to bridge materialy contribute to the rural character within the project area-they provide visual screening of the residence at 12801 MCR and promote visual asthetics which will mitigate the visual impact of a modern highway character that the project creates. Mitigation by bridge realignment and grade lowering would significantly mitigate visual impacts. Please respond.	Please see the responses to comments 22, 23, 25, and 26.
28	The new bridge and bridge approaches would remain at existing elevations; therefore, existing views to and from the bridge would not be substantially altered.	Statement is inconsistent with 65% design drawings. Drawings show a variable and minimum 2-foot increase in bridge deck elevation from existing structure. Following sentence is therefor rebuttable; please provide justification for conclusion BASED ON ACTUAL project design or revise accordingly	Comment noted. The new bridge would be 1 to 2.5 feet higher and roadway approaches would be a maximum of 2.5 to 4 feet higher than existing elevations. While the elevations are changing from existing conditions (as the commenter notes), they are not changing to an extent that would significantly affect public views in general.
29	Therefore, the proposed project would have a less than significant impact to scenic vistas.	Please explain how the proposed project would have a less than significant impact to the scenic vista when the vegetation including mature trees will be removed from 99% of one side of the road. Only 1 tree is marked for removal from the opposing side of the project road way. (Removes viewscreen/sound buffer from Residence 1. It will take many years for revegetation to equivalent of what is there now)	Please see the responses to comments 23, 25, and 26.
30	There are also no designated or eligible cultural, historical, or natural resources that could be considered important scenic resources within the project area	Previous comments earlier indicated existence of a year-round biological community which includes protected species in the creekbed. Natural springs feed this community and support the trees shading the area The trees are a substantial indication of a healthy riparian community which materially contributes to the scenic vista in immediate project area.	Comment noted. The site providing biological value does not result in these resources being considered scenic. Please see the responses to comments 23 and 25.
31	The vertical alignment of the new bridge is not expected to change from that of the existing bridge, so the proposed project would not change the perspective of existing views.	The vertical alignment will be changed significantly (2 to 2.5-ft) and the roadway deck would be superelevated to conform to a horizontal curve according to the 65% plans.See previous comments Widening the bridge from 32' to 47'. (15' increase) The sun has a substantial effect on the drivers (eastbound drivers face direct sunlight shortly after sunrise; westbound traffic face same direct light situation now. Proposed project removal of trees adjacent on north side will make morning direct sunlight exposure significantly worse. Add realignment proposed will direct headlights into 12801 residence are.	Comment noted. The vertical alignment will be changed as discussed in response to comment 28, and the roadway deck will be superelevated to conform to a horizontal curve as noted in the 65% plans. The bridge would be widened to 43 feet as noted and analyzed in the IS/MND. These changes to the bridge alignment and width are not to an extent that would significantly affect the views of the public in general. The project does not involve the installation of any new sources of light or glare. Any incremental increase in the amount of sunlight hitting a driver's eyes as a result of tree removal would be a negligible impact relative to driving throughout the remainder of Marsh Creek Road; therefore, no changes are required.
32	However, the width of the bridge would increase in size from 30.5 to 47 feet in width.	Suggest checking and revising stated dimensions to conform to project plans	Comment noted. The proposed width of the bridge is 43 feet, not 47 feet. The dimensions were refined as the design of the bridge has been finalized.
33	Therefore, the proposed project is expected to have a less than significant impact related to light and glare.	Commenter contends this conclusion is rebuttable. Need to consider effect on commuting motorists from additional loss of vegetation screening direct sunlight.	Please see the response to comment 31.
34	Result in the loss of forest land or conversion of forest land to non-forest use?	Removal of 36 trees in an area of approximately 20" by 80 feet (1600 SF) constitutes loss of forest land. Can be Mitigated by revising project alignment design	The project area (including these trees) is not classified as forest land, therefore, no changes are required.

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35	The proposed project may also result in the need for CCCPWD to acquire a small portion of grazing land along the north side of the roadway just west of the bridge crossing for staging and permanent right of way acquisition.	Commenter understand from verbal communication with Neil Leary on 2/16/16 that permanent right of way acquisition no longer required due to design decision to build wall to retain roadway embankment. Commenter notes redesign to move roadway south would likely eliminate the requirement to build wall.	Comment noted.
36	The right-of-way acquisition would be needed in order to straighten out the existing curve that is considered a safety hazard.	Parcel number is needed for exact location. "Stating that the existing curve is considered a safety hazard." Please provide evidence documenting severity the safety issue to this existing curve. There hasn't been an vehicle accident on this curve in over 46 years. Safety hazard to the residences of the said land has not been taken into consideration. Moving their entrance/exit to residence has been moved closer to the curve that will have a higher design speed and less reaction time visual distance. The design as currently depicted doesn't provide any additional shoulder width (over 8' provided) to provide transition onto roadway allowing resident/guest to get some speed before entering traffic lanes.	Comment noted. The existing curve does not meet the County's current design speed standards. The project would improve the curve to a higher factor of safety to meet design speed requirements. The County has evaluated the new driveway location. Because the existing fence is being removed and the curve is being straightened, the new driveway location would have better sight distance than existing conditions. The paved shoulder at the new driveway will be significantly wider than the existing condition (8 feet vs. less than 1 foot in width), allowing for increased all weather use in ingress and egress of the new driveway. The existing condition does provide a large unpaved gravel shoulder that is used for ingress and egress of the property off the main road. County engineering will coordinate with the property owner on the appropriate flaring of the new driveway conform off the paved shoulder for ingress/egress. County engineering will also coordinate with the owner on the final location of the driveway.
37	Expose sensitive receptors to substantial pollutant concentrations?	Item d. is significant to the resident within 200' of the project and staging area for construction equipment. They are both Senior Citizens (late 70's and 80 years of age). With respect to dust and emission from construction equipment. Air quality will be substantially impacted.	The finding is correct as reported in Section D of the IS/MND. As discussed in the IS/MND, the analysis used toxic air contaminant (TAC) thresholds developed by the California Office of Environmental Health Hazard Assessment and Bay Area Air Quality Management District (BAAQMD), and considered the receptors identified in this comment in completing this analysis. These thresholds are developed to be protective of sensitive receptors, including the elderly.
38	All engines will meet or·exceed IJSIIPA/CARB Tier 3 off-road emission standards; or	Tier 4 engined equipment-Readily available Emission level will be even lower than recommendation described.	The commenter is correct; Tier 4 equipment would reduce emissions further than reported. As stated in the IS/MND, the project will require **at least** Tier 3 emission standards. Tier 4 off-road equipment is not uniformly available for all equipment, as it is still in the process of being phased in through the regulatory process. Requiring at least Tier 3 equipment ensures emissions will be below thresholds.
39	All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.	Requirement should be modified to include, and additionally water as frequently to suppress all visible dust.	As noted in the IS/MND, the dust control measures will be consistent with the BAAQMD requirements. Watering will be employed during high levels of dust.
40		Where is the source of water coming from? Should there be more watering for dust control? Safety of the drivers on the road, residences in area.	The water would come from a water truck, which would use water from municipal sources. Watering will be employed during high levels of dust.
41	Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.	This is irrelevant. Consider removing.	Comment noted. The project does not involve use of building pads.
42	A publically visible sign shall be posted with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action with 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.	48 hours is too long to respond to persons residing there and NOT ACCEPTABLE for dust issue at adjacent residences. Response should be within 1 hour during active work hours and 4 hours for events occurring outside working hours	The County will follow BAAQMD guidelines as noted in the IS/MND.
43		Is this 48 hours based on working hours or continuous hours from time of complaint. Dust monitors need to be located at both residences to the northeast of the project. They are within the distance being affected.	A response will be made within 48 continuous hours from the time of complaint. The regulations do not dictate that nearby residences have dust monitors, and, because dust levels are below applicable thresholds, dust monitors are not warranted.

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44	Since the proposed project would replace an existing substandard bridge with a new one with the same carrying capacity and meeting all current safety standards, it would not directly or indirectly increase traffic volumes to Marsh Creek Road and would have a less than significant effect on traffic flow locally and regionally. Thus, the proposed project's operational ambient CO impacts would be less than significant.	There would be a direct operational impact to the traffic during commute times, as hours of construction have been set for 7am -7pm and weekends with approval. As well as to the locals that live in the area.	Temporary construction-related impacts on traffic are discussed in the Transportation/Traffic section of the IS/MND. Two lanes of traffic would be maintained at all times during construction. Any delays associated with construction would occur for short periods (approximately 10 minutes). These delays would occur outside of peak commute hours. The finding reported in Section B is correct, and is related to operational impacts following construction.
45	Table 3: Construction Criteria Related Toxic Air Contaminant Impacts Prior to Mitigation	There is significant health impact to residents at 12801, as previously stated for toxic air contaminant impact.	Please see the response to comment 37. As noted in Table 4, mitigation to be implemented as part of the project will reduce the impact to below applicable thresholds.
46	The Mitigation and Monitoring Reporting Plan (MMRP; included as Appendix A) prepared for the proposed project identifies when mitigation measures will be implemented, the parties that will be responsible for ensuring implementation of these measures, and implementation of the measures will be verified.	Who will be responsible for ensuring that County effectively implements these measures? Need to identify. How often and how long will they be at job site? Where will real time air monitoring devices be placed in order for proper measures to be verified?	The resident engineer or inspector will ensure that the air quality mitigation measures are met. Please refer to the Mitigation, Monitoring, and Reporting Program (MMRP). The resident engineer will be on-site continuously. No real-time air monitoring is required or warranted as impacts will be less than significant.
47	With only one existing residential receptor within 200 feet of the bridge site, substantial on-going odor impacts of the 7-month construction period would be unlikely. Therefore, odor impacts associated with the proposed project would be less than significant.	There are no odors now. Any odor would be an impact and would be significant. What is the plan for odors that may happen from this project? How will the resident within 200' be accomodated?	Comment noted. As noted in the IS/MND, objectionable odors are not expected. Any objectionable odors should be reported to the resident engineer or inspector and will be addressed accordingly.

Comment No.	Text Commented On	Comment	CCCPWD Response
48	Summary Questions A through F	Commenter disagrees with determinations a., b., c. and d., and contends that impacts are potentially significant. Commenter notes that Project Proponent (CCCty Public Works) is part of the same political entity (Contra Costa County) which is charged with ensuring that project environmental process complying with CEQA. How is public to be assured that these conclusions are impartial? The is no independent entity outside County Control to be accountable for the assertion/conclusions made in this document. The County would be responsible for additional costs associated with substantial work undertaken to revise and/or augment work already performed. This biological resources section is based on limited "eyeballs on" field survey work performed by biological consultant. (Natural Environmental Survey, prepares for Caltrans and dated March 2015.) Wildlife (fauna) survey was performed on a single date (8/30/13). The report did not provide any description of the planned scope of the field work the consultant was committing to follow. (multiple visits, dusk or dawn observations, etc.- these would be expected for a consultant to define in a business proposal to the client.). Commenter requested field records of this activity to determine how much effort was contemplated/contracted for; this is material to supporting conclusions of less than significant impact vs. a potentially significant impact. Commenter noted that Section 2.5 provided caveat that conclusions were based on data collected on site "at the time of the site visit". There is no certification or statement in this document holding the preparers professionally accountable for their work. Please respond with description of EIR process features and procedural controls that assure transparency and accountability of proponent for accuracy/justification of conclusions presented.	The project falls within the HCP/NCCP Service Area and is a covered project (Bridge Replacement, Repair, Retrofit). Under the HCP/NCCP framework, presence of HCP/NCCP-covered species is assumed where habitat for these species occurs. In compliance with the HCP/NCCP, several qualified biologists conducted species-specific planning surveys on 8/30/13, and botanists conducted surveys on 4/16/13, 6/7/13, 8/30/13, and 3/21/14. The protocol for all biological surveys is provided in the HCP/NCCP and summarized in the PSR. The likelihood for HCP/NCCP covered species to occur in the project area was conservatively based on presence of suitable habitat. Habitat conditions within the survey area have not changed since surveys were conducted; therefore, the results remain representative of existing conditions. The HCP/NCCP is a Federal Endangered Species Act Section 10 incidental take permit and a California Endangered Species Act Section 2081 incidental take permit as long as appropriate avoidance and minimization measures are followed and appropriate HCP/NCCP fees are paid. CDFW and USFWS are signatory agencies to the HCP/NCCP. As noted in the IS/MND, the County fully intends to implement appropriate avoidance and minimization measures and pay all required fees to obtain take coverage for HCP/NCCP-covered species that may be impacted as a result of project construction, as well as to comply with all regulatory permits obtained for the project. As presented in the IS/MND, potentially significant impacts would be sufficiently mitigated through implementation of the applicable avoidance and minimization measures, including preconstruction surveys identified in the biological studies and IS/MND, and through payment of more than $82,000 in mitigation fees to the Habitat Conservancy. Therefore, no changes to the impact findings are required.
49	Special Status Wildlife Species	Consideration and not noted or scene because they are either nocturnal or out of the study focus times, are the following: Hawks – red tail, Coober socks Shark Shin Bats – Pallid Big Eared Owls –Screech Great Horned Ducks -Mallard (nesting pair) Quail – Nest in the blackberry bushes set for removal Deer – bring their fawns for water and grazing grasses	Comment noted. Under the HCP/NCCP framework, planning surveys are intended to identify presence of habitat and are not required to be conducted at any particular time of day nor during any particular season (with the exception of botanical surveys which were conducted during appropriate blooming periods as noted in the response to comment 48). Presence of HCP/NCCP-covered species is assumed where habitat for these species occurs. All wildlife mentioned have been accounted for in identifying the proposed avoidance and minimization measures set forth in the IS/MND to be implemented during construction. Mitigation measures BIO-1 (disturbance to habitats and trees), BIO-3 (migratory bird protective measure), BIO-6 (special status bats) and BIO-10b (wetland pond and stream protective measures) will be implemented prior to and during construction as appropriate to avoid disturbing wildlife in or adjacent to the project area.
50	California red-legged frog	There are red legged frogs in this water way. Residents at 12801 have observed the redlegged frog in the creek area for 46 years.	Comment noted. Presence of California red-legged frog (CRLF) in Marsh Creek is acknowledged by the project's biological studies and IS/MND. CRLF was observed by biologists during planning surveys for the project. Because CRLF is a covered species under the HCP/NCCP and because the project is covered under this permit, mitigation for the potential impact to occupied CRLF habitat consists of payment of mitigation fees, in addition to the measures outlined in the IS/MND under mitigation measure BIO-4.

Comment No.	Text Commented On	Comment	CCCPWD Response
51	Western pond turtle is a HCP/NCCP covered species and a California Species of Special Concern.	There is a family of pond turtles which nest and bare their hatchlings. They have been established for at least 46 years during 12801 owners residency.	Comment noted. Presence of suitable foraging, dispersal, and breeding habitat for western pond turtle is acknowledged by the IS/MND. Implementation of mitigation measure BIO-1 prior to construction will isolate the work site so wildlife can use protected riparian habitat without entering the construction site. Impacts from habitat disturbance will be mitigated through payment of mitigation fees to the Habitat Conservancy consistent with mitigation measure BIO-5.
52	The nearest record is 1.39 miles from the project site. No pond turtles were observed during the survey.	See comment above	Data collected from the CDFW California Natural Diversity Database is one of many tools used to determine habitat suitability for each species, but may not capture all occurrences. The IS/MND identified suitable riparian/aquatic habitat and adjacent upland habitat for western pond turtle within the project area. Therefore, this species was considered in the impact evaluation presented in the IS/MND under mitigation measure BIO-5. Please see the response to comment 51.
53	Although not observed with in the BSA, foraging habitat for pallid bar and Townsend's big-eared bar is present within the BSA within the site's native grasslands and al the edges of the oak savanna.	12801 residents have observed bats at dusk for many years on their property and over the creek	Although bats were not observed during the surveys, biologists identified suitable bat habitat within the biological survey area. As a result, the IS/MND (BIO-6) evaluates project construction on bats and provides appropriate avoidance, minimization, and mitigation to avoid disturbance to bats during construction. Please see mitigation measure BIO-6 in the IS/MND for details.
54	There are four records of San Joaquin kit fox occurrences within 5 miles of the BSA (CDFW 2013).	Residents of 12801 have observed kit fox families training pups in the grassy area at far west end of BSA for many years, the last sighting being in the summer of 2015. This area is on property owned by 12801 residents.	Potential presence of San Joaquin kit fox is acknowledged, although deemed unlikely, by the project's biological studies and IS/MND. The IS/MND provides an impact analysis for San Joaquin kit fox (impact analysis BIO-8) and describes a detailed avoidance and mitigation approach for this species consistent with the HCP/NCCP (mitigation measure BIO-8). Focused preconstruction surveys will be conducted by qualified biologists 30 days prior to construction to determine whether suitable burrows are present. If an occupied den is detected, both CDFW and USFWS will be notified. Please see mitigation measure BIO-8 for specific details about minimization measures under every scenario.
55	These conservation measures are incorporated into the species mitigation provided in this impact analysis, to offset potential project impacts.	Please describe how project impacts to wildlife on private property adjacent to the project(including the BSA) are addressed by the HCP/NCGP.	The HCP/NCCP does not distinguish between public and privately owned property for species impact avoidance measures or mitigation. Wildlife habitat outside of the work area will be protected by installation of exclusion fencing as appropriate. Please see the response to comment 51.
56	3. All no-take species will be avoided.	Please explain how aquatic community is to be relocated to "avoid" take of turtles/CRLF	No-take species are those species for which the HCP/NCCP does not provide incidental take coverage. CRLF and western pond turtle are not defined as no-take species under the HCP/NCCP. Mitigation measure BIO-4 describes the process by which USFWS and CDFW will be responsible for translocating CRLF, if present, prior to construction. For western pond turtle, please see the responses to comments 51 and 52 and mitigation measure BIO-5 in the IS/MND. With implementation of applicable avoidance and minimization measures and payment of appropriate HCP/NCCP fees, the project will have coverage for incidental take of CRLF and western pond turtle via the Federal Endangered Species Act Section 10 incidental take permit and California Endangered Species Act Section 2081 incidental take permit (the HCP/NCCP permit). A qualified biologist will be present during creek dewatering to capture and relocate wildlife in the work zone, as appropriate.
57	5. Temporary stream diversions, if required, will use sand bags or other approved methods that minimize in stream impacts and effects on wildlife.	Please describe how invasive procedures in limited access condition protect wildlife. Or describe techniques that will avoid that situation during stream diversion.	The project has been designed to be consistent with HCP/NCCP Conservation Measure 1.14 Design Requirements for Covered Roads Outside the Urban Development Area (Chapter 6). In compliance with that measure, several avoidance and minimization measures will be used for protection of biological resources within and adjacent to the biological survey area. Please see mitigation measures BIO-1 and BIO-10b in the IS/MND for details.

Comment No.	Text Commented On	Comment	CCCPWD Response
58	8. On-site monitoring will be conducted throughout the construction period to ensure that disturbance limits, best management practices (BMPs) and HCP restrictions are being implemented properly.	Please clarify what organization is to monitor; and how organized to avoid conflict of interest with proponent conducting work.	Biological monitors must be approved by the regulatory agencies (CDFW and USFWS) prior to project activities. The County contracts with several independent biological consulting firms, all of which employ qualified biologists meeting state and federal agency requirements for conducting surveys and identifying special status species. Monitoring biologists are hired to protect resources and advise the project's resident engineer on resource protection and regulatory compliance. Further, Public Works Environmental Services staff monitors project construction and advises the project's resident engineer and department management on regulatory compliance.
59	11. Cut-and-fill slopes will he revegetated with native, non-invasive nonnative, or nonreproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions.	How and whom will water this for growth potential?	Seeds are distributed just prior to first rains via a hydroseeding technique that provides adequate initial hydration for seed germination. Vegetation will be drought tolerant and no additional irrigation will be required.
60	Trail fence posts will be placed at or outside of the driplines of avoided trees to the extent feasible based on the limits of the area to be graded.	Fence posts need be 5' outside the drip ring of the tree.	Comment noted.
61	All trimming will be conducted under the supervision of a certified arborist.	Will this arborist be on site at all times for supervision of this process?	A certified arborist will be present during tree trimming activities.
62	No preconstruction surveys are required.	Commenter notes that survey is necessary during design phase to quantify extent of impact-concerns on impacts to adjacent perennial aquatic community already noted and measures such as planned dewatering may render local relocation impractical or ineffective.	Appropriate habitat for CRLF is present and acknowledged by the project's biological studies and the IS/MND. Please refer to mitigation measure BIO-4 for applicable CRLF protective measures required by the HCP/NCCP.
63	Impact BIO-5 - Disturbance to Western Pond Turtle and Their Habitat	There is nesting Western Pond Turtles in the creek waters. Area observed is within 150' of proposed project. Dewatering would have massive impact on this population. This situation needs to be specifically addressed in the EIR	Wildlife exclusion fencing will be installed prior to construction activities to isolate the work area and preclude wildlife from entering the construction work area. Creek flows will be bypassed around the work area to maintain downstream flows. Construction will occur in the late spring through early fall months (dry season). Please see the responses to comments 51 and 52 and mitigation measure BIO-5 in the IS/MND.
64	Impacts to western pond turtle and their habitat would be mitigated through payment of applicable development fees and wetland mitigation fees for permanent and temporary impacts, totaling $83,217.82, as required under the HCP/NCCP (Sections 4.1.1.4 and 4.4.2).	Note that no mention made of mitigation of habitat destruction on adjacent property owner land.	Please see the responses to comments 11, 12, 51, 52, 55, 63, and 66.
65	Although the occurrence of San Joaquin kit fox within the BS1 is unlikely, the site nevertheless supports marginally suitable foraging and movement habitat.	Statement is erroneous; interview with adjacent residents during field survey would have alerted biologist to this possibility. NO interaction with residents was attempted; when resident 12801 asked about purpose of related tree tagging work, biologist/arborist provided nonformative and evasive answers and made no effort to refer questions to County client that was manging the work.	Comment noted. Please see the response to comment 54.

Comment No.	Text Commented On	Comment	CCCPWD Response
66	Compensatory mitigation for temporary and permanent impacts to habitats will be achieved through payment by CCCPWD of development fees and wetland mitigation fees. The proposed project would provide a development fee of $13,909.19 for permanent impacts and a development fee of $2,119.99 for temporary fees. A wetland mitigation fee of $41,659.62 for permanent impacts to stream and riparian woodland habitats, and a wetland mitigation fee of $25,529.02 for temporary impacts to stream and riparian woodland habitats. Specific to riparian habitat, fees will offset permanent impacts to 40 linear feet of stream and permanent impacts to riparian woodland as a result of the loss of 0.091 acre of riparian canopy. Additionally, the fee will offset temporary construction impacts to 249 linear feet of stream and 0.306 acre of riparian habitat. Therefore a total combined mitigation fee for the project will be $83,217.82.	These fees are here because temporary and permanent impacts to habitat is unavoidable. No compensation to adjacent property owner's habitat also affected by the project even mentioned. Please justify legal basis for this or acknowledge obligation under the law.	This project is covered by the HCP/NCCP, which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Activities covered under the HCP/NCCP are considered to have received Incidental Take authorization from the USFWS and CDFW if appropriate avoidance measures are implemented and appropriate mitigation fees are paid. These avoidance and mitigation measures are described in detail in the IS/MND. The issue of property owner compensation is addressed by our Real Estate Division during the acquisition phase of the project. Property owner compensation is not a CEQA issue. Therefore, no changes to the IS/MND are required.
67	Implementation of Mitigation Measures 10A and 10B as described under checklist item b) above, would reduce impacts to wetlands to less than significant with mitigation incorporated.	Is mitigation scope limited to BSA; is proponent committed to mitigate all impacts to downstream perennial waters on land owned by 12801 residents.	The total stream length within the biological survey area is 495 linear feet. As noted in the IS/MND, dewatering will occur in the work area extending approximately 150 feet upstream and 130 feet downstream of the existing bridge. Water quality impacts downstream of construction would be minimized through implementation of mitigation measures BIO-10a and 10b. A hydrogeologic evaluation was conducted to assess the potential for impacts to the creek system. According to Balance Hydrologics, no lasting hydrological impacts are expected as a result of the temporary dewatering. However, they note that compaction of the channel bed could result from use of heavy equipment in the channel. They recommend the County work with hydrologists, geomorphologists, and/or engineers to minimize these impacts through measures such as: 1. Minimizing use of heavy equipment within 20 feet of the reported spring 2. Minimizing grading and redistribution of bed sediment 3. Minimizing compaction by retaining existing bed material under weight-dissipating mats The County will follow these recommendations to ensure channel compaction is minimized.
68	Therefore, impacts of the proposed project would be less than significant.	NES study does not provide conclusive evidence supporting this assertion. Please provide specific supporting evidence or cite references in supporting documents to justify this statement. Please specifically address resident amphibian and turtle communities in perennial waterway downstream of project	All wildlife and habitat impacts will be appropriately mitigated via the HCP/NCCP. See the responses to comments 50, 51, 52, and 56 for more information on CRLF and western pond turtles.
69	Landslides?	Consider Sliding triggered by excavations for retaining walls	The geotechnical report prepared for the project evaluated the potential landslide risk. The IS/MND findings are consistent with the results of this report.

Comment No.	Text Commented On	Comment	CCCPWD Response
70	Result in substantial soil erosion or the loss of topsoil?	Need to consider sliding hillside or soil erosion if retaining walls are not constructed between construction work seasons.	Please see the response to comment 69.
71	The project area is not located within a potential landslide area (Contra Costa County 2005). Therefore, the proposed project would have no impact.	Please explain this: All of Marsh Creek is a slide area. Grader equipment keeps the road clear during the winter/rainy season for traffic to move through safely.	The project area has not been designated by the County as high landslide potential. As substantiated by the geotechnical report prepared for the project, the IS/MND findings are appropriate.
72		Conclusion needs more site specific substantiation then consulting a small scale generalized map. Please provide evidence proving this point.	Please see the response to comment 71.
73	Therefore, proposed project impacts associated with soil erosion would be less than significant.	Commenter disagrees with this conclusion. Commenter has pointed out possible conditons in downstream creek channel/channel slope adjacent to project limits that could be subject to SIGNIFICANT erosion or bank collapse from channel flow through the new bridge opening. Lower flow profile at bridge will translate to higher fow velocities in downstream reach of channel. Planned destruction of trees at edge project will weaken channel banks and reduce erosion resistance. This is a SIGNIFICANT impact which needs to be considered in the project design	An area of armoring within Marsh Creek has been described in the IS/MND and accounted for in stream impact calculations that determine HCP/NCCP stream impact fees; therefore, no changes to the IS/MND are required. Final payment of fees will be based on the final design of the bank armoring and any other erosion control devices. Please see the responses to comments 80 and 81 for further detail.
74	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	Existing Fire Hydrant in front of 12801 MCR must be relocated to suitable location in front of residence.	Comment noted. The existing fire hydrant has been accounted for by project design.
75	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	Commenter contends the presence of existing well, natural springs in creek at project site not addressed at all needs to be evaluated in detail prior to drawing any conclusion. This a significant impact.	A hydrogeologic analysis of Marsh Creek in the area of the bridge was performed to investigate the source of the water feeding a pool within the creek downstream of the work area and right of way. General mineral, boron, and specific conductance analysis did not reveal a spring; however, given elevated base flow volume, results are not sufficiently discriminating to rule out minor spring flow at the bridge location. Subsequent field verification will be conducted during lower (spring or summer) flows to determine whether additional consideration is necessary to accommodate groundwater flow. Balance Hydrologics concluded that if alluvial flows are the source of the reported spring, no further mitigation measures are warranted as construction activities would not deprive the system of inflow. However, Balance Hydrologics further concluded that if Panoche bedrock waters are the source of the spring, then construction activities should avoid sealing off the source by placing drainage pathways through and/or below the abutment footings to maintain spring flow to the creek. These accommodations will be field fit if conditions warrant. In other words, during excavation for the abutments, if spring flows are encountered at an elevation that could be blocked by abutment construction, drainage pathways through and/or under the abutment will be constructed to ensure flows are allowed to continue to source the creek and pool. With these accommodations, impacts will remain less than significant, even if flows are sourced from Panoche bedrock. The existence of a possible spring and presence of a pool downstream of the project area does not change the impact determinations in the IS/MND.

Comment No.	Text Commented On	Comment	CCCPWD Response
76	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	Significant damage to immediate down stream channel and channel bank adjacent to the project wil occur without significant positive mitigation is not in the plan.	Please see the responses to comments 73, 75, 80, and 81.
77		Design needs to consider level of protection actually provided under present site condition and extent of potential construction disturbance (such as damage/killing of trees rooted in channel walls immediately adjacent planned structure. Question c answer be reconsidered in light of potential significant increase to final channel protection scope. This change may be more extensive than considered in the current document, or minimized if bridge location is moved upstream as mitigation to address other significant project impacts. Please note that property owner of 12801 MCR exclusively bears the risk of downstream damage	Please see the responses to comments 73, 75, 80, and 81.
78	The existing bridge structure constricts the Marsh Creek channel, resulting in flood waters backing up and inundating the underside of the bridge (WRECO 2015).	Provide documented evidence to support this statement. Residents of 12801 MCR have NEVER observed the creek to rise to the level indicated in 46 years. This is critical to assess the suitability of the project as proposed in 65% design.	Results of a HEC-RAS flow analysis in Marsh Creek show that the water surface during a 100-year storm event will inundate the bottom of the existing bridge and backup flows upstream of the bridge. The design flows used in the analysis were developed using CCCFC&WCD hydrologic methods and incorporate future planned uses for the watershed. Design flows can, therefore, be conservative if the watershed is not currently developed to its highest planned use. Please see the response to comment 80.
79	The proposed project would not affect groundwater supply; therefore, there would be no impact.	There is ground water flow in the area of construction coming from underground springs and a well that filters under ground to the creek. The perennial inflow is due to an abandoned 30’ deep well hand excavated and wood cribbed to an opening approx.. 6’X6’. The well is reported by the property owner to be located approximately 10’ to 20’ north of the existing R/W (offset ~ 50’ or so left perpendicular to edge exist’g pavement at approx. plan MC station 337+70. Well was reported to have been loosely backfilled with gravel and dirt by property owner to remove a safety hazard about 15 years ago. Well was reportedly hand dug by Chinese laborers well over 100 years ago. This well is a likely source of springs observed by 12801 residents in the creek bank feeding perennial water in creek immediately downstream of the existing bridge. It has sustained a substantial population of wildlife both resident (frogs and turtles, seasonal nesting ducks, small fish(~3” in length) and transient wildlife seeking water in dry months (deer and birds, coyotes, kit fox, bats, the common ones-racoons.	Please see the responses to comments 67 and 75.

Comment No.	Text Commented On	Comment	CCCPWD Response
80	The proposed project would modify the existing Marsh Creek stream channel within the project area, including removal of the existing bridge abutments and construction of new abutments that are further apart to allow for a less constricted stream channel. The abutments would be designed following Caltrans standards to minimize the potential for erosion and minimize the potentials for siltation. The design would widen the currently incised channel around the existing bridge to allow for lower velocity flows during storm events. Therefore, the proposed project would have a less than significant impact.	More study in detail needs to be done here. When the stream channel within the project area is modified and new abutments are further apart to allow less constricted stream channel then the flow down stream becomes impeaded and erodes the present soil because of narrow pass through for the water to travel.	The final project design will maintain or reduce stream velocities and stream bank erosion potential downstream of the project limits. Final determination of the bank armoring and channel details will be completed as part of final design. Considerations include rock slope protection, rock vein, contoured rock slope protection, rootwad installation, other measures or a combination of measures to achieve the hydraulic performance requirements for velocity and scour potential as well as meet permitting agency requirements.
81		The discussion needs to be expanded to include effects on existing channel conditions immediately adjacent to the county right of way property. The existing right side channel wall is stabilized within the right of way and immediately downstream by several old trees whose root systems are the primary armoring of the sidewalls. There are patches of very old masonry slope protection in places along this section. Furthermore, the channel slightly bends to the left in this area. The removal of the trees is required by the planned construction; and there is no evidence in the current design that planned improvements will protect the channel wall immediately downstream adjacent to the slope protection within the right of way. This is a significant local impact that puts the adjacent property owner (Residence 1) at significantly increased risk from channel wall erosion and bank recession/collapse during high runoff events.	Please refer to the response to comment 80 for more information on the types of treatments to be used. The existing bank erosive potential beyond the project limits will not be worsened as a result of the project; however, existing rates of bank erosion and existing bank erosive potential as a result of future high runoff events are likely to persist post-construction, as reduction in the bank erosive potential beyond the project limits is outside the scope of the project.
82	Conflict with any applicable land use plan, policy or the regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose or avoiding or mitigating an environmental effect?	Commenter notes concern that absent of long term plan for future use of the MCR corridor through Mt. Diablo foothill zone makes any answer to question non-informative relative to an accepted policy of the County.	The project is consistent with the County's General Plan. The County has studied the entire Marsh Creek Road corridor and uses that study to identify and prioritize locations for safety improvements as funding becomes available. The long-term plan for Marsh Creek Road was clarified in an amendment to the Precise Alignment Plan approved by County Board of Supervisors on June 10, 1997. This amendment concluded that the ultimate plan for the roadway would involve a two-lane configuration and setting aside additional right of way to accommodate future trails, slope easements, and safety improvements. This plan for a two-lane road within a larger (four-lane sized) right of way is in alignment with the County General Plan for the entire Marsh Creek Road corridor. Accordingly, this bridge project is consistent with the County's plans for the corridor.
83	Policy 5-A: To provide a safe, efficient, and balanced transportation system	This policy is general and not specific; document needs to discuss how the project complies with the policy; discussion needs to address unique location and existing state of MCR and resources needed to make it "safe".	The County has selected the bridge/roadway alignment that meets the relevant requirements. Please see the response to comment 82.
84	Policy #5-17: The design and scheduling of improvements to arterials and collectors shall give priority to safety over other factors including capacity	This statement needs to be elaborated on to discuss the amount of "improvement" provided by this project in relation to the entire 12 miles + Marsh Creek Road corridor. Interesting, again how does project fit into overall MCR safety improvement strategy? No discussion to help acces whether project is actually in line with realistic plan (affordable, doable with some timeframe consistent with General Plan timeframe) to improve overall safety of MCR.	Please see the responses to comments 82 and 83.
85	Therefore, the proposed project would have no Impact.	Conclusion requires substantiation as detailed above.	Please see the responses to comments 82, 83, and 84.

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86	The project area is located within the East Contra Costa County HCP/NCCP inventory area and is a covered activity. Compliance with the HCP/NCCP is covered under the Biological Resources section. Because the project complies with the HCP/NCCP, the proposed project would have no impact.	Need to provide evidence to substantiate this conclusion. Detail on specific elements of the referenced plan	The IS/MND provides an in-depth discussion of the project's compliance with the HCP/NCCP in the Biological Resources section. All mitigation measures, including development and wetland mitigation fees, were developed in accordance with the HCP/NCCP.
87	Table 6: Nearby Receptors Sensitive to Noise	Please explain how the noise is shielded by landscape trees and native trees when the native trees between the project and the residence are removed?	Table 6 is located in the Environmental Setting subsection. The purpose of this table is to summarize existing conditions at the sensitive receptors. As such, native and landscape trees are listed as existing forms of shielding at the three sensitive receptors.
88	It is anticipated that the proposed project would use standard construction equipment, which includes but is not limited to: large rotary drilling machine, crane, excavator, tractor, backhoe, grader, dump truck, water trailer, compactor, skid steer, pick-up trucks, paver, hopper, and generator, no pile driving will occur.	NES report reads as follows “The reinforced concrete bridge abutments will be supported by deep piles that will either be driven or drilled to a depth of 60 feet.” Please clarify.	As noted on page 64 of the IS/MND, the project will not use any pile driving equipment, which has been further refined by project design from what was originally analyzed in the Noise Technical Memorandum and Natural Environment Study.
89	The project would remove 2 non-native woodland trees to the south, but the majority of native and landscape trees would remain and continue to shield the commercial facility from noise.	Please revisit your drawings with tree removal. The count of trees here is only in the riparian area. What about the staging areas that affect over 20 healthy trees just to store equipment and job supplies. With the additional trees to be removed the almost entire habitat area will be destroyed (with exception of 2 mature sycamore trees). The trees in this area also serve as a sound barrier to the noise created by the events West of the project at Marsh Creek Springs. This privacy and buffer will be truncated (destroyed). Tree buffer needs to be restored and mitigated to equivalent level as to what is presently there.	Please see the responses to comments 4 and 25 regarding tree removal. The General Plan classifies the existing traffic noise level of Marsh Creek Road between Clayton and Deer Valley Road as 65 dBA (please refer to General Plan noise contours for Marsh Creek Road). The operational noise impact analysis presented in the IS/MND assumed no shielding is in place for either current (without-project) or future (with-project) conditions between noise coming from traffic on the bridge and general noise in the study area at the sensitive receptors.
90		This is not a commercial facility it is residential and event area which often times has large amounts of overflow parked vehicals along the road on both sides of Marsh Creek Road from the address of 12510 to 12801 and on to 12807.	Comment noted. As of February 26, 2016, Old Marsh Creek Springs states on its website that the "facility has held many weddings, quinceañera, anniversaries, and company picnics." Business hours are listed as 9:00 am to 7:00 pm. This property is privately owned and operated, doing business as Old Marsh Creek Springs Park. The business operates primarily as a wedding chapel, renting the property to generate profit.
91		Daily schedule described will be a substantial disruption to residents. Working hours need to be no later than 5 PM on weekdays and weekend work only in extreme circumstances to maintain contract schedule.	Comment noted. The work hours noted are consistent with the noise element of the County’s General Plan.
92	Construction activities are anticipated to be conducted in phases over the course of approximately two years, with	More defined times of construction including onsite servicing of equipment. More defined course of construction duration “approximately two years” all other reports state two seasons including this one.	Construction is likely to span two seasons between the summer of 2017 and the fall of 2018, pending Caltrans and federal approvals. Please see the response to comment 91 for proposed construction days and times.

Comment No.	Text Commented On	Comment	CCCPWD Response
93	construction work occurring between 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on weekends.	Statement that equipment noise controls and "intermittent nature of construction" will reduce impacts to Resident 1 to less than significant level needs substantialtion. The commenter contends that the contractor building the project will be contractually tied to a period of performance and subject to liquidated damages for late completion. That the work will be "intermittent" to the point the writers suggest is ridiculous to anyone familiar with properly designed public works construction. The residents at Residence 1 are retired people living at that location live there all the time. They will be exposed to construction operations essentially the entire duration of the project. Almost all of the work will be right next to Residence 1 and involve demolition and other significant noise generation sources such as air compressors, air powered tools, material handling and equipment operating under substantial loads. All equipment is equipped with highly audible backup alarms which will be extensively activated due to constricted work areas around the bridge site.	The term "intermittent" was used to describe the typical nature of construction, which often includes various types of equipment operating at various levels (or not at all) at one or more times throughout a given period. Noise specialists at Anchor QEA ran a desktop model to assess the noise impacts associated with construction. According to the results of that model, ambient noise levels will increase with construction; however, implementation of equipment noise controls and other administrative measures including work hour restrictions will reduce the levels to less than significant. The purpose of the project is to improve the long-term safety of the bridge for the local community, including those who reside at Residence 1. Any equipment alarms that may sound during construction are necessary to ensure the safety of construction personnel, as well as anyone else in the immediate area; this is necessary for public safety.
94	Public Services Intro	Consider indirect increase in demand for police service for accident response.	The IS/MND appropriately considered the potential impacts on police service. The project would not increase demand for police services or impede existing service. A temporary road would be maintained during construction, so access through the project area is not expected to be disrupted for more than short and intermittent periods.
95	Transportation/Traffic Intro	No comments specific to this section (Neg. Dec) EIR	Comment noted.
96	The existing bridge over Marsh Creek has been deemed structurally deficient and functionally obsolete in recent Caltrans bridge inspection reports.	This is not the same status rating as the Caltrans structure maintenance investigations report of July 2015? Please explain the discrepancy.	Please see the response to comment 7.
97	The proposed project has been designed so that existing traffic can be accommodated during construction, while minimizing impacts to the surrounding right-of-way, including existing buildings.	Safety to the residences in the direct area hasn't been considered.	The analysis provided in the IS/MND does not differentiate between user groups, and considers the safety of all users.
98	The proposed project would maintain traffic flow and safety during construction. Construction of the new bridge would be staged to accommodate two lanes of traffic throughout construction.	Does this discussion make sense? Is culvert replacement part of this review?	Please see the response to comment 91. As noted in the IS/MND, construction will include a traffic management plan that will accommodate existing users.
99	A temporary partial road closure may be required over a long weekend to complete the replacement of the culvert west of the project.	Please share the drawings and placement of this culvert. Haven't seen anything on this activity / construction.	This text no longer applies. As the design of the project has been finalized, the need for a partial road closure will no longer be required.
100	The proposed project would widen shoulders through the project area, improving pedestrian and bicycle safety.	Commenter contends that Increase to pedestrian/bicycle safety for 1000 feet on 12+ miles is insignificant.	Comment noted.

Comment No.	Text Commented On	Comment	CCCPWD Response
101	The proposed Project would improve safety by replacing a bridge that is structurally obsolete, widen existing shoulders, and straighten a sharp curve.	Please explain the Caltrans structure maintenance and investigations report. There is not such rating as Structurally obsolete.	Please see the response to comment 7.
102	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	Commenter's position is General conclusion is rebuttable given evidence provided; and contends that there is potential significant environmental impacts to the project area. Comments have been provided elsewhere , in particular regarding the biological elements and impacts in immediate project area.	Please see the responses to comments provided in this matrix. After review of the comments provided by this and other commenters, the County has found that the IS/MND findings do not change as a result of public comment.
103	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable'" means that the Incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	Commenter's position is this general conclusion is rebuttable; and contends that there is potential significant environmental impacts to the project area as comments provided in this document suggest	Please see the response to comment 102.
104	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	A substantial amount of stress has been experienced by the (Dortzbachs'- 46-years residents at 12801 Marsh Creek Rd.) when NO REASONABLE SAFETY into and out of their property is considered, and the planned work poses a real threat to the creek channel bank adjacent to their driveway. They are also faced with the destruction of creek habitat and wildlife "incidental take" in the portion of the creek on their property. They consider the creek and its life a major source of enjoyment and continuity in their lives; this is also a MAJOR stress on them These residents (Dortzbach's) are Senior Citizens 78 and 80 and this project is a MAJOR disruption in their lives, ever since the County sent them a letter in October 2015 regarding the proposed work. They were not informed of the proposed project by the County Public Works department until the project was at an advanced state of design. They have been cooperative with the "Biologist" for plant/animal study, refused to tell why they there or EVEN REFER THEM TO A COUNTY REPRESENTATIVE FOR ANSWERS when Dortzbachs asked the Biologist what their reason for tagging the trees was for.	Comment noted. Please see the response to comment 102. Issues raised in this comment are addressed throughout this response matrix. As noted in the response to comment 36, County engineering will coordinate with the property owner regarding the final location of the driveway. As noted in responses to comments 4 and 25, the project design relative to tree removal has been refined, resulting in the retention of 11 additional trees.

Comment No.	Text Commented On	Comment	CCCPWD Response
105	Within the broader context used to assess cumulative impacts, the proposed project would not directly or indirectly increase traffic volumes to Marsh Creek Road and would improve safety within the project area by replacing an old bridge with a new bridge that meets all current safety standards.	The safety doesn't extend to the two affected residents right next to the project. Commenter contends that geometric configuration of 1000+ feet of superelevated roadway will encourage drivers to speed even more than current situation encourages.	Please see the responses to comments 6, 22, 36, and 83.
106		All environmental monitoring/enforcement should be responsibility of individuals OUTSIDE the direct Public Works Project/Construction Management chain of command. Please clarify planned arrangement and describe how it will allow function to be performed independent of other project management functions	Please see the responses to comments 46 and 58.

LETTER OF TRANSMITTAL

Date: February 26, 2016	**Job No. 2015-01**
Project : Bridge 28C141 Project Dortzbach	
Technical Consultation	
Contract No.	
Transmittal No. 001	
Re-Transmittal No.	

To:

Contra Costa Public Works Dept.
255 Glacier Dr.
Martinez, CA 94553
Attn: Hilary Heard, Planner II

WE ARE SENDING YOU: ATTACHED **X** as separate pdf file_ UNDER SEPARATE COVER___VIA_____

___ Shop Drawings ___ Prints Plans/Specifications:___

___ Copy of Letter ___ Change order **X** Other: Public Review Comments-EIR Neg Dec Draft

COPIES	DATE	NO. OF PAGES	DESCRIPTION
1	26-Feb-16	106	Item 1:Commented text of document titled "Public Works Department Initial Study of Environmental Significance"
1	26-Feb-16	25 +/-	Item 2:Comments on document "Natural Environmental Study-Marsh Creek Road Bridge Replacement Project (Bridge No. 28C0141), March 2015
1	26-Feb-16	1	Email containing comments on Word file of Item 1 (as attachment)

SIGNED_____

Mr. Jim Gray - Consulting Engineer-(925) 260-5804

Submitted on behalf of Wrenetta and Richard A. Dortzbach

12801 Marsh Creek Road, Clayton, CA 94517

Re-Transmitted As Follows:

____ Approved as Submitted ____ Approved as Noted Below ____ Resubmit ____ Copies for Approval

____ Submittal Not Approved ____ For Informational Purposes Only

RECEIVED
CONTRA COSTA COUNTY
FEB 26 2016
PUBLIC WORKS DEPARTMENT

Sender Remarks: Item 1 submitted as formal response to published notice dated Jan 27, 2016
Item 2 furnished to comment on biological information furnished by Public Works (Neil Leary). This document appears to have provided information used in the EIR type document released for public review.

Curiously this document was not listed in the EIR type document's bibliography.

Department of Conservation and Development

30 Muir Road
Martinez,CA 94553

Phone:1 855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

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I.I JAN 27 2016

J.ECANGAMIUA COUNTY CLERK
CONTRA COSTA COUNTY
BY _____ * DEPUTY

January 2016

NOTICE OF PUBLIC REVIEW AND INTENT TO ADOPT A PROPOSED MGATED NEGATIVE DECLARATION
County File No. CP 15-39

Pursuant to the State of California Public Resources Code and the "Guidelines for Implementation of the California Environmental Quality Act of 1970" as amended to date, this is to advise you that the Department of Conservation and Development of Contra Costa County has prepared an initial study for the following project:

PROJECT NAME: Marsh Creek Road Bridge Replacement (Bridge 28C-141)

LEAD AGENCY: Contra Costa County Department of Conservation and Development

APPLICANT: Contra Costa County Public Works Department

LOCATION: The Project is located two miles east of Morgan Territory Road, located in the eastern area of Contra Costa County in the community of Clayton

DESCRIPTION:The purpose of this Project is to replace an existing bridge along Marsh Creek Road that carries traffic over Marsh Creek. The Project consists of bridge replacement; the proposed bridge would be an approximately 90-foot-long, single-span bridge. The bridge deck would be widened to provide a width of approximately 43 feet. with 12-foot-wide travel lanes, 8-foot-wide shoulders, and an approximately 1.5-foot-wide concrete barrier on each side of the new bridge. The proposed bridge would be constructed of reinforced concrete on pre-cast and pre-stressed I-girders. The reinforced concrete bridge abutments would be supported by spread footings. The existing structure includes tall, reinforced concrete walls that restrict the flows of Marsh Creek under the bridge. These existing walls would be removed as part of the project to open up the channel where Marsh Creek flows under the bridge. The channel work would require that Marsh Creek be dewatered in accordance with regulatory permits. Dewatering would likely be accomplished using coffer dams according to methods acceptable to the California Department of Fish and Wildlife (CDFW). Water would be

routed around the work area to maintain downstream flows. Dewatering would occur in the work area extending approximately 150 feet upstream and 200 feet downstream of the existing bridge. Along with replacing the bridge, the horizontal alignment of Marsh Creek Road would be shifted north on a parallel alignment to accommodate the wider bridge structure, and earthwork would be required along both sides of the existing roadway. In order to meet the hydraulic design standards, the vertical profile of the bridge would be slightly raised. The changes in both the horizontal and vertical alignments require reconstruction of Marsh Creek Road on both sides of the bridge (900 feet total). Two retaining walls may also be necessary: the first retaining wall would be along the north side of the roadway (west of the bridge), would have an average approximate height of 10 feet, and would be 183 feet long; the second smaller retaining wall would be set back from the roadway on the north side of the road (west of the bridge) and would be approximately 7 feet high and 90 feet long. The final design of these walls will be determined prior to construction. The widening and realignment of Marsh Creek Road to construct the new bridge may require right-of-way or temporary easements from several adjacent parcels. Staging of construction materials and equipment would occur in two potential locations north and south of the road in the center of the project site (Figure 2). The northern staging area would occur within an undeveloped vegetated area, and the southern staging would occur entirely within paved parking areas. Standard construction equipment would be used for constructing the proposed project, including but not limited to: excavators, graders, scrapers, baders, sweepers/scrubbers, plate compactors, rollers, backhoes, and pavers. The proposed project has been designed so that existing traffic can be accommodated during construction, while minimizing impacts to the surrounding right-of-way, including existing buildings. Construction would be sequenced in a manner to minimize traffic impacts during construction. Two phases of bridge construction are expected: The first phase would partially construct the new bridge with traffic using the existing bridge; The second phase shifts both directions of traffic onto the new bridge so the existing bridge can be demolished and the new bridge can be built to full width. During construction, the project is expected to accommodate one 12-foot-wide travel lane in each direction on Marsh Creek Road through the project site throughout construction, with short, infrequent periods of one lane traffic controls. Construction would take up to two seasons, likely starting in the summer of 2017 and finishing by the fall of 2018, pending Caltrans and Federal approvals. Utility relocation and right-of-way transaction will be necessary in support of the project. Tree and shrubbery removal and trimming will be necessary, in order to minimize damage to trees, any roots exposed during construction activities will be clean cut and tree branches will be trimmed. A copy of the Initial Study Mitigated Negative Declaration (IS/MND) may be reviewed at the Contra Costa County Public Works Department, 255 Glacier Drive, Martinez, during normal business hours. All documents referenced in the IS/MND are available on request. You may also view the IS/MND on the County's webpage: http://www.co.contra-costa.ca.us. (Go to the Department of Conservation and Development and click on Public Input or go to the Public Works Department and click on Public Notices). Si desi hablar con alguien en Espanolsabre este aviso, llame al (925) 313-2022.

Comment [ld1]: How will this water be re-routed around the construction site? The cofferdam method(s) considered "acceptable to CDFW" needs to be described in sufficient detail to correctly determine if locally significant impacts to the biological community. This community exists year round due to inflow from underground spring, located within 100' north of existing bridge. Biological study conducted on August 30, 2013, didn't make note of the upstream dry, but down stream had water flow.

Commenter notes that most of the dewatering zone in the downstream (north direction) is outside of the county right-away; therefore encroaching (on order of 150-ft) into the property of private residence (12801) adjacent to the project.

Comment [ld2]: According to the NES (Natural Environmental Study, March 2015) only 800' on both sides of the bridge will be needed.
Please explain this 100' of discrepancy.

Comment [ld3]: What is the alternative plan if the right-of-way or temporary easeme are not agreed upon?

PUBLIC COMMENT PERIOD: The period for accepting comments on the adequacy of the environmental document is from January 27, 2016 to February 26, 2016, at 5:00 P.M. Any comments should be in writing and submitted to the following address and/or email address:

Hillary Heard, Planner II
Contra Costa County Public Works Department
255 Glacier Drive
Martinez, CA 94553
hillary.heard@pw.cccounty.us

Any questions regarding the Project itself should be directed to:

Neil Leary
Contra Costa County Public Works Department
255 Glacier Drive
Martinez, CA 94553
(925) 313-2278

The environmental document is expected to go before the County Board of Supervisors on March 15, 2016. To confirm the Board date, please contact Hilary Heard at (925) 313-2022.

Contra
Costa
County

PUBLIC WORKS
DEPARTMENT NITAL STUDY
OF
ENVIRONMENTAL SIGNFICANCE

PROJECT NUMBER: 0662-6R4079

CP# 15-39

PROJECT NAME: lacement Brid e 28C-0141

PR, RED B'(: DATE: Janualy 5.2016

APPrIOVED BY:—— ?C_.:..._GQ.. DATE: 1-IJ -/C:.

RECOMMENDATONS:

O Categorical Exemption (Class X]

Mitigated Negative Declaratn

() Environmental Impact Report Required

O ConditionalNegative Dedaration

The project will not have a significant effect on the environment. The recommendation is based on the following: There is no substantial evidence that the project or any of its aspects may cause a significant effect on the environment, pursuant to 15063 (b) (2) of the CEQA Guidelines.

What changes to the project would mitigate the identified impacts: N/A

USGS Quad Sheet:Antioch South	Base Map Sheet #: P-20, P-21	Parcel#: N/A

GENERAL CONSIDERATIONS:

1. Location: The project is located two mles east of Morgan Territory Road, bcaled n the eastern area of Contra Costa County in the commurity of Clayton [Figures 1 2].

2. Project Description: The purpose of this project is to replace an existing bridge along Marsh Creek Road that carries traffic over Marsh Creek. The Project consists of bridge replacement: The proposed bridge would be an approximately 90-foot-long, single-span bridge. The bridge deck would be widened to provide a width of approximately 43 feet, with 12-foot-wide travel lanes, 8-foot-wide shoulders, and an approximately 1.5-foot-wide concrete barrier on each side of the new bridge. The proposed bridge would be constructed of reinforced concrete on pre-cast and pre-stressed I-girders. The reinforced concrete bridge abutments would be supported by spread footings. The existing structure includes tall, reinforced concrete walls that restrict the flows of Marsh Creek under the bridge. These existing walls would be removed as part of the project to open up the channel where Marsh Creek flows under the bridge. The channelwork would require that Marsh Creek be dewatered in accordance with regulatory permits. Dewatering would likely be accomplished using coffer dams according to methods acceptable to the California Department of Fish and Wildlife (CDFW). Water would be routed around the work area to maintain downstream flows. Dewatering would occur in the work area extending approximately 150 feet upstream and 200 feet downstream of the existing bridge. Along with replacing the bridge, the horizontal alignment of Marsh Creek Road would be shifted north on a parallel alignment to accommodate the wider bridge structure, and earthwork would be required along both sides of the existing roadway. In order to meet the hydraulic design standards, the vertical profile of the bridge would be slightly raised. The changes in both the horizontal and vertical alignments require reconstruction of Marsh Creek Road on both sides of the bridge (900 feet total). Two retaining walls may also be necessary: the first retaining wall would be along the north side of the roadway (west of the bridge), would have an average approximate height of 10 feet, and would be 183 feet long; the second smaller retaining wall would be set back from the roadway on the north side of the road (west of the bridge) and would be approximately 7 feet high and 90 feet long. The final design of these walls will be determined prior to construction. The widening and realignment of Marsh Creek Road to construct the new bridge may require right-of-way or temporary easements from several adjacent parcels. Staging of construction materials and equipment would occur in two potential locations north and south of the road in the center of the project site (Figure 2). The northern staging area would occur within an undeveloped vegetated area, and the southern staging would occur entirely within paved parking areas. Standard construction equipment would be used for constructing the proposed project, including but not limited to: excavators, graders, scrapers, loaders, sweepers/scrubbers, plate compactors, rollers, backhoes, and pavers. The

Comment [JG4]: OCR conversion has garbled areas on text, this document was translated from official version contained on County website. Conversion was performed using function on Adobe Acrobat xi to save pdf file as a word document.
Upon request Commenter will provide sworn statement attesting to this fact and that no alteration to text has been made, and that this is a true copy of said pdf, excepting garbled character conversion.
Commenter requested word version of document to comment on; County Planner in charge of EIR project declined to provide one.

Comment [Id5]: "Significant effect" on the environment will definitely be a factor. Removal of 36 trees, several bushes/ shrubs and personal landscape. Change to the entire scenic environment. Not to mention the wildlife habitat not taken into study for the nocturnal wildlife.

Comment [JG6]: This conclusion is rebuttable. Evidence provided in follow sections in many cases do not provide sufficient evidence/analyses to support this document statement. Comments addressing specific items are presented in the following section.

proposed project has been designed so that existing traffic can be accommodated during construction,while minimizing impacts to the surrounding right-of-way, including existing buildings. Construction would be sequenced in a manner to minimize traffic impacts during construction. Two phases of bridge construction are expected: The first phase would partially construct the new bridge with traffic using the existing bridge;The second phase shifts both directions of traffic onto the new bridge so the existing bridge can be demolished and *the* new bridge can be built to full width. During construction, the project is expected to accommodate one 12-foot-wide travel lane in each direction on Marsh Creek Road through the project site throughout construction, YAth short, infrequent periods of one lane traffic controls. Construction would take up to two seasons,likely starting in the summer of 2017 and finishing by the fall of 2018, pending Caltrans and Federal approvals. Utility relocation and right-of-way transaction will be necessary in support of the project. Tree and shrubbery removal and trimming will be necessary, in order to minimize damage to trees, any roots exposed during construction activities will be clean cut and tree branches will be trimmed.

3. Does It appear that any feature of the project will generate significant public concern?
   0Yes 1:81 No 0maybe (Nature of concern):

Comment [ld7]: Please explain question 3.
"No" has been marked and this There is significant public concern. SAFETY
Two residence families will be directly impacted, they are part of the public.

4. Will the project require approval or permits by other than a County agency?
   Yes 0No U.S. Army Corps of Engineers, Regional Water Quality Control Board - Central Valley Region, California Department of Fish and Wildlife, State Water Resources Control Board.

5. Is the project within the Sphere of Influence of any city? No

Environmental Checklist

1.	Project Title:	Marsh Creek Road Bridge Replacement (Bridge 28C-0141)
2.	lead Agency Name and Address:	Contra Costa County Community Development Department 30 Muir Road, Martinez, CA 94553
3.	Contact Person and Phone Number:	Hillary Heard, Planner Environmental Services Division Contra Costa County Public Works Department 255 Glacier Drive, Martinez, CA 94553 (925) 313-2022
4.	**Project Location:**	Two miles East of Morgan Territory Road Clayton, Contra Costa County, California
5.	Project Sponsor's Name and Address:	Contra Costa County Public Works Department 255 Glacier Drive, Martinez, CA 94553
6.	General Plan Designation:	Agricultural lands (Al)
7.	Zoning:	A-2 (General Agriculture) and F-R (Forestry-Recreation)

8. OP.scription of Project:

Contra Costa County Public Works (CCCPWD), in woperation with the California Department of Transportation (Caltrans), proposes to replace the existing Marsh Creek Road Bridge (Bridge No. ZBC-0141) in Contra Costa County, Califomia (hereafter referred to as the proposed project). Marsh Creek Road is a nanow, two-lane rural major collector road that is widely used by commuters as an altemate to the heavily congested State Route 4. The road winds through a series of tight ntrns in rolling terrain, serving as a vital transportation link between Central and East Contra Costa County fur passenger vehicles, heavy trucks, and vehicles with trailers [C(lntra Cost<• County 2013). The proposed project site is located approximately 2 miles east of Morgan Territory Road in the Clayton Area (Figures 1 and 2). The project site falls within the Antioch South 7.5-minute United States Geologi.:al Survey (USGS) quadrangle, within the Northwest quarter of Section 8 Township O1N, Range O1E of the Mount Diablo Base and Meridian, and is located at NAO 83 UTM 37.891635, -121.848997.

The existing bridge has been deemed structurally deficient and functionally obsolete in recent Caltrans bridge inspection reports. The purpose of the proposed project is to replace the existing single-span bridge with a new single-span bridge that meets current design standards. The new bridge would be designed to meet current design standards (i.e., CCCPWD, Caltrans, and American Msociation of State Highway and Transportation Officials) and would include wider shoulders and wider Janes.

The proposed bridge would be an approximately 90-foot-long, single-span bridge. The bridge det:k would be widened to provide a width of approximately 43 feet, with 12-foot-wide travel lanes, 8-foot-wide shoulders, and an approximately 1.5-foot-wide concrete barrier on each

Comment [ld8]: Please reconcile this statement with the public record "Caltrans Bridge inspection maintenance report(CSMIR) "Dated July 2015, page 90, 4th item identified as Bridge # 28C0141. Column "SD/FO" rates this bridge as "FO" NOT "SD"

Comment [JG9]: Please confirm that ENTIRE project description is accurate. For instance retaining walls on 65% plans are different from this description.

side of the new bridge. The proposed bridge would be constructed of reinforced concrete on pre-cast and pre-stressed I-girders. The reinforced concrete bridge abutments would be supported by spread footings.

The existing structure indudes till, reinforced concrete walls that restrict the flows of Marsh Creek under the bridge. These existi ng wallswould be removed as part of the project to open up the channel where Marsh Creek flows under the bridge. The channel work would requ ire that Marsh Creek be dewatered in accordance wi th regulatory pe lmits. Dewatering would likely be accomplished using coffer damsaccording to methods acceptable to the California Department of Fish and Wildlife (CDFW). Water would be routed around the work area to maintain downstream flows. Dewatering would occu r in the work area extending approximately 150 feet upstream and 200 feet downstream of the existing bridge.

Along with replacing the bridge, the horizontal alignment of Marsh *Creek* Road wouldbe shifted north on a parallel alignment to accommodate the wider bridge structure, and earthwork would he required along both sides of the existing roadway. Jn order to meet the hydraulic design standards, the *vertical* profile of the bridge would be slightly raised. The changes in both the I iorl zon taT anil vertIcal afignments rcqllTre reconstruction oT Marsh Creek Road on both sides of the bridge (900 feet total). Two retaining walls may also be necessary: the first retaining wall would be along the north side of the roadway (west of the bridge), would have an average a pproximate height of 10 feet. and would be 183 feet Jong: the second smaller retaining wall would be set hack from the roadway on the north side of the road (west of the bridge) and would be a pproximately 7 feet high and 90 feet long. The final design of these walls will be determined prior to construction. The widening and realignment of Marsh Creek Road to construct th e new h l-idge may requ ire right of way or tempora ry easements from several adjacent parcels.

Overhead electric, phone, and cable lines crossthe creek along the south side of the road. An underground w<iter line isattached to the do\Ilstream (north) side of the hridge. The overhead electric line poles and the water line attached to the existing bridge will be relocated. Staging of construction materialsand equipment would occur in two potential locations north and south of the road in the center of the project site (Figure 2). The northern staging area would occur within an u ndeveloped vegetated area, and the southern staging would occur entirely within paved parki ng areas. Standard construction equipment woulil be used for constructing the proposed projei:t. including but not limited to:excavators. graders,scrapers, loaders,sweepers/scrubbers. plate compactors. rollers. b lckhoes.and pavers.

The proposed project has been designed so that existing traffic can be accommodated during construction. while minimi7.ing impacts to the surrounding right ohvay. induding existing buildings. Construction would be sequenced in a manner to minimize traffic impacts during construction. Two phases of bridge construction are expected:

- The first phase would partially construct the new bridge with traffic using the existing bridge.
- The second phase shifts both directions of traffic onto the new bridge so the existing bridge can be demolished and the new hridge can be built to full width.

Outing construction, the proj e c t is expected to accommodate one 12-foot wide travel lane in each direction on Marsh Creek Road through the project site throughout construction.with

Comment [ld10]: Please clarify the parcels involved in this acquisition of right-of-way whether temporary or permanent; and alternate plan if these acquisitions are not obtained.

Comment [ld11]: Who pays for these utilities to be relocated?
Who will be reimbursing the private residence adjacent to the project for the install and all cost of the existing fire hydrant mandated by the county for fire protection because of a house fire?
Hydrant is ""Blue Collared"- For Fire use only"not construction, rehabilitation, or relocation of bridge/roadway.

short, infrequent periods of one lane traffic controls. Construction would take up to two seasons, likely starting in the summer of 2017 and finishing by the fall of 2018, pending Caltrans and Federal approvals.

9. **Surrounding Land Uses and Setting:**

The proposed project location is approximately 6 miles east of the town of Clayton. The area surrounding the site is a mix of rural residential, recreation, and grazing lands. Throughout the project area, Marsh Creek Road is flanked on either side by rolling hills and ridgelines, providing a rural scenic backdrop from the town of Clayton to the town of Byron to the east.

10. Other Public Agencies Whose Approval is Required:

Federal Highway Administration, California Department of Transportation

The proposed project will be partially funded through the Federal Highway Bridge Program. Caltrans, on behalf of the Federal Highway Administration, is the lead agency for the National Environmental Policy Act. Therefore, the proposed project has been approved by Caltrans for National Environmental Policy Act compliance (September 2015).

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

Federal Endangered Species Act, California Natural Community Conservation Planning Act

The proposed project is located within the Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) inventory area and is a covered activity (Bridge Replacement). The HCP/NCCP is intended to provide an effective framework to protect natural resources and special-status species recovery in eastern Contra Costa County while improving and streamlining the environmental permitting process for impact on these species and associated habitats. The HCP/NCCP complies with Section 10(a)(1)(B) of the federal Endangered Species Act (ESA) and California Natural Community Conservation Planning Act of 2003 and as such covered activities are authorized incidental take of HCP/NCCP covered special status species subject to mitigation fees for both permanent and temporary impacts to species habitats and implementation of specific conditions and conservation measures to avoid or minimize potential effects to species and/or its habitats. The HCP/NCCP requires reporting and fee payment to the HCP/NCCP Implementing Entity, the East Contra Costa County Habitat Conservancy, a joint exercise of powers authority formed by the Cities of Brentwood, Clayton, Oakley, and Pittsburg and Contra Costa County (Jones & Stokes Associates 2006).

U.S. Army Corps of Engineers - Sacramento District

Clean Water Act, Section 404, Regional General Permit

Section 404 of the Clean Water Act (CWA) regulates discharges of dredged or fill material into jurisdictional waters of the U.S., including wetlands. A drainage ditch and a perennial stream channel are in the project area. There would be temporary and permanent impacts to these

Comment [JG12]: Several comments here:
1)Please quantify what the "incidental take" is expected, with respect to the local habitat destruction/wildlife killed or displaced that will result from the project as planned.
2)Provide specific citation of what HCP/NCCP actually allows, authority/jurisdiction for the East Contra Costa County Habitat Conservancy to authorize special species take on private property without specific permits from CDFW, compensation to property owners for said takings, and fees paid to a gover agency will compensate for wiping out a round creek channel population/habitat primarily located on private property.
3)Please clarify where this document describes mitigation measures for this impact on private property.

Comment [JG13]: Residents of 12801 were first notified of this project in mid- October 2015 by letter informing them of the need to relocate their driveway due the project defined in its current scope. Residents contend that delaying formal description of all local agencies effectively precluded sufficient time to perform fact finding, seek professional opinions, and prepare more specifically directed comments pertaining to regulatatory agency authority.

Comment [ld14]:
Please explain what specific impacts to the stream are, both temporary and permanent impacts to these resources. There is a significant possibility of permanent impact from disruption of natural springs in the creek adjacent to the existing bridge. Commenter notes that NES failed to identify groundwater source of perennial wetland downstream of bridge, and significance of this water source not only locally, but in the surrounding region. This information needs further study and professional evaluation relative to its potential significant impact on the environment. Commenter contends this is another issue warranting preparation of a full EIR, not a mitigated Negative Declaration.

resources during construction. This type of activity would be authorized under a regional General Permit program for JCP/NCCP covered projects (USACE 2015). Therefore, the U.S. Army Corps of Engineers (USACE) Sacramento District will be notified for authorization.

Regional Water Quality Control Board – Central Valley Region

Clean Water Act, Section 401, Water Quality Certification

Section 401 of CWA also regulates projects that discharge dredged or fill material into jurisdictional waters of the U.S., and waters of the state, including wetlands when a federal permit or license will be issued (RWQCB 2015). As noted above, a drainage ditch and seasonal wetland adjoin the project area, and would sustain minimal temporary impacts during construction. Therefore, a Water Quality Certification will be obtained from the RWQCB.

State Water Resources Control Board

National Pollution Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities {Order 2012-0006-DWQ) (Construction General Permit)

Projects that disturb one or more acres of soil or disturbs less than one acre but are part of a larger development that in total disturbs one or more acres, are required to obtain coverage under this permit (SWRCB 2015). If the project disturbs less than 5acres, the permit allows for a waiver certification if the project will occur when the rainfall erosivity factor value is less than five (i.e., typically occurring in dry seasons when rains are less frequent and less force). At this time, it is anticipated that the proposed project would disturb approximately 4.5 acres. Therefore, a waiver certification will be requested from the State Water Resources Control Board.

California Department of Fish and Wildlife

California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is responsible for enforcing the California Fish and Game Code, which contains several provisions potentially relevant to construction projects. Lake and Streambed Alteration Agreements are required whenever project activities will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by CDFW. Therefore, a Lake and Streambed AlterationAgreement will be obtained from CDFW for the proposed project.

The California Fish and Game Code also lists animal species designated as Fully Protected or Protected, which may not be taken or possessed without a permit from the California Fish and Game Commission and/or CDFW. These take permits do not allow "incidental take" and are more restrictive than the take allowed under Section 2081 of the California ESA. Fully Protected species are listed in Sections 3511 (birds), 4700 [mammals),5050 [reptiles and amphibians),and 5515(fish.) of the California Fish and Game Code, while Protected amphibians and reptiles are listed in Chapter 5, Sections 41 and 42

Comment [JG15]: Characterization of adjacent wetland as "seasonal" is not correct. Commenter has supplied information regarding natural spring activity which sustains a year round wetland just north of the present bridge.
As such, this wetland will sustain major damage from construction activities (especially dewatering)and likely permanent damage from disruption of the groundwater source sustaining the wetlands.

Comment [JG16]: See previous comment- conclusion that impacts are minimal and temporary are inconsistent with actual site conditions present at the project site

Comment [JG17]: Commenter notes that active construction will be occurring over two seasons and portions of the work are actually within the creek bed. The tributary watershed at this proposed project is over 23 square miles. Special measures are needed to protect the downstream creek features as well as disturbed areas within the construction. Given these issues, commenter notes that waiver may not be appropriate for disturbed areas within the creek and adjacent areas that may be subject to erosion/sedimentation from seasonal stream flows.

Comment [Id18]: Whom will be obtaining this agreement and how will it be monitored, and how often?

Comment [JG19]: Commenter requests status of consulation to date and concrens/input provided by CDFW revelent to present scope. If, not performed, provide written statement why this was not considered necessaryin reaching conclusions expressed in this document.
Commenter contends this communication would be material to conclusions expressed in this document and recommendation for adoption of the Mitigated Negative Declaration

Section 3503 of the California Fish and Game Code prohibits the take. possession.or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take. possession. or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests. These provisions along with the federal Migratory Bird Treaty Act. essentially serve to protect nesting native birds. Non-native species. including European starling. house sparrow. and rock pigeon,are not afforded any protection under the Migratory Bird Treaty Act or California Fish and Game Code. The proposed project will comply with all provisions of the California Fish and Game Code.

Comment [JG20]: This statement needs to address each specific provision of the fish and game code explicitly; explaining how the proposed project will be in compliance and whether the measures proposed have obtained concurring opinion of CDFW prior to formally certifying this document

Environmental Factors Potentially Affected

The environmental factors checked below would potenUally be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

D	Aesthetics	D	Agriculturaland Forestry	D	Air Quality
D	Biological Resources	D	Cutural Resources	D	Geology/Soils
D	Greenhouse Gas Emissions	D	Hazards and Hazardous Materials	D	Hydology/Water Quality
Dand	Use/Planning	D	Mineral Resourtes	D	Noise
D	Population/Housing	D	Public Services	D	Recreation
D	Transportation/Traffic	D	Utilities/Service Systems	D	Mandatory Fndings of Significance

Determination

On the basis of this initial evaluation:

O Ifind that the proposed project COULD NOT have a signifcant effect on the environment, and a NEGATIVE DECLARATON will be prepared

Ifind that although the proposed project could have a significant effect on the environment, there will not b...sienific;int pffpr:tinth" ... hPc:o;iu"fl' rf>vii()n'itnthP-projP.ct have been made bv or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

O Ifind that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is requ red.

O Ifind that the proposed project MAY have an impact on the environment that is 'potentially significant" or "potentially significant unless mitigated" but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards and (2) has been addressed by mitigation measures based on the earlier analysis, as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

O Ifind that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are Imposed upon the project, nothing further is require

Hillary Heard

NAME OF PREPARER Contra Costa County Public Works Department

1/27/16

Date

[signature]

LEAD AGENCY Contra Costa County Community Development Department

1/27/16

Date

Comment [ld21]:

Comment [JG22]: Commenter contends that factual information pertaining to environmental conditions available or readily obtainable with due diligence was not considered in making this determination. Further review of factual information, especially relative to the permanent wetland immediately to the north of existing bridge is expected to show that there will be a significant impact to the environment and that an EIR would be required as CURRENTLY PROPOSED. Information relating to pre-design feasibility studies conducted by project proponent and reviewed by commenter suggest that a design for bridge replacement essentially in-situ using a southerly alignment shift to gain additional lane and shoulder width be reconsidered. Flood study could be re-evaluated for a lower frequency (50 year recurrance period) which should allow deck elevation be lowered and reduce length of roadway grade and geometry changes. Design speed could be revised downward to be consistent with adjacent roadway conditions and in consideration of long term plan for the portion of Marsh Creek Road system within Mt. Diablo foothill zone.

I. Aesthetics	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Have *a* substantial adverse effect on a scenic vista?	D	D	181	D
b. Substantially damage scenic resources, **including, but not limited to, trees, rock** outcroppings, and historic buildings along *a* scenic highway?	D	D	181	O
c. Substantially degrade the existing visual character or quality of the site and its **surroundings?**	D	D		O
d. Create a new source of substantial light or glare that would adversely affect daytime or **nighttime vievts in the area?**	O	O		O

Comment [JG23]: Mitigation possible by alignment redesign to avoid destroying most of habitat on North side of existing bridge; otherwise commenter contends this is a potentially significant impact.

Comment [JG24]: Commenter contends that damage will occur to habitat noted above unless redesign to move alignment away from north side is implemented as mitigation.

Comment [JG25]: Commentor notes same concern as previous comments-Removal of most trees (approx. 36+ of aprox 46 trees along north side of bridge) will signifantly degrade view; both to motorists and to 12801 MCR residents.

Comment [Id26]: Please explain how the Aesthetics to the scenic rual backdrop of the area at the project is not substantially impacted when all of the mature vegeta going to be removed within project area?

Environmental Setting

Within its boundaries, Contra Costa County (County) identifies scenic ridges and waterways as the two main scenic resources, in addition to many localized scenic features. Scenic ridges include hillsides and rock outcroppings and scenic waterways include the San Francisco, San Pablo, and Suisun bays. Throughout much of the County, there are significant topographic variations in the landscape. The largest and most prominent of these are the hills that form the backdrop for much of the developed portions of the area. Views of these major ridgelines help to reinforce the rural feeling of the County's rapidly growing communities. These major ridges provide an important balance to current and planned development (Contra Costa County 2005).

The proposed project location is approximately 6 miles east of the town of Clayton. The area surrounding the site is a mix of sparse residential, recreation,and grazing lands. Throughout the project area, Marsh Creek Road is flanked on either side by rolling hillsand ridgelines, providing a rural scenic backdrop from the town of Clayton to the town of Byron to the e<ist. These features have led the County to designate M<irsh Creek Road as a scenic route for providing high visual value of the rolling hillsand ridgelines (Contra Costa County 2005). There are no designated or eligible cultural, historical, or natural resources that could be considered important visual resources wtithin the project area as reported in the technical studies prepared for this project (LSA Associates 201S: Contra Costa County 201Sa).

Comment [JG27]: This conclusion is rebuttable. Commenter contends that large number of trees adjacent to bridge materialy contribute to the rural character within the project area-they provide visual screening of the residence at 12801 MCR and promote visual asthetics which will mitigate the visual impact of a modern highway character that the project creates. Mitigation by bridge realignment and grade lowering would significantly mitigate visual impacts. Please respond.

a) Would the project have a substantial adverse effect on a scenic vista?

The County has designated two main resources as exhibiting important scenic vistas: scenic ridges, hillsides, and rock outcroppings and the San Fr<incisco Bay/Delta estuary system (Contra Costa County 200Sa). The project area lies in a valley floor flanked by large rolling hills within a rural setting and therefore would not interfere with scenic vistas of scenic ridgelines, hillsides or rocking outcroppings. There are no scenic \Stas of the San Francisco Day/Delta estuary system within the project area. The new bridge would be located within the same general footprint as the existing bridge, but would be

wider. Approximately 36 trees would be removed as a result of the proposed project; however, these changes are not expected to affect the existing scenic vista of the site. The new bridge and bridge approaches would remain at existing elevations; therefore, existing views to and from the bridge would not be substantially altered. Therefore, the proposed project would have a less than significant impact to scenic vista.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?

While Marsh Creek Road is listed as a scenic route, it is not designated or eligible as a State Scenic Highway (Caltrans 2015). In addition, the approximately 36 trees proposed for removal by the proposed project are not considered heritage trees or trees of local significance. There are also no designated or eligible cultural, historical, or natural resources that could be considered important scenic resources within the project area. Therefore, the proposed project would have a less than significant impact on scenic resources.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The proposed project would remove up to approximately 36 trees and expand the footprint of the new bridge. The amount of trees being removed is localized and considered relatively minor compared to the amount of remaining vegetation through the corridor. These effects are not expected to substantially degrade the existing visual character or quality. Therefore, the proposed project's impacts on the site's visual character would be less than significant.

d) Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

The proposed project is not expected to provide a new substantial source for light and glare. The vertical alignment of the new bridge is not expected to change from that of the existing bridge, so the proposed project would not change the perspective of existing views. However, the width of the bridge would increase in size from 30.5 to 47 feet in width. This increase in square footage of concrete could potentially increase glare during certain times of the day depending upon the location of the sun, due to the light color of concrete when compared to the surrounding visual character. However, the increase is expected to be negligible. No new lighting is proposed as part of the proposed project. Therefore, the proposed project is expected to have a less than significant impact related to light and glare.

Comment [JG28]: Statement is inconsistent with 65% design drawings. Drawings show a variable and minimum 2-foot increase in bridge deck elevation from existing structure. Following sentence is therefor rebuttable; please provide justification for conclusion BASED ON ACTUAL project design or revise accordingly

Comment [ld29]: Please explain how the proposed project would have a less than significant impact to the scenic vista when the vegetation including mature trees will be removed from 99% of one side of the road. Only 1 tree is marked for removal from the opposing side of the project road way. (Removes viewscreen/sound buffer from Residence 1. It will take many years for revegetation to equivalent of what is there now)

Comment [JG30]: Previous comments earlier indicated existence of a year-round biological community which includes protected species in the creekbed. Natural springs feed this community and support the trees shading the area The trees are a substantial indication of a healthy riparian community which materially contributes to the scenic vista in immediate project area.

Comment [ld31]: The vertical alignment will be changed significantly (2 to 2.5-ft) and the roadway deck would be superelevated to conform to a horizontal curve according to the 65% plans.See previous comments Widening the bridge from 32' to 47'. (15' increase) The sun has a substantial effect on the drivers (eastbound drivers face direct sunlight shortly after sunrise; westbound traffic face same direct light situation now. Proposed project removal of trees adjacent on north side will make morning direct sunlight exposure significantly worse. Add realignment proposed will direct headlights into 12801 residence are.

Comment [JG32]: Suggest checking and revising stated dimensions to conform to project plans

Comment [JG33]: Commenter contends this conclusion is rebuttable. Need to consider effect on commuting motorists from additional loss of vegetation screening direct sunlight.

II. Agrkultural and Forestry Resources	Potentially Sigrficant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the Calforna Resources Agency, to non-agricultural use?	D	D	CI	
b. Conflict with existing zoning f0< agr cultural use or conllict with a Williamson Act contract?	O	CI	()	
c. Conflict with existing zonng 10<, or cause rezong of forestland (as defined in Public Resources Code Sect on 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	C		D	
d. Result in the loss of forest land or conversion of forest land to non-forest use?	D	O	D	
e. Involve other changes in the existing environment that, due to their locat on or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	CI	D		D

Comment [JG34]: Removal of 36 trees in an area of approximately 20" by 80 feet (1600 SF) constitutes loss of forest land. Can be Mitigated by revising project alignment de

Regulatory Setting

Consistent with the state of California, the County has seen a significant decrease In the amount of acreage in farm production. The majority of the decline has been attributed to urbanization of the region, which over time gradually converts agricultural lands to other uses. Within the County, this has resulted in a reduction in both crop and grazing lands (Contra Costa County 2005).

A project that would convert prime agricultural land to non-agricultural use or impair the agricultural productivity would normally have a significant effect on the environment. No set acreage of prime farmland conversion has been determined by case law or regulatory framework which would constitute a significant impact (California Department of Conservation 2015).

Several programs and regulations have been established to better minimize and manage the conversion of farmland. Programs and policies applicable to the proposed project are described in the following paragraphs.

California Environmental Quality Act (CEQA) Guidelines. The CEQA Guidelines require a project to address potential impacts to both farmland conversion and the cancellation of Williamson Act contracts for parcels exceeding 100 acres. The cancellation of a Williamson Act contract is an action considered to be of statewide, regional, or area-wide significance, and thus is subject to CEQA review (CEQA Guidelines Section 15206(b)(3)).

California's Farm Mapping and Monitoring Program (FMMP). The FMMP was established in 1982 in response to a critical need for assessing the location, quality, and quantity of farmlands and conversion of these lands over time. FMMP is a non-regulatory program and provides a consistent and impartial analysis of agricultural land use and land use changes throughout California. Creation of the FMMP was supported by the Legislature and a broad coalition of building, business, government, and conservation interest (California Department of Conservation 2015).

California Land Conservation Act of 1965. This act is commonly referred to as the Williamson Act, and it enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive a reduced property tax assessments based on open space use, versus highest and best use value (California Department of Conservation 2015).

Contra Costa County General Plan. The County has identified agricultural resources as very valuable and important. The County has established goals and policies in their General Plan (2005) to enhance and protect farmlands and minimize conflicts with other land uses.

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project area is located in the foothills near Mt. Diablo. The topography is not conducive for commercial farming practices and no active farming has been observed. There are two soil units within the project area: Los Osos clay loam, which is not considered to support prime farmland, and Zamora silty clay loam, which could be classified as prime farmland if irrigated (NRCS 2015). Based on review of the Contra Costa County Important Farmland Map (2012) and visual observations, no irrigation for crop production has been documented nearby; therefore, the lands within the project area are not considered prime, unique, or of statewide significance (Anchor QEA 2015).

There are no lands within the project area that are designated as prime or unique farmland or farmlands of statewide significance. Therefore, the project would have **no impact** on *these* regulated types of farmlands.

b) Would the project conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?

Under the Williamson Act, land may be enrolled under the "Prime Agricultural Land" designation if it meets economic or production criteria. A review of the FMMP as well as County zoning information indicates that there are two parcels (parcel number 076130008 and 078130020) to the east of the proposed project boundary that are currently enrolled in the Williamson Act program (Figure *3)*: parcel 078130008 (approximately 318 acres) and parcel 078130020 (approximately 100 acres). Because each parcel is larger than 100 acres, they are both precluded from being converted to non-eligible uses. Both parcels are zoned A-4, which is classified as "Agricultural Preserve" (Contra Costa County 2015a).

The proposed project would not extend into these parcels and would therefore not convert any of these lands into non-farmland use. Therefore, the project would have **no impact** on Williamson Act-contracted lands.

c and d) Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? Result in the loss of forest land or conversion of forest land to non-forest use?

The proposed project does not involve activities within areas that are zoned as forest land. Therefore, the proposed project would have no impact on timberlands.

e) Would the project involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

The project area is within three classified farmland categories: farmland of local importance, grazing land, and other land. Technical soil ratings and current land use are used as the basis for determining the classification within the Important Farmland Maps of these lands. The minimum land use mapping unit is 10 acres unless specified. Smaller units of land are incorporated into the surrounding map classifications. In order to must accur<ltely represent the Natural Resources Conservation Service digital soil survey, soil units of one acre or larger are depicted in Important Farmland Maps (California Department of Conservancy 2015).

Farmland of locerl Importance. This dassificat.ion includes land of importance to the local economy, as defined by each county's local advisoly committee and adopted by its Board of Supervisors. farmland of local importance is either currently producing, or has the capability of production, but does not meet the critelia of Prilne f.'arlnland. Parnlland of State\vide ltnportance, or Unique Farlnland.

Grazing land. This classification is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the Califomia Cattlemen's Association. Unhrersity of California Cooperative Extension.and other groups interested in the extent of grazing <lctivities. (California Department of Conservancy 2015).

Other land. This includes land not included in any other mapping category. Common examples include low density rural developments: brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities: strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as "other land."

A portion of the site has been designated as farmland of local importance due to the band of Zamora silty clay loam that traverses the project area. This band ranges from approximately 200 to 400 feet \vide within the project area. The proposed project may permanently affect a small portion of this soil type just east of where the roadway crosses the stream. However, this area has already been converted to residential use and is not irrigated; therefore, the proposed project would have only minor effeds on farmland of local importance and is not expeted to impat the overall potential agricultural production as none exists today on that land.

The proposed project may also result in the need for CCCPWD to acquire a small portion of grazing land along the north side of the roadway just west of the bridge crossing for staging and permanent right of way acquisition. The staging would be temporary and the land would be reverted back to its pre-project condition after construction. The right of-way acquisition would be needed in order to straighten out the existing curve that is considered a safety hazard. The land acquisition is not expected to affect the

Comment [JG35]: Commenter understand from verbal communication with Neil Leary on 2/16/16 that permanent right of way acquisition no longer required due to design decision to build wall to retain roadway embankment. Commenter notes redesign to move roadway south would likely eliminate the requirement to build wall.

Comment [ld36]: Parcel number is needed for exact location.
"Stating that the existing curve is considered a safety hazard." Please provide evidence documenting severity the safety issue to this existing curve. There hasn't been an vehicle accident on this curve in over 46 years.

Safety hazard to the residences of the said land has not been taken into consideration. Moving their entrance/exit to residence has been moved closer to the curve that will have a higher design speed and less reaction time visual distance. The design as currently depicted doesn't provide any additional shoulder width (over 8' provided) to provide transition onto roadway allowing resident/guest to get some speed before entering traffic lanes.

overall abi lity for the parcel to be grazed nor sign ificantly r·educe the overall production of the grazing land. Therefore, the proposed project's i mpacts on farmland of local importance and grazi n g land would be less than significant.

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

Comment [JG37]: Item d. is significant to the resident within 200' of the project and staging area for construction equipment. They are both Senior Citizens (late 70's and 80 years of age). With respect to dust and emission from construction equipment. Air quality will be substantially impacted.

Regulatory Setting

The U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) currently focus much of their air pollutant control efforts on five major air pollutants: ozone, N02, CO, S02, PM 10, and PM2.5. These are the most prevalent air pollutants emitted nationwide and statewide, and they are known to be harmful to human health when their ambient levels exceed certain concentrations. Consequently, federal and state ambient air quality standards have been set for each of these pollutants (known as "criteria air pollutants") at levels protective of human health, with an added margin of safety to afford additional protection to the young, the old and the infirm (i.e., sensitive receptors), who are more susceptible to their adverse health effects.

Toxic air contaminants (TACs) emitted into the air are also regulated as such to limit their adverse impact to human health and welfare. In the State and in the Bay Area, the majority of the estimated carcinogenic/chronic health risks from TAC exposures have been attributed to relatively few TACs, the most important being particulate matter from diesel-fueled engines (DPM), which is responsible for about 00% of the cumulative cancer-risk from all airborne TAC exposures.

Following the identification of DPM as a TAC in 1998, CARB developed the *Diesel Risk Reduction Plan* as a comprehensive strategy to control DPM emissions. The overall goal of the Plan is to reduce DPM emissions by 75% by 2010 and 85% by 2020. Such reductions were to be achieved by a combination of approaches including more stringent emission regulations for new diesel engines, a low-sulfur fuel program, and control measures for various categories of in-use on- and off-road diesel engines.

The recommended in-use control strategies are generally based on the following types of controls:

- Retrofitting engines with emission control systems such as diesel particulate filters or oxidation catalysts.
- Replacement of existing engines with new-technology diesel engines or natural gas engines.
- Restrictions placed on the operation of existing equipment.

In July 2007, CARB approved the *In-Use Off-Road Diesel Vehicle Regulation* (as part of the *Diesel Risk Reduction Plan* cited above), which applies the following controls to in-use off-road diesel engines used in construction equipment:

- Imposes limits on construction equipment idling, requires a written idling policy from the fleet owner, and requires a disclosure of its emission potential when selling equipment.
- Requires all construction equipment to be reported to CARB using the Diesel Off Road Online Reporting System (DOORS) and for each piece of equipment to be labeled as to its emission potential as listed in DOORS.
- Restricts the adding of older equipment into construction fleets.
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS; i.e., exhaust retrofits).

The air quality analysis in this document was performed using the methodologies recommended by the Bay Area Air Quality Management District (BAAQMD) in their *CEQA Air Quality Guidelines*[4] (BAAQMD 2012). The criteria air pollutants evaluated in this analysis include carbon monoxide (CO), reactive organic compounds (ROG) and nitrogen dioxide (NO_2) (both being precursors to ozone formation), inhalable particulates (PM_{10}), and fine particulates ($PM_{2.5}$). Health risks associated with project-specific and cumulative exposures to DPM are also evaluated. The following thresholds were considered in this analysis:

- According to the *CEQA Air Quality Guidelines*, any project would have a significant potential for causing/contributing to a local air quality standard violation or making a cumulatively considerable contribution to a regional air quality problem if its criteria pollutant emissions during construction or operations would exceed any the thresholds presented in Table 1.
- Also, there would be significant operational CO impacts if CO emissions from motor vehicle traffic or from cumulative traffic congestion resulting from a project would exceed the Ambient Air Quality Standard (AAQS) of 9.0 ppm (8 hour average) or 20.0 ppm (1-hour average).
- Finally, the *CEQA Air Quality Guidelines* establish a relevant zone of influence for an assessment of project-level and cumulative health risk from TAC exposure to an area within 1,000 feet of a

[4] The BAAQMD's June 2010 adopted thresholds of significance were challenged in a lawsuit. Although the BAAQMD's adoption of significance thresholds for air quality analysis has been subject to judicial action, the County of Contra Costa has determined that BAAQMD's *Revised Draft Options and Justification Report* (October 2009) provide substantial evidence to support the BAAQMD recommended thresholds. Therefore, the County of Contra Costa has determined the BAAQMD 2010 thresholds are appropriate for use in this analysis.

project site. Project construction-related or operational TAC impacts to sensitive receptors within the zone that exceed any of the following thresholds are considered significant

An excess cancer risk level of more than 10 in one million

A non-cancer hazard index greater than 1.0

An incremental increase of 0.3 micrograms per cubic meter (µg/m3) or greater to annual average PM2.5 concentrations

Cumulative impacts from TACs emitted from freeways, state highways, or high volume roadways (i.e., the latter defined as having traffic volumes of 10,000 vehicles or more per day or 1,000 trucks per day), and from all BAAQMD-permitted stationary sources within the zone to sensitive receptors within the zone that exceed any of the following thresholds are considered cumulatively significant:

A combined excess cancer risk levels of more than 100 in one million

A combined non-cancer hazard index greater than 10.0

A combined incremental increase in annual average PM2.5 concentrations of 0.8 micrograms per cubic meter air (µg/m3) or greater

Table 1
CEQA Air Quality Significance Thresholds for Criteria Air Pollutant Emissions

Pollutant	Construction Average Daily (lb/day)	Operational Average Daily (lb/day)	Operational Maximum Annual (tons/year)
Reactive Organic Gases (ROG)	54	54	10
Oxides of Nitrogen (NO)	54	54	10
Inhalable Particulate Matter (PMi:)	82 (exhaust)	82	15
Fine Inhalable Particulate Matter ($PM_{2.5}$)	54 (exhaust)	54	10
PM_{10}/$PM_{2.5}$ (Fugitive Dust)	BMPs[a]	N/A	N/A

Notes:
a. If BAAQMD Best Management Practices (BMPs) for fugitive dust control are implemented during construction, the impacts of such residual emissions are considered to be less than significant.
BMPs = Best Management Practices
lb/day = pounds per day
N/A = Not Applicable
Source: Bay Area Air Quality Management District. *2011 May (Revised), California Environmental Quality Act Air Quality Guidelines.*

Environmental Setting

The project site is located in a transitional area between the Diablo Valley and Livermore Valley climatological sub-regions of the Bay Area (as identified by the BAAQMD in their *CEQA Guidelines*, Appendix C). The air pollution potential is high in both sub-regions, especially in the summer and fall

when high temperatures increase the potential for ozone build up. The *valleys* not only trap locally generated pollutants, but can receive ozone and ozone precursor intrusions from surrounding areas. During the winter, strong surface-based temperature inversions often occur. When this happens, pollutants such as carbon monoxide and particulate matter, generated by motor vehicles, fireplaces/woodstoves and agricultural burning, can become concentrated.

The San Francisco Bay Area is currently designated "nonattainment" for state and national (1 hour and 8hour) ozone standards, for the state PM10 standards, for state and national (annual average and 24-hour) PM2.5 standards. It is "attainment" or "unclassifiable" with respect to AAQS for other criteria pollutants. The BAAQMD maintains a number of air quality monitoring stations, which continually measure the ambient concentrations of major air pollutants throughout the Bay Area. Data from the monitoring station in Livermore, about 15 miles south of the project site shows that violations of both the ozone and particulate standards have been recorded on a few days in each year over the last three ye.ar.

Contra Costa County contains a great number of stationary industrial/commercial air pollution sources that have air pollutant emissions substantial enough to require that they operate under BAAQMO air permit (i.e., their locations, types and TAC health risks can be displayed using the BAAQMD's Stationary Source Screening Analysis Tool in Google Earth), but none of these are located closer than 1,000 feet from the project site. Traffic volumes on Marsh Creek Road are not high enough to put this roadway in the class of substantial roadway TAC emitters, and no other roadways in that class pass closer than 1,000 feet from the project site.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The BAAQMD adopted its 2010 *Bay Area Clean Air Plan* (CAP) in accordance with the requirements of the California Clean Air Act (CCAA) to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, and TACs in a single, integrated plan; and establish emission control measures to be adopted or implemented. The primary goals of the CAP are to attain/maintain AAQS, and to reduce population exposure to air pollutants and protect public health in the Bay Area.

Compliance with BAAQMD approved CEQA thresholds of significance are the conditions for determining that a project would be consistent with all adopted CAP control measures and would not substantially interfere with the attainment of CAP goals. Also, the proposed project would replace an existing bridge that does not meet current Caltrans traffic and seismic safety standards with a new bridge that would have the same traffic carrying capacity. Thus, it does not have the potential to substantially affect housing, employment, transportation, and/or population projections within the Bay Area Air Basin. As the following analysis demonstrates, the proposed project would not have significant and unavoidable air quality impact because it meets all BAAQMD CEQA thresholds with the exception of the PM2.5 emissions threshold. As is described further under checklist item d, the proposed project's annual PM2.5 concentration from construction would be 0.6S µg/m3, which exceeds the project-level CEQA significance threshold.

Mitigation Measure AQ-1 would be implemented to reduce the proposed project's maximum annual PM2.5 emissions.

Mitigation Measure AIR-1: Enhanced Exhaust Emissions Reduction Measures

The construction contractor will implement the follo\\ng 13AAQMD Enhanced Exhaust Emissions Reduction Measures for Proj ect Construction Equipment measures to further reduce construction-rela ted exhaust emissions:

- All off-road construction equipment will meet the following requirements:

  All engines will meet m-exceed IJSIIPA/CARB Tier 3 off-road emission standards; or

  All engines will be retrofitted with a GARB Level 2 VDECS device.

Implementation of Mitigation Measure AIR-1 would reduce the proposed project's maximum annual PM2.5 concentration increment to 0.28 tg/m", which is below the threshold. Thus. impacts would be less than significant with mitigation incorporated.

Comment [JG38]: Tier 4 engined equipment-Readily available Emission level will be even lower than recommendation described.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction-Related Impacts

The proposed project would replace an existing substandard bridge with a new bridge with the same carrying capacity that meets all Caltrans traffic and seismic safety standards. Project construction, expected to take about seven months, would generate temporary emissions of criteria pollutants and TACs in equipment exhaust, and fugitive dust from equipment and material movement. The *CBQA Air Quality Guidelines* recommend quantification of construction-related exhaust emissions and compa1ison of those emissions to the Cf::QA significance thre.shol<IS. Thus, the CalEEMod (California Bnissions Estimator Model, Version 201.3.2.2) was used to quantify construction-related emissions of criteria pollutants.

The *CEQA llir Quality Guidelines* require a number of construction Best Management Practices (BM Ps) to control fugitive dust, and the use of paints and coatings compliant 'ith 13AAQMD volatile organic compounds [VOC) control regulations. Thus, the following basic fugitive dust control measures must be implemented by the construction contractor:

- All exposed surfaces e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered uvo times per day.
- I\l I haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt track-out onto adja<:ent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibi ted.
- All vehicle speeds on unpaved surfaces shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. [redacted] used.
- A publically visible sign shall be posted \vith the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corret:tive action with 48 hours. The Air District's phone number shall also he visible to ensure wmpliance with applicable regulations.

Comment [JG39]: Requirement should be modified to include, and additionally water as frequently to suppress all visible dust.

Comment [Id40]: Where is the source of water coming from?
Should there be more watering for dust control?
Safety of the drivers on the road, residences in area.-

Comment [JG41]: This is irrelevant. Consider removing.

Comment [JG42]: 48 hours is too long to respond to persons residing there and NOT ACCEPTABLE for dust issue at adjacent residences. Response should be within 1 hour during active work hours and 4 hours for events occurring outside working hours

Comment [Id43]: Is this 48 hours based on working hours or continuous hours from time of complaint. Dust monitors need to be located at both residences to the northeast of the project. They are within the distance being affected.

Table 2 provides the estimated short-term emissions from construction equipment, truck, and worker vehicle commute resulting from the proposed project. The maximum daily con struction period emissions we le compared to the CEQA significance thresholds. All construction related emissions would be well below the thresholds; therefore, impact would be less than significant.

Table 2
Project Construction Criteria Pollutant Emissions (Pounds per Day)

Construction Period	ROG	NOx	PM10 (Exhaust)	PM s (Exhaust)
Year 2017	1.2	13.6	0.7	0.6
Significance Thresholds	54	54	82	54
Significant Impact?	No	No	No	No

Notes:
ROG = reactive organic compounds
NOx = Nitrogen oxide

Operational Impacts

The BAAQMD has identified the following screening criteria for determining whether project-related motor vehicle CO emissions would likely cause CO AAQS to be exceeded:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans; or
- The project traffic would increase traffic volumes at affected intersections to more than 44,000 vehicles per day; or
- The project traffic would increase traffic volumes at affected intersections to more than 24,000 vehicles per day where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Since the proposed project would replace an existing substandard bridge with a new one with the same carrying capacity and meeting all current safety standards, it would not directly or indirectly increase traffic volumes to Marsh Creek Road and would have a less than significant effect on traffic flow locally and regionally. Thus, the proposed project's operational ambient CO impacts would be less than significant.

Comment [ld44]: There would be a direct operational impact to the traffic during commute times, as hours of construction have been set for 7am -7pm and weekends with approval. As well as to the locals that live in the area.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

As discussed previously, proposed project-related construction and operational emissions would be below the BAAQMD significance thresholds. Therefore, the proposed project would not make cumulatively considerable contributions to the Bay Area's regional problems with ozone or particulate matter. Thus, cumulative emission impacts would be less than significant.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Ambient TAC concentrations produced by the proposed project and other significant local TAC sources within 1000 feet of a project site are considered substantial if they exceed the CEQA health risk thresholds at sensitive receptors within this zone. The nearest existing residential land use is north of Marsh Creek Road about 200 feet from east end of the existing bridge.

Construction-Related TAC Impacts

Cancer risk is the lifetime probability of developing cancer from exposure to carcinogenic substances. Following health risk assessment guidelines established by California Office or Environmental Health Hazard Assessment (OEHHA) and the BAAQMD In *Recommended Methods for Screening and Modeling local Risks and Hazards*, incremental cancer risks were estimated by applying established toxicity factors to modeled TAC concentrations. The maximum cancer risk from DPM generated from construction of the proposed project for the closest residential receptor would be 2.9 per million. Thus, the cancer risk due to proposed project construction activities would be below the BAAQMD threshold of ten per million and less than significant.

Adverse health impacts unrelated to cancer are measured using a hazard index (HI), which is defined as the ratio of the proposed project's incremental TAC exposure concentration to a published reference exposure level as determined by OEHHA. If the HI is greater than 1.0 then the Impact is considered to be significant. The non-cancer reference exposure level for DPM as determined by OEHHA is 5 µg/m³. The non-cancer HI from construction of the proposed project would be 0.1, well below the BAAQMD threshold of one and less than significant.

The modeled maximum annual PM2.5 concentration from construction of the proposed project would be 0.65 µg/m³, which exceeds the project-level CEQA significance threshold of 0.3 µg/m³ for PM2.5 (Table 3).

Table 3
Construction Criteria Related Toxic Air Contaminant Impacts Prior to Mitigation

Construction Period	Hazard Index	PM2.5 (µg/m³)
Year 2017	0.1	0.65
Significance Thresholds	1	0.3
Significant Impact?	No	Yes

Note: µg/m³ = micrograms per cubic meters air

Implementation of Mitigation Measure AIR-1 would be implemented to reduce the proposed project's maximum annual PM2.5 emissions:

Mitigation Measure AIR1: Enhanced Exhaust Emissions Reduction Measures

The construction contractor will implement the following BAAQMD *Enhanced Exhaust Emissions Reduction Measures for Project Construction Equipment* measures to further reduce construction-related exhaust emissions:

- All off-road construction equipment will meet the following requirements:

Comment [ld45]: There is significant health impact to residents at 12801, as previously stated for toxic air contaminant impact.

– All engines will meet or exceed USEPA/CARB Tier 3 offroad emission standards; or

– All engines will be retrofitted with a CARB Level 2 VDECS device.

Implementation of Mitigation Measure AIR would reduce the proposed project's maximum annual PM2.5 concentration increment to 0.28 µg/m³ which is below the threshold (Table 4). Thus, impacts would be less than significant with mitigation incorporated.

Table 4
Construction Criteria Related Toic Air Contaminant Impacts after Mitigation

Construction Period	Hazard Index	PM 2.5 (µg/m³)
Year 2017	0.1	0.28
Significance Thresholds	1	0.3
Significant Impact?	No	No

Note: µg/m³ = micrograms per cubic meters air

The Mitigation and Monitoring Reporting Plan (MMRP; included as Appendix A) prepared for the proposed project identities when mitigation measures will be implemented, the parties that will be responsible for ensuring implementation of these measures, and implementation of the measures will be verified.

Comment [ld46]: Who will be responsible for ensuring that County effectively implements these measures? Need to identify.
How often and how long will they be at job site?
Where will real time air monitoring devices be placed in order for proper measures to be verified?

Operational TAC Impacts

The proposed proj[illegible] Creek Road. Thus, the incremental cancer risk, non-cancer hazard, and PM2.5 from operations would be zero and less than significant.

Cumulative TAC Impacts

The *CEQA Air Quality Guidelines* method for determining cumulative TAC health risk requires the tallying of risk from project sources and all permitted stationary sources and major roadways within a 1,000 feet of a project site and adding them for comparison with the cumulative health risk thresholds.

A database of permitted stationary emissions sources, major roadways, and their associated health risks is available online from the BAAQMD through the Stationary Source and Highway Screening Analysis Tools. There are no such listed sources within 1,000 feet of the Project site. Thus, cumulative TAC impacts would be less than significant.

e) Would the project create objectionable odors affecting a substantial number of people?

The BAAQMD's significance criteria for odors are subjective and are based on the number of odor complaints generated by a project. Generally, the BAAQMD considers any project with the potential to frequently expose substantial sensitive receptors to objectionable odors to cause a significant impact. With respect to the proposed project, diesel-fueled construction equipment exhaust would be odorous in close proximity to the source. However, these emissions typically dissipate quickly with distance. With only one existing residential receptor within 200 feet of the bridge site, substantial on-going odor

impacts of the 7-month construction period would be unlikely. Therefore, odor impacts associated with the proposed project would be less than significant.

Comment [ld47]: There are no odors now. Any odor would be an impact and would be significant.
What is the plan for odors that may happen from this project?
How will the resident within 200' be accomodated?

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

This section evaluates both the direct and indirect impacts of the proposed project on biological resources. Identification of species with the potential to occur in or adjacent to the project area was based on field surveys conducted by qualified biologists from LSA Associates, Inc. (LSA) during summer of 2013 and spring 2014. Biologists also conducted a review of existing biological resource evaluations for projects in the region; a review of the California Natural Diversity Data Base (CNDDB; CDFW 2013); a review of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2013); a review of the online database maintained by the Sacramento USFWS office (USFWS 2013) for the Antioch South, Clayton, Diablo, Tassajara, Byron Hot Springs, and Brentwood USGS 7.5-minute quadrangles; and review of *Special-Status Species Proposed for Coverage in the ECCC HCP/NCCP*, Vol. 1/Table 3-8 and Vol. 2/Appendix D (Jones & Stokes Associates 2006).

Comment [JG48]: Commenter disagrees with determinations a., b., c. and d., and contends that impacts are potentially significant. Commenter notes that Project Proponent (CCCty Public Works) is part of the same political entity (Contra Costa County) which is charged with ensuring that project environmental process complying with CEQA. How is public to be assured that these conclusions are impartial? The is no independent entity outside County Control to be accountable for the assertion/conclusions made in this document. The County would be responsible for additional costs associated with substantial work undertaken to revise and/or augment work already performed.
This biological resources section is based on limited "eyeballs on" field survey work performed by biological consultant. (Natural Environmental Survey, prepares for Caltrans and dated March 2015.) Wildlife (fauna) survey was performed on a single date (8/30/13).
The report did not provide any description of the planned scope of the field work the consultant was committing to follow. (multiple visits, dusk or dawn observations, etc.-these would be expected for a consultant to define in a business proposal to the client.). Commenter requested field records of this activity to determine how much effort was contemplated/contracted for; this is material to supporting conclusions of less than significant impact vs. a potentially significant impact. Commenter noted that Section 2.5 provided caveat that conclusions were based on data collected on site "at the time of the site visit" . There is no certification or statement in this document holding the preparers professionally accountable for their work.
Please respond with description of EIR process features and procedural controls that assure transparency and accountability of proponent for accuracy/justification of conclusions presented.

Regulatory Setting

The proposed project is located withi n the East Contra Costa County HCP/NCCP inventoty area and is a covered activity as described in Section 2.3 of the HCP/NCCP: Transporta tion Projects – Bridge Replacement, Repair or Retrofit (Rural infrastructure Projects). The HCP/NCCP is intended to provide an effective framework to protect natural resources and special-status species recovery in eastern Contra Costa County while improving and streamlining the environmental pennitting process for impacts on these species and associated habitats. The HCP/NCCP complies wi th Section lO(a)(l)(B) of ESA, and California Natural Community Conservation Planning Act of 2003 and as such covered activities are a uthori zed incidentlI take of HCP/NCCP-covered special-status species subject to mitigation fees for both pennanent and temporary impacts to species habitats and implementation of specific conditions and conservation measures to avoid or minim ize poten tial effects to species and/or its habitats. The HCP/NCCP requires reporting and fee payment to the HCP/NCCP Implementing Entity, the East Contra Costa County Habitat Conservancy (Habitat Conservancy),a joint exercise of powers authority formed by the Cities of Bren twood, Clayton, Oakley and Pittsburg and Contra Costa County (Jones & Stokes Associates 2006).

For the purposes of this evaluation, special-status plant and wildlife species are defined as those species listed as endangered, threatened, or proposed for listing under the llSA as amended (Code of Federal Regu lations [CFR],Title 50, Section 17), and/or species protected under the Migratory Bird Treaty Act (16 U.S.Code (USC] 703-7 12); the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; June B, 1940) as amended; California Endangered Species Act (CESA: California Code of Regulations Title 14, Section 670.5); California Fish and Game Code (Sections 1901, 2062, 2067, 3511,4700, 5050 and 5515); animal species designated as Species of Special Concern or Fully Protected by the CDFW; plant species assigned California Rare Plant Ranks lA, lB, 2A, 2B, 3,and 4 in the CNPS Inventory of Hare and Endangered VasClllar Plants of California (CN PS 20 13); and/or Native Plant Protection Act of 1977, and species covered under the HCP/NCCP.

Special-status species also include locally rare species defined by CllQ.A gu ideli nes 15125(c) and 15380, which may include species that are designated as sensitive, declin ing, rare, locally endemic or as having limited or restricted distribu tion by various federal, state and lo(al agencies, organizations and watch lists. Their status is based on thei r rari ty and end<mgerment throughout all or portions of their range.

Environmental Setting

Qu:ilified biologists conducted plann ing surveys and biological assessments to identify habitat< within and <irou nd the project area to determi ne if sensitive ha bitats, natural communities, and jurisdictional wetlands and other waters of the U.S. occur as well as potentia l presence of special-sta tus species. Natural communities and land cover types were classified in accordance with the HCP/NCCP (Chapter 3, Section 3.3.2), which desctibes land cover types based on literatu re by Jones & Stokes Associates [1996), Holland (1986), Mayer and Laudenslayer (1988; 1999),and the first edition of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995).

A wetland delineation sntdy was cond ucted with in the Biological Study Area [BSA) on August 30, 2013, following the methods outlined in USACE's Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim Hegional Supplement to the Corps ofEngineers Wetland Delineation Manual: Arid West Region (Arid West Supplement, USACE 2006). The delineation included areas meeting USI\Cf. criteria for wetlands and other waters of the United States subject to regul:ition u nder Section 404 of the CWA, as well as potentially jurisdictional waters of the State of California u nder the Porter-Cologne

Water Quality Control Act. The findings and conclusionsof the jurisdictional delineation were submitted to the USACE for verification on March 7, 2014. The HCP/NCCP hase s creek i mpacts on the area of creek from top of bank to top of bank, excluding portions of the stream mapped as u rban l and cover [i.e., under the existing bridge).

In compliance 'ith the HCP/NCCP, a Planning Survey Report (PSR) was completed by CCCPWD to identify potentially present special status species, potential project impact5 on those species, and appropriate mitigation measures. In addition, a Natural Environment Study (NES) was prepared for Caltrans in support of this project. Based on results of the resource information search and field surveys, l>iologists determined the special-status species identified in Table 5 could potentially occur in BSA. The BSA is defined as the boundary surrounding the footprint of the proposed project, induding right-of-way limits, areas potentially needed for driveway rea lignments, and potential staging areas. The entirety of the BSA is 6.333 acres. Natural communities (as defined in the HCP/NCCP) are described on the basis of vegeta tion characteristics, such as dominant spede s a nd vegetation struemre (Figures 4a and 4h). Natu ral comm u nities withi n the OSA are classified as oak sav:mn:Lo<ik woodland, ripari an wood land, chapa l lal/scru b, and native grassland.

The potential for these species to occur within the BS/\ w<1s assessed in the Oiological Assessment (BA). PSR, and NES for the proposed project. These th ree documents considered impacts to special-status species based on the presence of su itable habitat (identified throu l4h site reconnaissance and species specific planning surveys), the proximity of known species occu rrences, and knowledge of the species' range and/or mobility. Species that require habitats not present in the BSA and project vicinity (i.e., alkaline, saline, or serpentine soils, inland dunes, vernal pool s, tid:11S<llt marsh, brackish marsh, etc.) were eliminated from consideration in the BA, PSR, and the N ES, and are not discussed further in this **docutnent.**

Table 5
Potentially Occurring Special-Status Plant and Wildlife Species

Common Name (Species Name)	**Listing Status***
PLANTS	
Large-flowered fiddleneck *(Amsinckiu grundifloru)*	FE/SE/CNPS lB.1
Slender silver moss *(Anomobryum juloceum)*	--/-/CNPS 4
Mt. Diablo manzanita *(Arccostaphylos auricularo)*	-/--/CN PS lB, HCP/NCCP-covered
Contra Costa manzanita *(Arccostaphylos manzanito* ssp. *Laevigoto)*	-/--/CN PS lB
Big tarplant *(8/epliarizonia plumosa)*	-/-/CN PS lB, HCP/NCCP-covered
Round-leaved filaree *(California macrophyllo)*	-/--/CN PS lB, HCP/N CCP-covered
Mt. Diablo fairy lantern *(Ca/ochortus pulchellus)*	-/-/CN PS lB, HCP/NCCP-covered
Hospital canyon larkspur *(Delphinium californicum ssp. interius)*	-/--/CN PS lB
Mt. Dlablo buckwheat *(Eriogonum truncutum)*	-/FP/CNPS lB, HCP/NCCP-covered
Diablo helianthella *(Ne/ianthellu caswnea)*	-/-/16, HCP/NCCP-covered
Showy madia *(Madia rodiato)*	-/-/CNPS 16, HCP/NCCP-covered
Adobe navarretia *(Navarretia nigelliformis ssp. nigelliformis)*	HCP/NCCP-covered
Coastal triquetrella *(TriqC1etrel/o californica)*	-j.-/CN PS lB
Oval-leaved viburnum *(Viburnum ellipticum)*	--/--/CN PS 2B

Common Name (Species Name)	Listing Status*
WILDLIFE	
California tiger salamander *(Ambystoma ca/iforniense)*	FT/ ST, HCP/NCCP-covered
California red-legged frog *(Rana draytonii)*	FT/CSC, HCP/NCCP-covered
Alameda whipsnake *(Masticophis lotera/is euryxonthus)*	FT/ST
Western pond turtle *(Actinemys marmorato)*	–/CSC/ HCP/NCCP-covered
Coast horned lizard *(Phrynosoma coronocum)*	–/ CSC
Golden Eagle *(Aquila chrysoetos)*	BGPA/FP, HCP/NCCP covered
White-tailed kite *(£/anus /eucurus)*	–/ FP, HCP/NCCP-covered,no-take
Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*	–/SLC,HCP/NCCP-covered
Pallid bat *(Antrozous pallidus)*	–/CSC, HCP/NCCP-covered
Ringtail *(Bassariscus astucus)*	–/FP, HCP/NCCPovered; no-take
San Joaquin kit fox *(Vulpes macrotis mutica)*	FE/ST,HCP/NCCP-covered
American badger *(Taxidea taxus)*	*4CSC*

Notes:

EXPLANATION OF STATE AND FEDERAL LISTING CODES

FEDERAL
FE = Federally listed as Endangered
FT = Federly listed as Threatened
SGPA = Said and Golden Eagle Protection Act

STATE
SE = State listed as Endangered
ST = State listed as Threatened
CSC = California Species of Special Concern
FP = Fully Protected
SLC = State-listed candidate

COUNTY
HCP/NCCP-covered = species is covered by the HCP/NCCP
No take = no-take spees under the HCP/NCCP

CNPS
1B.1 = Plants rare, threatened or endangered in California and elsevhere. Seriously endangered in California.
1B.2 = Plants rare, threatened or endangered in California and elsevhere. Fairly endangered in California.
1B.3 = Plants rare, threatened or endangered in California alld elsevhere. Not very endangered in California.
2.2 = Plants rare, threatened or endangered in California, but more common elsevhere fairly threatened In California.
2.3 = Plants rare, threatened *or* endangered in C()lifornia, but more common elsevhere-not very threatened In California.
3 = Plants about which *vie* need more information - a revie\v list.
3.2 = Plants about vlhich We need more information – a review list-fairly endangered In ca11rornia.
3.3 = Plants about vlhich We need more Information - not very endangered in California.
4 = Plants of limited distribution-a watch list- fairly threatened In California.

Special-Status Plant Species

fourteen plant species were identified as potent.ia))y occurring within or adjacent to the BSA. The BSl providessu itable habitat for large-flowered fiddleneck *(Amsinckiagrandiflora]*, which isa HCP/NCCP no-take species that is federally-<)nd tate-listed as endangered. It also hasa California)(are Plant Rank of 18 (rare, threatened, or endangered in California or elsewhere].

Sever;11 other special-statusplant species could also potentially occur within or adjacen t to the BSA. These other species are:slender silver moss *(Anomob1y11mjula ceum]*, M t. Diablo rnanzanitJ *(Arctostuplfy/os uuriculata;* HCP/NCCP covered). Contra Costa manza n ita *(Arctostapliylos munzanita ssp. laevi1utu)*, big tarp)ant *(Blepharizonia plumosa*, JJCP/NCCP-covered), round-le:ived filarce *Du/ifor11ia macrophylla*, HCP/NCCP-covered). M t IJ iahlo fairy lan tern *(Calocliortus pulcliellus*, HCP/NCCP-covered).

Hospital Canyon larkspur *(Delphinium coli/ornicum* ssp. *i l lterius)*, Mt. Diablo buckwheat *(Eriugunum mmcatum;* HC P/NCCPcovere<l), Di<tblo helianthella *(Helianthe/l l l c l l stl l l lea,* HCP/NCCP coveredJ, showy madia *(Madia radiat<r,* HCP/NCCP-covered), adohe navarTetia *(Navarretia nigellifurmis ssp. nigellijormis,* HCP/NCCP-covered), coastal triquctrella *(Triquecrella californica)*, and oval-leaved viburnum *(Viburnum ellipcic l lm)*.

Protocol-level surveys for these special-status plants were conducted during summer and full of 2013 <lnd in spring of 2014. No speciaktatus plants were observed at the site.

Special-Status Wildlife Species

Special-status species that have the potential to occur in the BS/\ based on the presence of suitable habitat include: California tiger salamander *(Ambystoma ca/ijomiense)*, C<tliforn ia red-legged frog *(Rana draytollil)*, Alameda whipsnake *(M osticophis lateralis euryxantlws,* western pond turtle *(Actinemys marmorata)*, golden eagle *(Aquila chrysaetos)*, Townsend's big-eared bat *(Curynurhinus townsencJii mwmendir)*, and San Joaquin kit fox *(Vulpes macrolis mucica)*. The remaining five speciaktatus species that may occur in the BSA include coast horned lizard *(l'hrynosoma coronatun!)* white-tailed kite *(£/anus /eucunl s)*, pallid bat *(Antrozuus pa//idus)*, ringtail *(Bassariscus astutus)*, and American badger *(Toxidea taxus)*. These five species are not specifically covered by the HJC P/NCCP, but are considered due to the identification of suitable habitat within the BSA Ringtail, golden eagle and white-tailed kite n re designated as Fully Protected under Set'tion 351 l of the California Fish and Game Code. Fully Protected srecies may not be taken or possessed at any time and no licenses or pennits may be issued for thei r ta ke except for collecting these species for ne<:essary scientific research. The bald eagle and gold en eagle (nesting and vvintering) are also designated as a C<tlifornia Species of Special Concern and are protected under the federal Bald and Golden Bogle Protection Act (16 U.SC. 660-668d, 54 Stat.250) *as* amended.

The 12 special-status wildlife species with the poten tial to occur in die BSA are discussed in more detail in the following paragraphs.

California tiger salamander. California tiger salamander is a federally and state-threatened spei:ies that is covered under the HCP/NCCP. The project area is located within the Central Californi<i distinct population segment for this species (CDFW 20B). There are 27 CN DDB occurrence records within 5 miles of the project site. The nearest record consists of one adult found along Marsh Creek Road 0.9 mile from the project site in 1982. The nearest breeding record is from a drainage pond located 1.3 miles from the project site where a single l<lrv<l was found in 1999. There are numerous stock ponds within 5 miles of the project site thatprovide potenti<J l breeding habitat for this species, and the site is within modeled breeding, aestivation, and movement habit<it for California tiger salamander under the HCP/NCCP.

Biological survey results indicated that the BSA does not provide suitable breeding habitat for California tiger salamander. llowever, potential upland aestivation, foraging, and movement habitat does occur wid fi n the BSA. Moreover, the potential breeding habitat jnd kno'iloccu l Tences documented above are within the known migration distance of the species (up to 1.4 miles). Overall, the BSA provides approximately 1.716 acres of marginally suitable California tiger s<l lamander habitat, including native grassland, chapa rral/scrub, and oak savanna. Based on survey resu lts and background information, adult s<l lam<l mler could potentially occur within the BSA. However, the habit;it is marginally suitable for two reasons: (1) no small mammal bu rrows were seen in the immedi<.lte vicinity of the BSA; and (2) the

Comment [ld49]: Consideration and not noted or scene because they are either nocturnal or out of the study focus times, are the following:
Hawks – red tail,
Coober socks
Shark Shin
Bats – Pallid
Big Eared
Owls –Screech
Great Horned
Ducks -Mallard (nesting pair)
Quail – Nest in the blackberry bushes set for removal
Deer – bring their fawns for water and grazing grasses

distance to the nearest known breeding site is near the upper limit of documented salamander rnovement distances.

California red-legged fl'Og. California red legged frog is a HC P/NCCP-covered species that is listed as federally threatened and is also a Califomia Species of Spedal Concern. California red-legged frog is known to occur in the project vicinity (CDFW 20 13). There are 30 documented CNDDB occurrences within S miles of the project site. The nearest record, prior to smveys conducted for this project, consists of one adult seen in Marsh Creek 0.51 mile from the project site in 1982. The nearest breeding record is from a stock pond located 1.2 miles from the project site that was found in 2006. The site is within the area of modeled migration and aestivation habitat for Califomia red-legged frog under the HCP/NCCP (HCP/NCCP Chapter 4: Figure 4 3).

Comment [ld50]: There are red legged frogs in this water way. Residents at 12801 have observed the redlegged frog in the creek area for 46 years.

Alameda whipsnalw. i\lameda whipsnake is a HCP/NCCP-covered and federally- and state listed threatened species. AWS is known to occur in the project vicinity ICDFW 2013). There are 43 known occurrences within 5 miles of the project site, and the BSA lies within the area of modeled movement habitat for whipsnake under the HCP/NCCP.

Western pot1d turtle. Western pond turtle is a HCP/NCCP covered species and a California Species of Special Concern. This species is known to occur in the pmject vicinity (CDFW 2013). There are six CN DDB occurrence records within 5 miles of the project site. The nearest record is 1.39 miles from the project site. No pond turtles were obse l ved during the survey. However, the BSA does provide suitable aquatic and upland habitat for western pond turtles. Overall, the BSA provides approximately 4-.0!13 acres of suitable native grassland, oak savanna, oak woodland, riparian woodland, and stream habitat for this species.

Comment [ld51]: There is a family of pond turtles which nest and bare their hatchlings. They have been established for at least 46 years during 12801 owners residency.

Comment [JG52]: See comment above

Coasc/1ortted//zatd. Coast homed lizard is a C<tlifornia Species of Special Concem. Wlthm the liA suitable habitat for this species is present in the chaparral. oak savanna, and grassland habitat types. Coast horned lizard is known to occur in the project vicinity (CDFW 2013), with one CN DDB occurrence within 5 miles of the project site. The occurrence was recorded in 2002, 4-71 miles away from the BSA. Biologists conducted a habitat assessment and planning smvey for coast horned lizard wid l in the OSA on August 30, 2013. Survey results verified that tJ le BSA contains 1716 acres of native grassland, oak savan n<t, and chaparral land cover types that pmvide potentially suitable foraging and movement habitat for this species.

Golden eagle. Golden eagle is protected under the Bald <l nd Golden Eagle Protection Act, is fully protected under California Pish and Game Code and is a HCP/NCCP covered species. There is ooe golden eagle nest confirmed within 5 miles of the project site, approximately 2.45 miles away (Terry Hunt, Contract Raptor Biologist, East Bay Regional Park District, pers.comm.). No nests were observed by biologists during planning surveys in the BSA, and large trees near the project site are unlikely to provide suitable nesting habitat due to human activity along Marsh Creek Road. The native grassland and oak savanna provide marginally suitable foraging habitat for this species.

Wllite-cailed i<ite. White tailed kite is a no-take species that is fully-protected under California Fish and Game Code. They breed in a variety of habitats including grasslands, cultivated fields, oak woodlands and suburban areas where prey is abundant. Trees within the BSA pro\de marginal nesting habitat for this species, due proxi miti• to ffarsh Creek Road. The native grassland and oak savan n<• l and cover types provide marginally suitable foraging habitat for this species.

Tow1 Iset I d's b(q-ear-ed bat:arid pallid bat. Townsend's big-eared bat is a California State-listed Candidate and a HCP/Nc;CP-covere<l species. Pallid bat is a California Species of Special Concern. Neither bat

species has a federal listing starus. 'Illough not observed with in the BSA. foraging habitat for pallid bar and Townsend'sbig-eared bar is present within the BSA within the site's native grasslands and al the edges of the oak savan na. Add itionally larger trees on rhe site could potentially *provide* suitable day and/or night roosting habitat for these species where hollowed trun ks and branches have developed.

Comment [JG53]: 12801 residents have observed bats at dusk for many years on their property and over the creek

Rlngtcul. Ringtail is a fully protected species under the Califom ia Fish and Game Code, a HCP/NCCP-covered notake species. Only two known records exist for ringtails in Contra Costa County, one of which is in the Los Vaqueros watershed. N o evidence of their occurrence wasobserved during the planni ng survey. Nevertheless, poten tial ly su itable habitat for ringtails occurs i n the oak sava nna, oak wood land, chaparral/scrub, and riparia n wood land land cover types within and ad jacent lO the BSA. Add itionally, large trees on the site could su pport hollowed recesses potentially large en1>ugh to provide cover fur the ri ngtail.

Sun /ooqui I I kit/ox. San Joaquin kit fox is an HCl'/NC:CP-covered species listed as federally endangered and state threatened. There are four records of San Joaquin kit fox occurrences with i n S miles of the BSA (CDFW 2013). An unverified occurrence is appruximately 0.5 mile from the site. One ad ult was observed at this location by an u nrrai ned observer" in 1989 (CDFW 2013). All other kit fox sightings occurred prior to 1993. The BSA lies within the known foraging range (1to 12 miles) ofrecorde<l den sites (USFVVS 1998), but is ouL5ide of modeled suitable habitat for kit fox under the HCP/NCCP.

Comment [JG54]: Residents of 12801 have observed kit fox families training pups in the grassy area at far west end of BSA for many years, the last sighting being in the summer of 2015. This area is on property owned by 12801 residents.

Based on survey results, kit fox cou ld potentia lly oc.u r in the BSA. However, the potential for occu rrence is low due to the margi nal nature of the habitat for this species and the absence of observations in Contra Costa County since 1993. 1 lthough there have been occurrences of Srn Joaqui n l<lt fox withi n the HCP/NCCP area, the most recen t su rveys ha ve found no evidence of occu ltincy i n the project vici nity.

Americar> badger. American badi;er is a Calirornia Species of Special Concern; it has no federal listing status. American badgers occur in a wid e va riety of open, arid habitats, but are most commonly associated \\rjth grasslands, savannas, mountain meadows, and open areas of desert scrub (Stephenson and C:alcarone 1999). The principal habitat requirements for this species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground (Williams 1986). American badgers are primarily found in areas of low to moderate slope (Stephenson and Cakarone I,199). This species has not been documented from the BSA, yet ma rginally suitable badger habitat is present within open grasslands \-Vithin the BSA. The nearest known occurrence is 4.21 miles from the FISA and was recorded in 2002 (COFW 2013).

a) Would the project have a substan tial adverse effect, either directl y or through habita t modifications, on any species identified as a candidate, sensitive, or special-status species in loca l or regional pla ns, policies, or regulations, or by CDFW or USFWS?

The HCP/NCGP complies with Section lO(a)[1)(B) of the *F.SA* and Califomia Natural Commu nity Conservation Planning Act of 2003. As such, covered activities are authorized for incidental take of HCP/NCCI' covered special-status species subject to mitigation fees for hoth pennanent and temporary impacts to species and/or their habitats. In addition, project proponent'are required to Implement specific conditions and conservation measures to avoid or minimize potential effects to species and/or their habitats. These conservation measures are incorporated into the species mitigation provided in this impact analysis, to offset potential project impacts.

Comment [JG55]: Please describe how project impacts to wildlife on private property adjacent to the project(including the BSA) are addressed by the HCP/NCGP.

Impact 810-1 -Disturbance to Sensitive Habitats and Trees

Project activities would result in limited permanent impacts to natural and non-natural land cover types located adjacent to the existing roadway and shoulders as follows: riparian woodland (0.091 acre) (including stream woodland from top-of-bank to top-of-bank (0.058 acre)), oak woodland (0.102 acre), oak savanna (0.150 acre), chaparral/scrub (0.128 acre), native grassland (0046 acre), non-native woodland (0.02-1 acre), and urban (1.015 acres).

Temporary project impacts would occur to riparian woodland (0.306 acre), oak woodland (0.208 acre), oak savanna (0.184 acre), chaparral/scrub (0083 acre), native grassland (0.008 acre), nonnative woodland (0031 acre), and urban (0.417 acre).

The proposed project would also result in the removal of 36 trees that consist of gray pine (*Pinus sabiniana*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), red willow (*Salix laevigato*), western sycamore (*Platanus racemosa*), California buckeye (*Aesculus californica*), California bay (*Umbellularia californica*), and cherry plum (*Prunus cerasifera*).

The following measures would be implemented to offset these impacts. The impacts of the proposed project would be **less than significant with mitigation incorporated.**

Mitigation Measure 810-1 Sensitive Habitat and Tree Protective Measures

The proposed project has been designed to be consistent with HCP/NCCP Conservation Measure 1.H Design Requirements for Covered Roads Outside the Urban Development Area. In compliance with that measure as well as additional considerations identified in the NES, the following general construction requirements would be used for protection of the biological resources within the BSA and project vicinity:

1. Equipment storage, fueling, and staging areas will be sited on disrupted areas or on ruderal or non-sensitive non native grassland land cover types, when these sites are available, to minimize risk of direct discharge into riparian areas or other sensitive land cover types.
2. No erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks.
3. All no-take species will be avoided.
4. Construction activities will comply with the Migratory Bird Treaty Act and will consider seasonal requirements for birds and migratory non-resident species, including covered species.
5. Temporary stream diversions, if required, will use sand bags or other approved methods that minimize in stream impacts and effects on wildlife.
6. Silt fencing or other sediment trapping method will be installed down-gradient from construction activities to minimize the transport of sediment off site.
7. Barriers will be constructed to keep wildlife out of construction sites, as appropriate.
8. On-site monitoring will be conducted throughout the construction period to ensure that disturbance limits, best management practices (BMPs), and HCP restrictions are being implemented properly.

Comment [JG56]: Please explain how aquatic community is to be relocated to "avoid" take of turtles/CRLF

Comment [JG57]: Please describe how invasive procedures in limited access condition protect wildlife. Or describe techniques that will avoid that situation during stream diversion.

Comment [JG58]: Please clarify what organization is to monitor; and how organized to avoid conflict of interest with proponent conducting work.

9. Active construction areas will be watered regularly to minimize the impact of duston adjacent vtgetation and wildli fe habitats, if walTante d.

10. Vegetation and debris must he managed in and near culvelts and underand near bridges to ensure that entryways remain open and visible to wildlife and the passage through the culvert or under the bridge remains clear.

11. Cut-and-fill slopes will he revegetated with native, non-invasive nonnative,or nonreprodu(1ive (i.e., sterile hybrids) plants suitable for the altered soil conditions.

Comment [ld59]: How and whom will water this for growth potential?

12. Per the NES,tree protection fencing will be used during the construction process to prevent direct. damage to trees :ind their growing environment located just outside of the construction site (avoided trees). The fencing\vill consist of blaze orange barrier fencing supported by metal "T rail" fence posts ond will be placed at or outside of the driplines of avoided trees to the extent.feasible based on the limits of the area to be graded. The fencing will be installed before site preparation,construction activities or tree removal/trimming begins,and viii be installed under the supervision of a qualified arborist.

Comment [ld60]: Fence posts need be 5' outside the drip ring of the tree.

13. Per the NES,heavy machinery will not. be allowed to operate or park within or around areas containing avoided trees. If it is necessary for heavy machinery to operate within the dripline of avoided trees,then a layer of mulch or pe;l gravel at least 4 inches deep will be placed on the ground beneath the dripline. A 0.75-inch sheet of plY\wood will he placed on top of the mulch. The plywood and mulch will reduce compaction of the soil Within the dripline.

14. Per the NES,construction m;iterials (eg., gravel. aggregate.heavy equipment). project debris,and waste m;lterial will not he placed adjacent to or against the trunks of avoided trees.

15. Per the NES if the trimming of tree canopy is required to allow the movement of construction machinely, all branches to be removed will be pruned back to an appropriate sized lateral or to the trunk by follO\ving proper pruning guidelines. All trimming will be conducted under the supervision of a certified arborist.

Comment [ld61]: Will this arborist be on site at all times for supervision of this process?

Impact 810-2- Disturbance to Rore Plonts

Based on the results of the preliminary surveys conducted in the spring and summer and the late summer protocol-level plant survey conducted in 2013 and a spring protocol-level plant survey conducted in 2014,no rare or pecial-st;itus pl;int species occur within the BSA. *As* such, the preliminary conclusion is th;lt the proposed project would have no impact on the special-status plant **species.**

Impact 810-3 - Disturbance to Special-Status Birds During Construction

Construction of the proposed project would require removal of trees and shrubs located along the east side of Marsh Creek Road in the vicinity of the bridge crossing. The avian nesting season is February 15 to August 31.. The proposed project may directly or indirectly impact listed, fully protected and/or Migratory Bird Treaty Act-protectec.l nesting birds, if preent. The proposed project is not anticipated to impact these species with implementation of Mitigation Measure BJ0-3. Therefore, proposed project impacts to any listed, fully protected migratory birds would be less **than** significant with mitigation incorporated.

Mitigation Measure 810-3 Migratory Bird Protective Measures

- To the extent feasible, vegetation removal activities shall not occur during the bird breeding season of February 15 through August 31.
- If vegetation removal must occur du ri ng the breeding season, all sites shall be smveyed by a qualified biologist to verify the presence or absence of nesting birds.
- Preconstructiu n surveys will be conducted no more than nvo weeks prior to the start of work from February 15- llugust 31.
- If the survey indicates the potential presence of nesting birds.a buffer will be placed around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be detennined by the biologist in consultation with the CDFW. and will be based to a large exten t on the nesti ng species and its sensitivity to disturbance. In general, buffer sir.es of 0.5-mile fur golden eagle, 250 feet for raptors including whi te-tailed kite and SO feet fur other birds should suffice to prevent d isturbance to birds nesting in an u rban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near- the nest.

Impact 810-4 – Disturbance to Calfornia Red-legged Frog and Their Habitat

Implementation of proposed project activities would temporarily disturb aquatic and upland habitat known to support the federa lly threatened California red legged frog. Compensatory mitigation for impacts to California red-legged frog habitat would be achieved through payment of a mitigation fee as stipulated in the PSI\ and the Bioluical Opinion for the proposed proje ct Com pensatory mitigation fur impacts to Califomia red-legged frog (as well as other llCP/NCCP-covered species) would be achieved through payment by CCCPWD development fees and wetland mitigation fees for permanent and tempora ly i mpacts, totaling $83,217.82, as required under the HCP/ NCCP. In addition to fees, potential impacts to this species during construct.ion would be minimized through implementation of Mitigation Measu re ll10-4. Therefore, the proposed project impacts to California red-legged frog would he less than significant with mitiga tion incorporated.

Mitigation Measure 810-4 Calfornia Red-legged Frog Protective Measures

- ⁄\USFWS/CDF\V-approved biologist will identify potential red-legged frog breeding habit<lt [Section 6.3.1of the HCP/ NCCP, Planning Surveys). If the project fills or surrou nds suitable breeding habitat, the project proponent will notify !JSFWS, CDFW, and the Implementing Entity of the presence and condition of potential breed ing habit<lt, as described below. No µreconstruction surveys are required.
- Written notification to USFINS, CDFW, and the Implementing Entity, including photos and habitat assessment, is required prior to disturbance of any su i table breedi ng habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 rJays prior to this removal to allow USFWS or CDPW staff to transloate individuals, if requested. USFWS or CDFW must notify the project proponent of their i ntent to trnnslocate California redlegged frog within 14 days of recei'ing notice from the project proponent. The applicant must allow USFWS or COFW access to the site prior tu construction if they request it.

Comment [JG62]: Commenter notes that survey is necessary during design phase to quantify extent of impact-concerns on impacts to adjacent perennial aquatic community already noted and measures such as planned dewatering may render local relocation impractical or ineffective.

- There are no restlictions under the HCP/NCCP on the nature of the dismrbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate indi\duals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breetling habitat to allow USF\VS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and COFW).

Impact BIO-5 - Disturbance ta Western Pond Turtle and Their Habitat

Western pond turtle habitat includes ponds, marshes rivers.streams, and irrigation canals. Nest are typically constructed in upland habitat within 0.25 mile of aquatic habitat. During constrnction,there is potential for injury or mortality of turtles moving through the site, due to being crushed by vehicles, humans, or construction equipment associated with proposed project activities. Per the NES, approximately 0.389 acre of native grassland.o<tk savanna, oak woodland,and riparian woodland that provide suitable foraging, dispersal. and/or breeding habitat for western pond mrtle would be r'll<Ulently im.pacret:lby constmction activlties.. Approximately Q.706 a.cre ol habitat would be temporarily impacted by the proposed projet In addition, 0.045 acre of stream would be permanently imp<lcted and 0.182 acre would be temporarily impacted during the bridge replacement. Implementation of Mitigation Measure BIOS would reduce this potential impact to less **than** significant with mitigation incorporated.

Comment [ld63]: There is nesting Western Pond Turtles in the creek waters. Area observed is within 150' of proposed project. Dewatering would have massive impact on this population. This situation needs to be specifically addressed in the EIR

Mitigation Meosvre 810-5: Payment d Development Fees

There are no species-specific avoidance and minimization measures required under the liCP/NCCP beyond the general landscape-level avoidance and minimization measures. Impacts to western pond turtle and their habitat would be mitigated through payment of applicable development fees and wetland mitigation fees for permanent and temponuy impacts, totaling $83,21782 as required under the HCP/NCCP (Sections 4.1.14 and 4.4.2).

Comment [JG64]: Note that no mention made of mitigation of habitat destruction on adjacent property owner land.

Impact 810-6 - Disturbance to Special-status Bats

Per the NES, project construction activities could impact suit.able foraging habitat for special status bats, including pallid bat and Townsend's big-e<lred bat, if present. Implementation of Mitigation Measun' III0-6 would reduce tliis potential impact to less than significant with mitigation incorporated.

Mitigation Measure BIO-6 Special-Status Bat Protective Measures

Project-related impacts to bat roosting habitat can be avoided or rninimized by implementing the following measure as described in the NES:

- All potential roost trees within the project site will be surveyed for the presence of bat roosts by a qualified biologist. The survey may entail direct inspection of the trees or nocturnal surveys. The survey will be conducted no more than two weeks prior to the initiation of tree removal and ground disturbing activities. If no roosting sites are present, then trees will be removed within !'\\lo weeks following the survey.

- If roosting habitat is present and occupied, then a qualified biologist will determine the species of hats present and the t)'le of roost (i.e., day roost, night roost, maternit)' roost). If it is determined that the bat are not a special-status species and that the roost is not being used as a

maternity roost, then the bats may be evicted from the roost using methods developed by a biologist experienced in developing and implementing bat mitigation and exclusion plans.

- If the batsare found to be pallid bats orthe roostis being used as a maternity roost by any bat species, then a biologist experienced in bat mitigation and exclusion plans must prepare an eviction plan detailing the methods of exduding bats from the roost(s) and the methods to be used to secure the existing roost site(s) to prevent its reuse priorto removal. Removal of the roost[s) will only occur after the e\ction plan has been approved by CDFW.
- Tree removal surrounding roost trees will be conducted without damaging the roost trees.
- No diesel or gas-powered equipment will be stored or operated directly beneath a roost site.
- All construction activity in the vidnity of an active roost " ll be limited to daylight hours.
- As an option, protocol-level surveys may be wnducted the year prior to construction to rule out the presence of bat species in the project vicinity.

Impact 810-7-Disturbance to Ringtail

Potentially suitable habitat for ringtails occurs in the oak savanna, oak woodland, chaparral/scrub, and riparian woodland land cover types within and adjacent to the BSA. Additionally, large trees on the site could support hollowed recesses potentially large enough to provide wver for the ringtail. Permanent impacts to habitat could occur if unoccupied sites are damaged or removed. Implementation of Mitigation Measure DI0-7 would reduce the potential impact to less than significant with mitigation incorporated.

Mitigation Measure 810-7 Ringtail Protective Measures

To ensure the avoidance of ringt.ail, a preconstruction survey 'ill be conducted by a qualified biologist of all potentially suit:lble den sites (i.e.. tree hollows and logs) 'ithin the project site. Any occupied dens will be !lagged, and the biologist will prepare a ringtail passive relocation plan subject to the approval of CDFW. The commencement of construction work \viii be delayed until one of the following has occurred:

- If the biologist has documented that ringtails have volunt;Jrily vacated the den site, then construction may begin \within 7 days following this observation.
- If the den is not vacated within 20 observation days, then the biologist may commence passive relocation in accordance with the CDFW-approved relocation plan. No relocation shall be wnducted during the early pup-rearing season of May 1to June 15.
- AU activities that involve the ringtail shall be documented and reported to the CDFW within 30 days of the activity.

Impact 810-8-Disturbance to San Joaquin Kit Fox Habitat

!\lthough the occurrence of San Joaquin kit fox within the BSA is unlikely, the site nevertheless supports marginally suitable foraging and movement habitat. Although suitable burrows large enough for breeding were not identified during the planning surveys, there isstill the potential for bmTows to he created prior to constnlction. Approximately 0.96 acre of native grassland and oak savanna that provide marginally suit<ible h<tbitat for San Joaquin kit fox would be permanently affected by

Comment [JG65]: Statement is erroneous; interview with adjacent residents during field survey would have alerted biologist to this possibility. NO interaction with residents was attempted; when resident 12801 asked about purpose of related tree tagging work, biologist/arborist provided nonformative and evasive answers and made no effort to refer questions to County client that was manging the work.

oonstruction activities. In addition. approximatt!ly 0.19Z acre of habitat would be temporarily impacted. Implementation of Mitigation Measure BI O-B would reduce this potential impact to less I ll an significa nt with mitigation incorporJted.

Mitigation Meosvre 810-8: Son Joaquin Kit Fox Protective Meosvres

1. Pl ior to any ground disturbance reloted to covered activities.a USFWS/CDFVV -;ipproved biologisnvill conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning h<ibl tat for San Joaquin kit fox. The surveys will est<tblish the presence or absence of San Joaqu in kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999). Preconstruction surveys will be conducted within 30 <lays of ground disturbance. On the parcel where the ativi ty is proposed. the biologist will survey the proposed disturbance footp l int and a 250 foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be detennined and mapped. Written result:< of pre€9nstrumcm surveys wil! be submitted to USf\VSJ-ruhin5 workingd. Y' after survey completion and before the start orground distu rbance. Concu l Tence is not required prior to ini tiation of covered activities.
2. If a San Joaquin kit fox den is discovered in the development footpri nt, the den will *be* monitored for three days by a U SFWS/CIWW-approved biologist using a track inll an ed ium or an infrared beam camera to camera to determine if the den iscurren tly being used.
3. Unoccupied dens will he destroyed I mmediately to preven t sub,equen t use.
4. If a nat<1 l or pupping den Is found. USFWS and CDFW will *be* notified immediately. The den wiU not be destroi•ed until the pups and adults have vacated the den and then only af\er further consultation witl l USFWS and CDFW.
5. I f San Joaquin kit fox activity is observed at the den dwing the initial monitori ng period. the den will be monitored for an additional 5 consecutive days from the time of the fi rst obsorv:jtion to allow any resident animals to mv\" to another den while den use Is :actively discouraged. For dens other tha n natal or pupping dens. use of the den can be discou raged by pa rtia lly plugging the entrance with soil such that any resident animal can easily escape. One• the den is determ ined to be unoccupied. it may be excavated u nder the direction of the biologist. Mternatively. if the animal is still present after 5 or more consecutive days of plugging and monitol ing. the den may have to be excavated when, in the judgment of the biologist. it is temporarily vacan t (I.e.. during the animal's normal foraglng activities).
6. If <lens are identified in the su rvey area outside the disturb;ince footpri nt, exclusion zones around each den entrance or cl uster of entrances will he demarcated. The configuration of excl usion zones should be circular. with a radius me:l sured ou tward from the den entrancelsJ. No activities will occur within the exclusion zones. Exclusion zone radii for potential dens will he at least SO feet and will be demarcated with four to five nagged stakes. Exclusion zone rad ii for k nown dens will be at least 100 feet and will he demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

/mpoCf 810-9-Disturbance to Americon Badger

Suitable habitat for American b<1dger is present in the grassland and oak woodland areas within BSA. Noise dIsturh<1nce from construction activities may result in direct impact (e.g., mortality or sett destruction) and/or indirect impacts (eg., temporary changes in foraging patterns or territories, noise, or light disturbance, etc.) to these sensitive species. This potential impact would be minimized and/or avoided thmugh establishment of no-disturbance buffers as described below. Implementation of Mitigation Measure 810-9 would reduce this potential I mpact to less than significant with mitigation Incorporated.

Mitlgotion Measure BI0-9: Conduct Preconstruction SuNey for American Badger

The following avoidance and minimization measures shall minimize potential impacts on American badger:

1. If grading or construction will begin during the breeding season (March through August), a qualified biologist will conduct a survey of the grassland habitat to identify any badger burrows on the site. TI1e survey will be conducted no sooner than two weeks prior to the start of construction.
2. Impacts to active badger dens will be avoided by establishing exclusion zones around all active dens, within which construction-related activities will he prohibited until denning is complete or the den isab<mdoned.
3. A qualified hiologist will monitor each active den once per week in order to trac1< Its status and I nform the CCCPWD of when a den area has been cleared for construction.

The MMRf (included as Appendix A) prepared for the proposed project identifies when mitigation measures will be implemented, the parties that will be responsible for ensuring implementation of these measures, and implementation of the measures will he verified.

bl Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identifiedh local or regional plans, policies, or regulations, or by CDFW or USFWS?

The proposed project is located within the HCr/NCCP inventory area and is a covered activity. The proposed project would have a permanent and temporary impact to <1pproximately 1.4 acres of undeveloped hahitats and removal of approximately 36 trees. The grading footprint of the proposed project has heen minimized to the maximum extent practicable in order to avoid jurisdictional fe:itures. I mplementation of Mitigation Measure 010-1 would minimize or avoid impacts to special-status spedes and their habitats, including trees.

Impact 810-10-Impocts to Sensitive Natural Communities

The proposed project would result in both temporary and permanent impact to natur.l1 communities, sensitive habitats and undeveloped habitats regulated by USFWS and CDFW through the Lake and Streamhed Alter<1tion Agreement and by the Habitat Conservancy. The proposed project Is located within the HCP/NCCP inventory area and would have permanent and temporarlyimpacts to undeveloped habitats (approximately 1.4 acres). The proposed project would pemlanently impact 40 linear feet (0.058 acre) and temporarily impact 249 linear feet (0.289 acre) of stream from top of bank to top of bank. In addition to payment of development and wetland fees desribed in Mitigation

Measure BIO-10a, potential impacts to natural communities during construction would be minimized through implementation of Mitigation Measure BIO-10b. These measures would reduce proposed project impacts on sensitive natural communities to less than significant with mitigation incorporated.

Mitigation Measure BIO 10a: Payment Of HCP Development and Wetland Fees

Compensatory mitigation for temporary and permanent impacts to habitats will be achieved through payment by CCCPWD of development fees and wetland mitigation fees. The proposed project would provide a development fee of $13,909.19 for permanent impacts and a development fee of $2,119.99 for temporary fees. A wetland mitigation fee of $11,659.62 for permanent impacts to stream and riparian woodland habitats and a wetland mitigation fee of $25,527.02 for temporary impacts to stream and riparian woodland habitats. Specific to riparian habitat, fees will offset permanent impacts to 40 linear feet of stream and permanent impacts to riparian woodland as a result of the loss of 0.091 acre of riparian canopy. Additionally, the fee will offset temporary construction impacts to 249 linear feet of stream and 0.306 acre of riparian habitat. Therefore a total combined mitigation fee for the project will be R1,2'1782.

Comment [ld66]: These fees are here because temporary and permanent impacts to habitat is unavoidable. No compensation to adjacent property owner's habitat also affected by the project even mentioned. Please justify legal basis for this or acknowledge obligation under the law.

Mitigation Measure BIO-10b: Wetland Pond and Stream Protective Measures

In addition and consistent with HCP/NCCP Conservation Measure 2.12 *Wetland, Pond, and Stream Avoidance and Minimization*, the following applicable avoidance and minimization measures will be used to protect the stream occurring within and adjacent to the project site:

- Prior to the start of construction, all portions of the stream to be avoided by the project will be clearly staked in the field by a qualified biologist.
- Prior to the start of construction, construction personnel will be trained by a qualified biologist on all required avoidance and minimization measures as well as permit requirements.
- Trash generated by the project will be promptly and properly removed from the site.
- No construction or maintenance vehicles will be refueled within 200 feet of the streams unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.
- Appropriate erosion-control measures (e.g., fiber rolls, filter fences) will be used on site to reduce siltation and runoff of contaminants into the stream. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and to trap reptiles and amphibians.
- Fiber rolls used for erosion control will be certified as free of noxious weed seed and will not contain plastics of any kind.
- Seed mixtures applied for erosion control will not contain invasive nonnative species, and will be composed of native species or sterile nonnative species.
- Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, where appropriate to control serious invasive plants, herbicides that have been approved for use by USEPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species

and their habitats. In seasonal or intermittent stream or wetland environment s,appropriate herbicides may be applied during the dry season to wntrol nonnative invasive species (e.g., yellow star-thistle). Herbicide dri ft should be minimized by applying the het'liicide asdose to the target area as possible.

The MM R P (included as Append ix!\) prepared for the proposed project identifies when mitigation measu res will be implemented.the parties that will be responsihle forensu ring implementation of these measures, and implementation of the measu res will be verified.

c) Would the project have a substantial adverse effect on federally protected wetla nds as defined by Section 404 of the Clea n Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

Stream habitat and riparian wood land impacts discussed under checklist item b) above may also affect federally protected wetlands and other waters of the United States subject to regula tion under Section 404 of the CWA. Results of the wetland delineation smvey detennined that perm ment impacts would occur to 40 linear feet (0.030 acre) of USACE jurisdictional stream and 425 linear feet (0.019 acre) of non jurisdictional ditch. Temporaty impacts wou ld occur to 289 linear feet (0.169 acre) of jurisdictional sream. Impacts to ju risdictional waters indude all waters to be impacted below Ordinaty High Water. Implementation of Mitigation Measures IOa and IOb as described under checklist item h) above, would reduce impacts to wetlands to less than significant with mitigation incollorated.

Comment [JG67]: Is mitigation scope limited to BSA; is proponent committed to mitigate all impacts to downstream perennial waters on land owned by 12801 resident

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wild life spedes or with established native resident or migratory wildlife corridors, or impede the u se of native wildlife n ursery sites?

The constructed project would not result in permanent disruption to movement. of wildlife species in the area, as the proposed project is limited to road improvements and there are no permanent featu res that would pose a barrierto movement. However, temporary con'truction activities, especially noise may temporarily inhibit dispersal, migration, and daily movement of common wildlife but it is not anticipated considering its location within a heavily traveled road. This disru ption wou ld be localized and short term in nature. Therefore, impacts of the proposed project would he less than all significant

Comment [JG68]: NES study does not provide conclusive evidence supporting this assertion. Please provide specific supporting evidence or cite references in supporting documents to justify this statement. Please specifically address resident amphibian and turtle communities in perennial waterway downstream of project

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservatio n policy or ord inance?

The proposed project would not conflict IVith any local JJC)]icies or ordinances protecting biological resources. Potential project impacts would be avoided where feasible or mitigated through implementation of avoidance measu resand best management practices outline in the PSR and identified in Mitigation Measu res described previously. The PSR was completed in adherence with the HCP/NCCP which is consistent with the policies included in the Consetvation Element section of the County General Plan. The proposed project is not subject co the County Tree Ordinance (Contra Costa County Code [CCCCJ Title 8.Chapter 816-6.10(6). Therefore, the proposed project would have no impact.

f] Would the project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

The proposed project would include avoidance and mitigation measure$ identified in the PSR and rrovide mitigation fees to offset impacts in com1)Jiance with the HCP/NCCP. Therefor, the project would have no impact.

V. Cultural Resources	Potentially Significant Impact	less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	D	O	181	D
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	D	O	181	D
c. Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	D	D	O	
d. Disturb any human remains, including those interred outside of formal cemeteries?	D	O		D
e. Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Section 21074(a)?	D	O		D

Regulatory Background

CEQA requires lead agencies to determine if a project would have an adverse impact on a significant cultural resource (Public Resources Code Sections 21084, 21084.1, 21003.2). A resource can be a prehistoric or historic structure, object, site, or district, and is considered significant if:

- It is listed in or has been determined eligible for listing in the California Register of Historic Resources (CRHR);
- It is included in a local register of historical resources, as defined in Public Resources Code 5020.1(k);
- It has been identified as a significant in an historical resources survey, as defined in Public Resources Code 5024.1(g); or
- It is determined to be historically significant by the CEQA lead agency (CCR Title 14, Section 15064.5(a)).

The CRHR eligibility criteria are used to determine significance. A significant resource must meet one of the four criteria, as follows:

1. The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. The resource is associated with the lives of persons important in our past;
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual, or possesses high artistic values; or

4. The resource has yielded, or may be likely to yield, information important in prehistory or history.

If a significant resource would *be* impacted, the lead agency must determine whether there is substantial evidence in the administrative record to support a finding of significant effect (Section 21080(e)). CEQA requires examination of mitigation measures or feasible project alternatives that would avoid or minimize any impacts or potential impacts.

Effective July 1, 2015, Assembly Bill 52 amended CEQA to mandate consultation with California Native American tribes during the CEQA process to determine whether or not the proposed project may have a significant impact on a Tribal Cultural Resource, and that this consideration be made separately from cultural and paleontological resources. Section 21073 of the Public Resources Code defines California Native American tribes as "a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission (NAHC) for the purposes of Chapter 905 of the Statutes of 2004." This includes both federally and non-federally recognized tribes. Section 21074(a) of the Public Resource Code defines Tribal Cultural Resources for the purpose of CEQA as:

1. 'Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are any of the following:
   A. included or determined to be eligible for inclusion in the CRHR; and/or
   B. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or
   C. a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria A and B also meet the definition of a Historical Resource under CEQA, a Tribal Cultural Resource may also require additional consideration as a Historical Resource. Tribal Cultural Resources may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies carry out consultation with tribes at the commencement of the CEQA process to identify Tribal Cultural Resources. Furthermore, because a significant effect on a Tribal Cultural Resource is considered a significant impact on the environment under CEQA, consultation is required to develop appropriate avoidance, impact minimization, and mitigation measures. Consultation is concluded when either the lead agency and tribes agree to appropriate mitigation measures to mitigate or avoid a significant effect, if a significant effect exists, or when a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (21080.3.2(b)), whereby the lead agency uses its best judgement in requiring mitigation measures that avoid or minimize impact to the greatest extent feasible.

Cultural Resources Assessment

A cultural resources survey for the proposed project was conducted in accordance with federal laws and regulations. Section 106 of the National Historic Preservation Act and its implementing regulations at 36

Code of Federal Regulations (CFR) 800 (Caltrans 2014). Although the regulatory setting for this survey is focused on federal vs. state requirements, the project area and methods of analysis are equivalent; therefore, the results of the Caltrans survey are summarized in the following paragraphs.

Historic Overview and Results

The project area is in the Central California culture area. It is in the traditional territory of the Bay Miwok people, a Miwok speaking group who were organized into tribelets. Miwok communities moved seasonally between permanent villages and temporary resource-gathering locations. Littoral and marine resources were a primary component of the diet, supplemented by plant resources such as acorns, terrestrial mammals, and birds. Technologies included fish nets and traps, tule mats, and the bow and arrow.

The oldest sites in the region, dating from before 10,000 years ago, are assigned to the Paleoindian period. Evidence from this period is scarce, but indicates that populations were small and moved frequently. In the subsequent Archaic period (about 10,000 to 1,000 years ago), cultural complexity intensified, and a wider variety of food resources were used. Sites from the Emergent period, from about 1000 years ago to Euroamerican contact, are consistent with ethnographically described cultures.

The first Euroamerican contact in the region was by Spanish explorers in the late 1700s. In the project vicinity, these contacts were primarily military. After Mexican independence in 1621, much of California was granted to individuals as ranchos. However, the project area was not part of a rancho and was likely unoccupied. California seceded from Mexico in 1047, and the Gold Rush began in 1048, bringing many Americans to the region. As the Gold Rush wound down, many of them settled in the area and engaged in agriculture and other commercial activities. Viniculture and tourism both began in mid-nineteenth century in the region. The Marsh Creek Springs Resort, adjacent to the south side of the road, was constructed in 1927, but extensively damaged by floods in 1957 and 1962. The proposed project would not affect the resort. The Marsh Creek Bridge was built in 1948.

The Caltrans survey did not identify any archaeological resources in the project area. The project area has been extensively disturbed by road construction, and it is unlikely that any *native* sediments are present within the horizontal and vertical extent of ground disturbance. Tribal consultation by Caltrans did not identify any culturally significant or sacred lands. The Marsh Creek Bridge was determined not historically significant

Paleontological Overview

The Bureau of Land Management has developed a classification system based on the potential for the occurrence of significant paleontological resources in a geologic unit and the associated risk for impacts to the resource (BLM 2000; 2007). Any rock material that contains fossils has the potential to yield fossils that are unique or significant to science. However, geological formations that have the potential to contain vertebrate fossils are more sensitive than those likely to contain only invertebrate fossils. Invertebrate fossils found in marine sediments are usually not considered unique resources, because the geological contexts in which they are encountered are widespread and fairly predictable. Invertebrate fossil species are usually abundant and well-preserved. Therefore, when found in a complete state, vertebrate fossils are more likely to be a significant resource than are invertebrate fossils. As a result, geologic formations having the potential to contain vertebrate fossils are considered the most sensitive. Vertebrate fossil sites are usually found in non-marine, upland deposits (BLM 2007).

Soils in the projett irea where ground disturbance would occur are generally alluvially derived [Zamora silty clay loam, 2% to 5% slopes). Alluvial deposits typically contain only invertebrate fossils (if any), and those are out of original depositional context (BLM 2007).

a and b) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?

The proposed project would not cause a substantial adverse change to an historic or archaeological resource because it is unlikely that any such resources are present in the project area. Field survey did not identify archaeological materials or undisturbed native soils. Bridge 141 has been detennined not eligible for listing on the CRHR or the National Register of Historic Pl<1ces.

The County would stop constmction if any archaeological or historical resources discovered during constmction pursuant to our standard spedfk<ttions. Therefore, proposed project impacts would be less than significant.

c) Would the project directly or indirect y destroy a unique paleontological resource or site or unique geological feature?

The proposed project would involve some clearing and gr<1ding as part of the bridge replacement and shoulder improvements. However, these project acti\ ties are not expected to impact any paleontological resource or site or unique geologic fe<1ture because they occur primarily in alluvially derived soils. Therefore the project, would have no impact on paleontological resources or unique geological features.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

The proposed projet:t would not disturb any human remains because it is unlikely that any such remains are present in the project area. The proposed project would occur in previously disturbed sediments.

Construction work would stop if human remains are encountered. Procedures for the diswvery of human rem<Jins, in compliance with California Health and Safety Code (Health and Safety Code Section 7050.S[b)), will be included in the Inadvertent Discovery Plan described in checklist item c). Therefore, project impmts would be less tl1an significant.

e) Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Section 21074(a)?

Contrn Costa County h<1s communicated with the NAHC, and has sent a letter to a tribe that requested consultation in the area. No response has been received. No other historical or ethnographic sources suggest that a Tribal Cultural Resource may be present in the project vicinity. Therefore, project impats would be less than significan t.

VI. Geology and Soils	Potent ally Sigficant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potent al substant al adverse effects, including the risk of loss, injury, or death involving:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a kno\vn fault?	O	D		()
2 Strong seismic ground shaking?	O	()	181	D
3. Seismic-related ground failure including liquefaction?	O	O	181	()
4. Landslides?	D	O	O	:8J
b. **Result in substantial soil erosion or the loss of topsoil?**	D	O	181	D|
c. Be located on a geolog unit or soil that is unstable nrth Iivnnlrl hPrnmP uno;.t;:ihle ;.is ;ir st.flt of th project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	()	D	181	D
d. Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	()	D	D	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative vlastewater disposal systems in are(ls \Vhere sewers are not available for the disposal of wastewater?	()	D	()	
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	()	D	O	

Comment [JG69]: Consider Sliding triggered by excavations for retaining walls

Comment [ld70]: Need to consider sliding hillside or soil erosion if retaining walls are not constructed between construction work seasons.

Environmental Setting

Geology

The Quaternaly Alluvium and Great V:llley Sequence geological formations occurs beneath the project area. The Quaternary Alluvi u m form<1t iohnsists of consolidated and unconsolidated sediments and can cause localiied probl ems for building due to expansive clays.h illside earth flows <md unstable cut slopes. The Great Valley Sequence formation consists of hard marine sandstone. shale and

conglomerate. Foundation and slope stability c"\J n<litions are fair to good, subject to sliding where sheared, fractllred, or contorted (Contra Costa County 2005d).

Soils

There are two soil types located within the project footprint and four adjacent. The soils types within the project footprint indude Los Osos clay loam (50 to 75% slope) and Zamora silty clay loam (2 to 5% slope)). Los Osos clay lo;l m is generally associated with upl;md slopes and consists of loam, clay loam and unweather rock and is considered well drained and high erosion. Zamora silty clay Is usually associated with alluial fans, terraces, valley noors such as those found along Marsh Creek and consists of silt clay loam. Other soil types adjacent to the project include Los Gatos loam [30 to 50% slope), Los Gatos loam 50 to 75%). Los Osos clay loam (15 to 30% slope), and Rock outcrop Xerorthents association (NRCS 2015).

Seismic Hazard

Contra Costa County is subjr.et tn a high dte of seismic activity. The San Francisco Bay region has been affected by more than ten severe earthquakes during historic time. The proposed project location is approximately 05 mile from the Clayton section of the Greenville Fault Zone (California Deparnnent of Conservation 2010). The Clayton settion is a slip-strike fault and genernlly is poorly defined, and fault related topographic features are poorly developed. It is characterized by subdued saddles and subdued hill fronts. This dextral strike-slip fault zone borders the eastern side of Livermore Valley and is considered to be part of the larger San Andreas Fault system in the centr;ll Coast Ranges. The fault zone extends from northwest of Livermore Valley along the Marsh Creek and Clayton faults towards Clayton Valley (Bryant and Cluett 2002).

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

The rroject is not expected to expose people or structures to potential substantial adverse effects from a rupture of a known earthquake fault as the project area is not within a mapped Alquist-Priolo Fault Zone, and there are no known faults within the project area. While the Clayton section of the Greenville fault zone is located approximately 0.5 miles from the project area, there has been no documentation of dalmlgini; earthqu;rkes, historic surface faulting, or known micro seismic activity [Contra Costa County 2005). The proposed project does not include features that would increase risk to people or structures as it is primarily limited to replacement of an existing bridge, and shoulder widening of an existing roadway. Nevertheless, the proposed project design and construction would incorporate measures that are in accordance with local design practice and guidelines to ensure the new bridge would withstand seismic activity as defined in the Caltrans Highway Design Manual. Therefore, proposed project impacts would be less than significant.

2) Strong seismic ground shaking?

As discussed previously, the project area Is not located in a fault wne. The slip-snike fault located to iL west Is not considered to pose a risk of surface rnpture, but is considere<l a potential seismic source.

The project area is located within hard bed rock, which is considered to have the lowest damage susceptibility [Contra Costa County 2005). The proposed project is not expected to expose people or structures to potential substantial adverse effects as the project does not include features that would increase risk to people or structures as it is primarily limited bridge replacement and shoulder widening of an existing roadway. Nevertheless, the project design and constntction would incorporate measures that are in accordance with local design practice and guidelines to ensure that the project would withstand seismic activity as defined in the Caltrans Highway Design Manual. Therefore, proposed project impacts would be lessthan siБllillcant.

3) Seismic-related groundfailure, including liquefaction?

The project area is primarily located within a generally moderate to high liquefaction potential due to the soil deposition related to Marsh Creek (Contra Costa County 2005). The project design would incorporate design measures in accordance with local design practice and guidelinesas defined in the Caltrans Highway Design Manual which are intended to ensure that structures would withstand seismic activity and liquefaction. Therefore, proposed project impacts would be less than significant.

4) Landslides?

The project area is not located within a potential landslide area [Contra Costa County 2005). Therefore, the proposed project would have no impact.

Comment [ld71]: Please explain this: All of Marsh Creek is a slide area. Grader equipment keeps the road clear during the winter/rainy season for traffic to move through safely.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Minor grading and excavation associated with the bridge replacement would result in a negligible [illegible] exposure of soilsto wind erosion from grading and excavation activities. However, standard erosion control BMPs would be implemented during construction to minimize potential impacts. Therefore, proposed project impacts associated with soil erosion would be lessthan significant

Comment [JG72]: Conclusion needs m[illegible] site specific substantiation then consulting a small scale generalized map. Please provide evidence proving this point.

c) Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

The project area is not located in a geologic unit or soil that is considered unstable and likely to result in landslides. However, the project area is partially located within an area that could be susceptible to liquefaction. The project design and construction would incorporate recommended measures in accordance with local design practice and guidelines as defined in the Caltrans Highway Design Manual to ensure that the proposed project would withstand seismic activity and liquefaction. Therefore, proposed project impactswould be less than significant.

Comment [JG73]: Commenter disagrees with this conclusion. Commenter has pointed out possible conditons in downstream creek channel/channel slope adjacent to project limits that could be subject to SIGNIFICANT erosion or bank collapse from channel flow through the new bridge opening. Lower flow profile at bridge will translate to higher fow velocities in downstream reach of channel. Planned destruction of trees at edge project will weaken channel banks and reduce erosion resistance. This is a SIGNIFICANT impact which needs to be considered in the project design

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

The project area is located on silty clay loam, which contains soils with expansive properties. The proposed project would be engineered according to standard industry practice, which includes design considerations for soil type. The project design would incorporate design measures in accordance with local design practice and guidelines asdefined in the Caltrans Highway Design Manual which are intended to ensure that structures would withstand seismic activity and liquefaction. Therefore, proposed project impacts would have no impact

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

The proposed project would not require septic or other waste systems in the shoit or long terms. Therefore, the proposed project would have no impact

VII. Greenhouse Gas Emissions	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	()	D		O
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	D	O		O

Greenhouse gases (GHGs) are atmospheric gases that capture and retain a portion of the heat radiated from the earth ;ifter it has been heated by the sun. The primary GHGs are carbon dioxide (C02), methane (CH4), and nitrous oxide [N20), ozone, and water vapor. While GHGs are natural components of the atmosphere, CO., CH4, and *N1O.* are also emitted from human actMties and their accumulation in the atmosphere over the past 200 years has substantially increased their concentrations. This accumulation of GHGs has been implicated as the driving force behind global climate change.

Jiuman emissions of CO,are largely by-products of fossil fuel combustion, whereas CH4 results from off-gassing associated with organic decay processes in agriculture, landfills,etc. Other GH Gs, including hydronuorocarbons, pernuorocarbons, and sulfur hexafluoride, are generated by certain industrial processes. The global warming potential of GHGs are typically reported in comparison to that of CO.,, the most common and influential CHG, in units of "carbon dioxide-equivalents" (C02e).

There is international scientific consensus that human-'\used increases in GHGs have and will continue to contribute to global warming. Potential glob:il warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone da)S, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habi lt and biodiversity.

Regulatory Background

Assembly Bill 32 (AB 32 - Nttiiez, Chapter 488, Statutes of 2006), the California Clohal Warming Solutions Act, requires CARB to lower State GHG emissions to 1990 levels by 2020-a 25% reduction statewide with mandatori• caps for significant GHG emission sources. *J\B* 32 directed CARB to develop discrete early actions to reduce GHG while preparing the Climate Change Scoping Plan in order to identity how best to reach the 2020 goal.

Statewide strategies to reduce GHG emissions to attain the 2020 goal include the Low Carbon Fuel Standard, the California Appliance Energy Efficiency regulations, the Califomia Renewable Energy Portfolio standard, changes in the motor vehicle corporate average fuel economy standards, and other early action measures that would ensure the state is on target to achieve the GHG emissions reduction goals of AB 32.

In an effort to make further progress in attaining the longer-range GHG emissions reductions requiretl by\B 2, Governor Brown identified in his j;inuary 2015 inaugural address an <iddi tional goal (i.e., reducin GHG emissions to 40% below 1990 levels by 2030) to be attained by implementing several key

dimate change strategy "pillars" (1) reducing present petroleum use in cars and trucks by up to 50%; (2) increasing from one-third to 50% the share of California's electricity derived from renewable sources; (3) doubling the energy efficiency sa\ngs achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived GHGs; (5) managing fann and rangelands, forests and wetlands to more efficiently store carbon; and (6) periodically updating the State's climate ad<1ptation strategy.

Building on state and regional climate protection effo1ts, the BAAQM D has adopted a resolution (13AAQMD 2013) to reduce GHG emissions by:

- Setting a goal for the Bay\rea region to reduce GHG emissions by 2050 to 80% below 199() levels.
- Developing a Regional Climate Protection Strategy to make progress towards the 2050 goal, using the Air District's Clean Air Plan to initiate the process.
- Developing a 10-point work program to guide the Air District's climate protection activities in tlle-n.ea?· t.erm.

Environmental Setting

CARB estim<1te<l that in 2011, California produced 459 million gross metric tons of CO_2e. CARB found that transportation is the source of 37% of the state's GHG emissions, followed by industrial sources at 23% and electricity generation (both in-state and out-of-state) at 18%. Agricultural uses contributed 8%, residenti<ll uses contributed 7% and commercial uses contributed 5% (CARB 2015).

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 40% of the Bay Area's 86.6 million metric tons of CO_2e emitted in 2011 (BAAQM D 2015). Industrial/commercial accounts for approximately 36% of the Bay Area's GHG emissions followed by electricity generation at 14%, residential at 1J%, off-road equipment at 1.5%, and agriculture at 1.5%.

The 13AAQMD is the primary agency responsible for air quality regulation in the nine-county San Francisco Bay Area Air Basin. As part of that role, the BAAQMD has prepared *CEQA Air Quality Guidelines* (BAAQM D 2012) that provide CEQA thresholds of significance for operational GHG emissions from land use projects (i.e., 1,100 metric tons of CO_2e per year, which is also considered the definition of a cumulatively considerable contribution to the global GHG burden and, therefore, of a significant cumulative impact), but has not defined thresholds for project construction GHG emissions. The *CEQA Air Quality Guidelines* methodology and thresholds of significance have been used in this Initial Study's analysis of potential GHG impacts assotiated with the proposed project.

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Although the BAAQMD has adopted 1,100 metric tons/year as a GHG operational emissions significance criterion for development projects, there is no similar adopted threshold for project construction emissions. Construction of the proposed project would generate a total of about 102 metric tons of GHG during its 7 month construction period. Because construction emissions would be short-term and would cease upon completion of construction, GHG from construction activities would not substantially

contribute to the global GHG emissions burden. Also, the proposed project is a routine transportation infrastrncture upgrade that would not affect regional population, employment or transportation pmjections upon wh ich regional GIIG inventories are based, or conflict wi th any County or State polides to red uce GHG emissions. The)))'Oposed pmject would not conflict with ap1 llicable plans, policies, and regu lations <ldopted for the purpose of red ucing CHG emissions <rnd, thus, would h:ive ii Jess than significant impact.

b) Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not wnOict with i\B 32 and the strategies being implemented to achieve its goals, orthe BAAQM D's Resolution and, thus, would have a less than significant impact

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Create a sigficant hazard to the public or the environment through the routi ne transport, use, or disposa lof hazardous materials?	D	D		D
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditons involving the release of hazardous materials in to the environment?	D	D		D
c. Emit hazardous emissions or involve handling huzu;-a-s-us<Jr<;c-ute!y haz dou ma {e-ra!s, substances, or waste within one-quarter mile of an existing or proposed school?	D	D	()	
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.S and, as a result, would it create a significant hazard to the public or the environment?	D	D	()	
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	()	D	D	
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	D	D	()	
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	D	D		O
h. Expose people or structures to a significant risk of loss injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	D	O	()	

Comment [JG74]: Existing Fire Hydrant in front of 12801 MCR must be relocated to suitable location in front of residence.

Regulatory Background

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. The release of hazardous materials into the environment could potentially contaminate soils, surface water, and groundwater supplies. An Initial Site Assessment was prepared for the proposed project (BASELINE 2014) to identify potential sources of contamination along the site. The potential sources of

-ontamination were evaluated as Recognized Environmental Conditions in accordance with the American Society of Testing and Materials (ASTM) Method E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmenral Assessment Process (BASELINE 2014).

a and b) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The proposed project would not increase the capacity of Marsh Creek Road; therefore, no long-term increase in the routine transport, use, or disposal of hazardous materials is expected. However, during construction, there would be an increased potential for the accidental release of hazardous substances through the use of construction equipment, including refueling operations.

In addition, two sites were identified within a 1.5-mile radius of the project: the abandoned Mt. Diablo Mercury Mine Dump Site (approximately 1.5 miles away) and the Marsh Creek Ranch (approximately 0.5 mile away (Figure 5). Materials were stockpiled at Mt. Diablo Mine Dump Site during the acid mining process for mercury. Acid mine drainage has routinely overflowed three surface impoundments and made its way to Horse and Dunn Creeks and then into Marsh Creek. Based on available information, Marsh Creek sediments may contain mercury and other metals. These metals could be released to surface waters if those sediments were disturbed (BASELINE 2014). BMPs, including the preparation of a site water pollution control plan (WPCP) or stormwater pollution prevention plan (SWPPP) would be implemented to minimize the release of sediments and soils into surface waters during construction.

The Marsh Creek Ranch site is listed as having an inactive 1000-gallon underground storage tank. Due to its distance from the project site and available information, this site would not have the potential to impact the project site (BASELINE 2014).

The project would require that the contractor prepare a WPCP or SWPPP to identify safety and BMPs (e.g., placement of drip pans under stationary equipment, routine equipment inspections, and on-site spill cleanup materials) to prevent accidental releases of hazardous substances and potential worker exposure. The proposed project would also require the contractor to contact Underground Service Alert (USA) prior to conducting any work that could potentially impact utilities (BASELINE 2014). For these reasons, project impacts would be less than significant.

c) Would the project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are no existing or proposed schools identified within 0.25 mile of the project area. The nearest school is Mt. Diablo Middle School, which is approximately 4.5 miles to the west in the City of Clayton. Therefore, the proposed project would have no impact to schools.

d) Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The proposed project is not located on a site that is included on a list of hazardous materials sites. As mentioned above, the nearest known hazardous sites are approximately 0.5 mile away. Therefore, the proposed project would have no impact.

e and f) Would the project be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area? Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?

The nearest airport to the project area is Buchanan Air Field, which is operated by Contra Costa County and located over 12 miles to the northwest in the City of Concord. There are no known private airstrips within a 2-mile radius of the project area. Therefore, the proposed project would have no impact.

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan in the short or long terms. Access for emergency vehicles would be provided at all times during construction. Therefore, proposed project impacts would be less than significant.

h) Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The project area is located within high fire hazard severity zone (CalFire 2007). The project proposes to replace existing steel and concrete structures with a new steel and concrete structures. These materials are not considered flammable and would not contribute to an increased risk due to wildland fires. Thererore, the proposed project would have no impact.

IX. Hydrology and Water Quality	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	D	D	[3	D
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	D	D	D	[6J
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	D	D		D
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	D	D		D
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	D	D		D
f. Otherwise substantially degrade water quality?	D	D	[S]	D
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	D	D	D	181
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	D	D	[Z	D
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	D	0	D	
j. Contribute to inundation by seiche, tsunami or mudflow?	D	D	D	

Comment [JG75]: Question B.-Commenter contends the presence of existing well, natural springs in creek at project site not addressed at all needs to be evaluated in detail prior to drawing any conclusion. This a significant impact.

Comment [ld76]: Significant damage to immediate down stream channel and channel bank adjacent to the project wil occur without significant positive mitigation is not in the plan.

Comment [JG77]: Design needs to consider level of protection actually provided under present site condition and extent of potential construction disturbance (such as damage/killing of trees rooted in channel walls immediately adjacent planned structure. Question c answer be reconsidered in light of potential significant increase to final channel protection scope. This change may be more extensive than considered in the current document, or minimized if bridge location is moved upstream as mitigation to address other significant project impacts.
Please note that property owner of 12801 MCR exclusively bears the risk of downstream damage

Environmental Setting

Hydrologic Resources

The Marsh Creek watershed drains the east side of Mount Diablo. The portion of the watershed that drains the project site is 23.1square miles. One of Marsh Creek's larger tributaries is Curry Canyon Creek; it.S confluence is located approximately 3.5 miles upstream and southwest of the project site as described further in the Location Hydraulic Study prepared for the proposed Project (LVRECO 2015). Downstream of the pmject site, Marsh Creek collects drninages from other tributaries such as Sycamore Creek and Briones Creek before reaching the Marsh Creek Reservoir, which islocated approximately 11 miles downstream least) of the project site. Downstream of Marsh Creek Reservoir, Marsh Creek continues flowing northerly through the cities of Brentwood and Oakley before discharging into the San Joaquin River (WRECO2015).

Flood Hazard Areas

Marsh Creek is classified a Special Flood Hazard Area Zone A, which represents areas within the 100-year base **flood plain where the base flood elevation has not been determined. The existing bridge stmcture constricts the Marsh Creek channel, resulting in flood waters backing up and inundating the underside of the bridge (WRF.CO 2015).**

Comment [JG78]: Provide documented evidence to support this statement. Residents of 12801 MCR have NEVER observed the creek to rise to the level indicated in 46 years. This is critical to assess the suitability of the project as proposed in 65% design.

Water Quality

Marsh Creek is designated as an impaired waterbody under the Federal Clean Water Act due to releases **of nicrcury and other metals frorn the abandoned Mt. Diablo Mercury Mine. The abandoned mercury** mine is located southwest of the intersection of Marsh Creek Road and Morgan Territory Road, approximately 15 miles from the project area. The mine operated from 1863 to '1974. Mine waste was stockpiled during mining operations. Acid mine drainage has routinely overflowed three surface Impoundments at the base of the mine waste, and into the Horse and Dunn Creeks, which then discharge to Marsh Creek and ultimately the Sacramento Delta. Investigation and cleanup of this site is taking place under the oversight of the Central Valley Regional Water Quality Control Board (RWQCB 2013; BASELINE 2015).

a) Would the project violate any water quality standards or waste discharge requirements?

The drainage area in the project area isexpected to be subject to regulation by USACE and RWQCB. Impacts to the drainage area would require authorization from the USACE Regional General Permit for small activities in the HCP/NCCP service area and a Water Quality Certification from RWQCB for any discharges.

A National Pollutant Discharrge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activties. Municipal stormwater discharge in eastem Contra Costa County are regulated under the East Contra Costa County Municipal NPDES Pennit. To obtain coverage under the Construction Gener:ll Pertnit, the project applicant must provic.le via electronic submittal.a Notict' of Intent, a WPCP or SWPPP.and other documents required by lattachment B of the Construction General Permit. The Munidpal Permit is overseen by RWQCB (BASELINE 2015).

The proposed project would be required to implement BMPs to control sediment and erosion during construction activities, as well as to comply with the provisions of the NPDES Construction General Permit, which would include the preparation and implementation of an SWPPP. The proposed project would also need to comply with provision C.2.e of the Municipal Permit, which requires BMPs to control sediment and erosion during construction and maintenance of rural public works and requires bridge crossing design to include measures to reduce erosion and maintain natural stream geomorphology (OASELINE 2015). Therefore, proposed project impacts would be less than significant.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

The proposed project would not affect groundwater supply; therefore, there would be no impact.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?

The proposed project would modify the existing Marsh Creek stream channel within the project area, including removal of the existing bridge abutments and construction of new abutments that are further apart to allow for a less constricted stream channel. The abutments would be designed following Caltrans standards to minimize the potential for erosion and minimize the potentials for siltation. The design would widen the currently incised channel around the existing bridge to allow for lower velocity flows during storm events. Therefore, the proposed project would have a less than significant impact.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?

The existing bridge structure constricts the Marsh Creek channel, resulting in flood waters backing up and inundating the underside of the bridge. The new bridge structure would be constructed with a wider span between the abutments to allow flood water to travel under the bridge during high flow events. The new bridge is expected to provide adequate freeboard between the bottom of the bridge and flood waters during a 100-year storm event (WRECO 2015). Therefore, the proposed project would have a less than significant impact.

e) Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The wider lanes and shoulders to be built as part of the proposed project would result in a minimal increase in impervious surface as compared to existing conditions. Following construction, use of the project site (as a bridge and roadway) would result in pollutant discharges from existing and new impervious surfaces similar to those under current conditions. Municipal Permit Provision C.2.e would require implementation of BMPs for erosion and sediment control during maintenance of the project.

Comment [ld79]: There is ground water flow in the area of construction coming from underground springs and a well that filters under ground to the creek.
The perennial inflow is due to an abandoned 30' deep well hand excavated and wood cribbed to an opening approx.. 6'X6'. The well is reported by the property owner to be located approximately 10' to 20' north of the existing R/W (offset ~ 50' or so left perpendicular to edge exist'g pavement at approx. plan MC station 337+70.
Well was reported to have been loosely backfilled with gravel and dirt by property owner to remove a safety hazard about 15 years ago. Well was reportedly hand dug by Chinese laborers well over 100 years ago. This well is a likely source of springs observed by 12801 residents in the creek bank feeding perennial water in creek immediately downstream of the existing bridge. It has sustained a substantial population of wildlife both resident (frogs and turtles, seasonal nesting ducks, small fish(~3" in length) a transient wildlife seeking water in dry mo.. (deer and birds, coyotes, kit fox, bats, the common ones-racoons, .

Comment [ld80]: More study in detail needs to be done here.
When the stream channel within the project area is modified and new abutments are further apart to allow less constricted stream channel then the flow down stream becomes impeaded and erodes the present soil because of narrow pass through for the water to travel.

Comment [JG81]: The discussion needs to be expanded to include effects on existing channel conditions immediately adjacent to the county right of way property. The existing right side channel wall is stabilized within the right of way and immediately downstream by several old trees whose root systems are the primary armoring of the sidewalls. There are patches of very old masonry slope protection in places along this section. Furthermore, the channel slightly bends to the left in this area. The removal of the trees is required by the planned construction; and there is no evidence in the current design that planned improvements will protect the channel wall immediately downstream adjacent to the slope protection within the right of way. This is a significant local impact that puts the adjacent property owner (Residence 1) at significantly increased risk from channel wall erosion and bank recession/collapse during high runoff events.

and Provision C.2.e (Z)(g) requires that the bridge design use measures to reduce erosion. The proposed project is not subject to C.3 requirements because it is a road project that does not create any additional traffic lanes. Therefore, the proposed project would have a less than significant impact.

f) Would the project otherwise substantially degrade water quality?

The proposed project would not increase the vehicle capacity of Bridge 141. Pollutants generated from the proposed project are expected to be similar to those under current conditions. Appropriate authorizations related to water quality would be obtained from regulatory agencies prior to construction. The bridge would be constructed to current design standards and project construction would implement BMPs during construction to avoid adverse impacts to the drainage area. Therefore, project impact would be less than significant.

g) Would the project place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project would not construct any house within the 100-year floodplain; therefore, the proposed project would have no impact.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect floodflows?

The existing bridge structure constricts the Marsh Creek channel, resulting in flood waters backing up and inundating the underside of the bridge. The new bridge structure would be constructed with a wider span between the abutments to allow more water to travel under the bridge during high flow events. The new bridge is expected to provide adequate freeboard between the bottom of the bridge and flood waters during a 100-year storm event (WRECO 2015). Therefore, proposed project impacts would be *less* than significant.

i) Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project does not include the construction or modification of dams or levees; therefore, the proposed project would have no impact.

j) Would the project contribute to inundation by seiche, tsunami, or mudflow?

The proposed project is located in the east-central part of the County and is not subject to seiche, tsunami, or mudflow; therefore, the proposed project would have no impact.

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

(a) Would the project physically divide an established community?

The proposed project would not physically divide an established community; on the contrary, it would likely result in improved commuter accessibility to areas on either side of the bridge. Therefore, the proposed project would have no impact.

(b) Would the project conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The Land Use Element of the County's General Plan has zoned the project area for agriculture, and the proposed project would not result in the alteration of this land use designation. The proposed project is also consistent with the General Plan's Transportation Circulation Element's policies, including the following:

- Policy 115-A: To provide a safe, efficient, and balanced transportation system.
- Policy #5-9: Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.
- Policy #5-17: The design and scheduling of improvements to arterials and collectors shall give priority to safety over other factors including capacity.

Therefore, the proposed project would have no Impact.

(c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The project area is located within the East Contra Costa County HCP/NCCP inventory area and is a covered activity. Compliance with the HCP/NCCP is *covered* under the Biological Resources section. Because the project complies with the HCP/NCCP, the proposed project would have no impact.

Comment [JG82]: Commenter notes concern that absent of long term plan for future use of the MCR corridor through Mt. Diablo foothill zone makes any answer to question non-informative relative to an accepted policy of the County.

Comment [JG83]: This policy is general and not specific; document needs to discuss how the project complies with the policy; discussion needs to address unique location and existing state of MCR and resources needed to make it "safe".

Comment [JG84]: This statement needs to be elaborated on to discuss the amount of "improvement" provided by this project in relation to the entire 12 miles + Marsh Creek Road corridor.
Interesting, again how does project fit into overall MCR safety improvement strategy? No discussion to help acces whether project is actually in line with realistic plan (affordable, doable with some timeframe consistent with General Plan timeframe) to improve overall safety of MCR.

Comment [JG85]: Conclusion requires substantiation as detailed above.

Comment [JG86]: Need to provide evidence to substantiate this conclusion. Detail on specific elements of the referenced plan

XI. Minoral Resources	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and tho residents of the state?	D	D	O	
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan.specific plan.or other land use plan?	O	O	O	

Environmental Setting

Mineral resources such as crushed rock and sand, among other resoun-es.are important to the County because these resources support the construction of homesand a mix of other industries. The mineral Industry and associated selvices provide significant employment in the County. The County has identified three distinct mineral resources areas: a clay deposit near the town Of Port Costa. Domenglne Sandstone in the eastem part of the County near llyron: and a Diabase l(r<lvel deposit 1101th of Mt. Dlablu near Clayton. Gravels from the Diabase deposi are used in road base as well as riprap for streambank protection. There are two active gravel mines within the Diabase gravel dellOsit approximately 5.5 miles to the west towards the town of Clayton ('Contra Costa County 2005).

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

There are no mapped mineral resources or active mineral extractions activities within the project area. Therefore. the proposed project would have no impact

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

There are no mapped mineral resources or active mineral extractions <activities within the project area. Therefore. the proposed project would have no impact.

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

Regulatory Background

The effeccs of noise on humans is subjective but often includes annoyance, nuisance, and dissatisfaction. Persistent and escalating noise levels can affect a person's overall health and increase the chance for stress-related illnesses, high blood pressure, hearing loss, speech interference, sleep disruption, and lost productivity (USEPA 2010). The main contributors to a community noise problem are often transportation sources such as highways and railroads because they are the most pervasive and continual. Temporary noise sources su'h as a jackhammer or bulldozer at a construction site can also contribute to the noise problem. The severity of a noise problem can be analyzed based on the relationship between the noise source and the person or place exposed to the noise (sensitive receptor), as well as the distance and path the noise would travel from the noise source to the sensitive receptor. Because the human ear is not equally sensitive to all frequencies and sound pressure levels, several methods of expressing average noise levels over a period of time have been developed.

Sound intensity (loudness) perceived by the human ear is typically measured in A-weighted decibels (dBA) with a range of 0 (threshold of hearing) to 140 (threshold of pain); the higher the decibels, the greater the intensity. Exposure to high noise levels affeccs the human body, with prolonged exposure to 75 decibels (dB) or above inreasing tension and thereby affecting blood pressure, heart function, and the nervous system; 85 dB or above resulting in physical damage to hearing; and 90 dB or above resulting in permanent cell damage. Prolonged exposure to 140 dB or above may cause a feeling of pain

in the ear, and 190 dB or above would likely rupture the eardrum and permanently damage the inner ear.

Human sound perception, in general, is such that a change in sound level of 3 dB is just noticeable; a change of 5 dB is clearly noticeable; and a change of 10 dB is perceived as doubling or halving the sound level. A doubling of actual sound energy is required to result in a 3 dB (i.e., barely noticeable) increase in noise from existing conditions; In practice, for example, this means that the volume of traffic on a roadway typically needs to double to result in a noticeable increase in noise (ICF International 2014).

When distance is the only factor considered, sound levels from isolated point sources of noise typically decrease by about 6 dB for *every* doubling of distance from the noise source. When the noise source is a continuous line, such as vehicle traffic on a highway, sound levels decrease by about 3 dB for every doubling of distance. Sound attenuation can also be affected by topographic features and structural barriers that absorb, reflect, or scatter sound waves, as well as atmospheric conditions (i.e., wind speed and direction, humidity levels, and temperatures) and the presence of dense vegetation.

Sound from multiple sources operating in the same area (i.e., pieces of equipment operating on a construction site) would result in a combined sound level that is greater than any individual source. The combined noise level produced by multiple noise sources is calculated using logarithmic summation. For example, if one bulldozer produces a noise level of 80 dBA, then two bulldozers operating side by side would generate a combined noise level of 83 dBA.

Section 65302(f) of the California Government Code requires that all city and county general plans include a noise element that identifies and provides mitigation for any existing and perceivable noise problems. The Noise Element of Contra Costa County's General Plan follows the California Department of Health Services *Guidelines for the Preparation and Content of the Noise Element of the General Plan*, which defines noise metrics, discusses the process of noise element development, and presents land use compatibility guidelines based on various noise levels. Contra Costa County, however, does not have a noise ordinance and therefore does not specify construction or operational noise level limits.

The General Plan's standard for outdoor noise levels in residential areas is 60 dBA. However, based on the traffic noise contours depicted in the Noise Element, outdoor noise levels at existing residences along Marsh Creek Road were estimated to be greater than 60 dBA. Because the General Plan does not establish an allowable project-related operational noise increase for existing residences with ambient noise levels greater than 60 dB, this CEQA analysis will consider the project to have a significant operational noise impact if it would create a traffic noise increase of greater than 3 dBA over existing ambient noise levels because the threshold of perceptible change is generally considered to be 3 dBA (ICF International 2014).

The Noise Element of the County's General Plan specifies that construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses, and should be commissioned to occur during normal work hours. This CEQA analysis will consider the project to have a significant construction noise impact if it would create a temporary noise increase of greater than 10 dB *over* the existing ambient noise level due to construction-related activities following the implementation of the above noise control and administrative measures. An increase of 10 dB is generally perceived as doubling the sound level.

Environmental Setting

Noisesensitive receptors nearest to the project site include two residences and one commercial facility commonly used for weddings. Locations and distances from these receptors to the project site are pro, ded in Table 6.

Table 6
Nearby Receptors Sensitive to Noise

Receptor	Address	Approximate Distance between Receptor and Existing Roadway Centerline/Potential Stagng Area[1]	Shielding	Existing condition between Receptor and Roadway
Residence 1	12801 Marsh Creek Road	199 feet (295 feet from northern staging area and 498 feet from southern staging area)	Landscape trees and native trees	Landscape trees and native trees
Residence 2	12807 Marsh Creek Road	428 feet (540 feet from northern staging area and 737 feet from southern stagig area)	Landscape trees and native trees	Landscape trees and native trees
Commercial Facility	12510 Marsh Creek Road	550 feet (488 feet from northern staging area and 368 feet from southern stagig area)	Landscape trees and native trees	Landscape trees, native trees, and a paved parking lot

Comment [ld87]: Please explain how the noise is shielded by landscape trees and native trees when the native trees between the project and the residence are removed?

The proposed project is located in a rural, predominantly agricultural (grazing) area. As such, ambient noise levels are less than in a more urban environment, and primarily stem from vehicular traffic along Marsh Creek Hood. Uased on the truffle noise contours provided in the Noise Elenlent of the County's General Plan, the traffic noise level of Marsh Creek Road between Clayton and Deer Valley noud is estimated to be 65 dBA, which is within the typical hourly noise level range (60 to 65 dBA) for suburban arterial roadways (ICF International 2014).

a) Would the project cause exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

It is anticipated that the proposed project would use standard construction equipment, which includes but is not limited to: large rotary drilling machine, crane, excavator, tractor, back hoe, grader, dump truck, water trailer, compactor, skid steer, pick-up trucks, paver, hopper, and generator, no pile driving will occur. Table 7 summarizes the typical noise levels produced by construction equipment commonly used on road construction projects.

Comment [ld88]: NES report reads as follows "The reinforced concrete bridge abutments will be supported by deep piles that will either be driven or drilled to a depth of 60 feet." Please clarify.

[1]Distances reflect the increase in proximity from Residences 1 and 2 resulting from the bridge replacement and road realignment.

Table 7
Typical Noise Levels of Road Construction Equipment

Equipment	Typical Noise Level (dBA at 50 feet from source)
Paver	89
Jackhammer	88
Truck	88
Concrete Mixer	85
Grader	85
Loader	85
Mobile Crane	83
Compactor	82
Excavator	81
Generator	81
Backhoe	80

Source: Federal Transit Administration 2006.

A reasonable worst-case construction noise level assumes that the two loudest pieces of equipment (paver and jackhammer) would operate concurrently throughout the day, which would result in a maximum value of 91.5 dBA.

The project would remove approximately 6 riparian trees and 3 non-native woodland trees to the east of the bridge on the north side of the roadway. These trees provide some screening from noise due to their location near the stream. However, both residences are set back from the roadway approximately 90 to 120 feet and would retain landscape trees. The project would remove 2 non-native woodland trees to the south, but the majority of native and landscape trees would remain and continue to shield the commercial facility from noise.

Construction activities are anticipated to be conducted in phases over the course of approximately two years, with construction work occurring between 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on weekends. Compared to existing conditions, construction activities would not increase noise levels at the Commercial Facility (550 feet away) and would minimally increase noise levels at Residence 2 (from 65 dBA to 66 dBA, 428 feet away). Construction activities could substantially increase noise levels at Residence 1 (199 feet away) from 65 dBA to 84 dBA which would be considered a significant construction impact; however, due to the intermittent nature of construction, construction noise would likely remain considerably lower at Residence 1 most of the time. Additionally, implementation of the following equipment noise controls and administrative measures, as outlined in the project's Noise Technical Memorandum, (Contra Costa County 2014) would reduce this impact to a less than significant level:

1. Use newer equipment with improved muffling and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. Newer equipment would generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise

Comment [ld89]: Please revisit your drawings with tree removal. The count of trees here is only in the riparian area. What about the staging areas that affect over 20 healthy trees just to store equipment and job supplies. With the additional trees to be removed the almost entire habitat area will be destroyed (with exception of 2 mature sycamore trees).
The trees in this area also serve as a sound barrier to the noise created by the events West of the project at Marsh Creek Springs. This privacy and buffer will be truncated (destroyed). Tree buffer needs to be restored and mitigated to equivalent level as to what is presently there.

Comment [ld90]: This is not a commercial facility it is residential and event area which often times has large amounts of overflow parked vehicals along the road on both sides of Marsh Creek Road from the address of 12510 to 12801 and on to 12807.

Comment [JG91]: Daily schedule described will be a substantial disruption to residents. Working hours need to be no later than 5 PM on weekdays and weekend work only in extreme circumstances to maintain contract schedule.

Comment [ld92]: More defined times of construction including onsite servicing of equipment.
More defined course of construction duration "approximately two years" all other reports state two seasons including this one.

Comment [JG93]: Statement that equipment noise controls and "intermittent nature of construction" will reduce impacts to Resident 1 to less than significant level needs substantialtion. The commenter contends that the contractor building the project will be contractually tied to a period of performance and subject to liquidated damages for late completion. That the work will be "intermittent" to the point the writers suggest is ridiculous to anyone familiar with properly designed public works construction.
The residents at Residence 1 are retired people living at that location live there all the time. They will be exposed to construction operations essentially the entire duration of the project. Almost all of the work will be right next to Residence 1 and involve demolition and other significant noise generation sources such as air compressors, air powered tools, material handling and equipment operating under substantial loads. All equipment is equipped with highly audible backup alarms which will be extensively activated due to constricted work areas around the bridge site.

control devices (eg., mufflers and shrouding, etc). Stationary noise generating equipment would be located as far as possible from sensitive receptors.

2. Turn off idling equipment.

3. The County would notify residents adjacent to the project site by letter prior to construction. The letter will include the hours of construction and the name and telephone number of the Resident Engineer who will be on-site and available to address residents' concerns

4. The County would maintain good public relations with the community to minimize objections to the unavoidable construction impacts. Provide frequent activity updates of all construction activities.

5. The County would limit construction to the hours between 7:00 a.m. and 7:00 p.m. No night work is anticipated for this project and work may be scheduled during weekends (with prior County approval). Weekend work as needed would be limited from 9:00 a.m. to 5:00 p.m.

The bridge will not *move* closer in proximity to the commercial facility, potential project operational noise impacts could stem from moving the bridge and roadway alignment closer to Residences 1 and 2. Specifically, the bridge would move approximately 30 feet closer to Residence 1 and the roadway would move approximately 10 feet closer to Residence 2. However, due to the following considerations, operational noise impacts would be negligible:

- No increase in vehicular traffic is anticipated to occur as a result of the proposed project.
- The slightly closer proximity of the bridge or roadway to the residences would not result in a significant permanent increase in noise levels at the residences. Based on the Noise Element of the County's General Plan, the current day-night average sound level 100 feet from the project site is estimated to be 65 dBA. Relocation of Residence 1 approximately 30 feet closer to the project site would result in a 2.82 dBA increase in noise, while relocation of Residence 2 approximately 10 feet closer would result in a 1.02 increase in noise. These increases are below the 3 dB fluctuation required to be perceived by the human ear, as well as the 3 dB increase assumed to result in a significant operational noise impact.

For the above-noted reasons, the proposed project would result in a less than significant impact.

(b) Would the project cause exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Traffic traveling on roadways is rarely the source of perceptible ground borne vibration. Exceptions to this occur when there is a significant discontinuity in the roadway surface which can impart energy into the ground that can be perceived as ground borne vibration. Because the proposed project is not anticipated to increase vehicular use of the bridge or corresponding roadway, and the road pavement would be smoother following construction, the proposed project would result in no impact on ground borne noise levels.

Construction activities, on the other hand, may generate localized ground borne vibration at sensitive receptors, especially during the operation of high-impact equipment. Table 8 depicts vibration levels of proposed construction equipment.

Table 8
Typical Vibration Levels of Proposed Construction Equipment

Equipment	Vibration Level (VdB) at is feet 1
Small Bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large Bulldozer	87

Note: VdB = vibration level

The proposed project would not use any pile driving equipment (which is a change from what was originally analyzed in the Noise Technical Memorandum; Contd Costa County 2014). Operation of the equirment listed above could result in nearby sensitive receptors experiencing vibration levels as high as 60 VdB at 199 feet (Residence 1), 50 VdB at 4211 feet (Residence 2), and 47 VdB at 550 feet (Comoierci:il Facility)." As indicated by the FTA, "human response to vibration is not usually significant unless the vibration exceeds 70 VdB" (FTA 2006). As such, it is likely that the nearby sensitive receptors would not perceive increased vibration levels during construction. Additionally, because construction would be temporary and localized, and would adhere to the equipment noise controls and administrative measures outlined in the project's Noise Technical Memorandum (Contra Costa County 2014), the proposed project wuultl result in no i m liact.

(c) Would the project cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?

As discussed in checklist item a), the location of the replacement bridge and road realignment could increase noise levels at nearby residences. However, these increases would be below the 3 dBA fluctuation required to be perceived by the human ear as well as the 3 dBA increase assumed to result in a significant operational noise impact. Therefore, the proposed project would result in a less than significant Impact.

(d) Would the project cause a substantial temporary increase in ambient noise levels in the Project vicinity above levels existing without the Project?

As discussed in checklist item a), compared to existing conditions, construction activities would not increase noise levels at the Commercial Facility (550 feet away) and would minimally increase (less than 10 dBA) noise levels at Residence 2 (from 65 dBA to 66 dOA, 428 feet away). However, construction activities could substantially increase (more than 10 dUA) noise levels at Residence 1 (199 feet away)

The cypical vibration levels of construction equipment at 25 feet are based on data provided in Table 12-2 of the FTA 2006 Transit Noise and Vibration Impact Assessment and then converted to VdB using the FTA's calculation of: Vdn = 20 x log 10 (PPV/PPV ref), where PPV ref = 1x 10 inches per second.

[4] Per FTA guidance, the vibration levels of proposed construction equipment at other distances were calculated using the following equation: PPV at Distance D = PPV (at 25 foot) x ([25/D] ") and then converted to VdB using the FTA calculation of: VdB = 20 x log 10 (PPV/PPV ref), where PPV ref = 1 x 10 inches per second.

[5] Distances reflect the increase in proximity from Residences 1 and 2 resulting from the bridge replacement and road realignment.

from 65 dBA (existing ambient noise level) to 84 dBA. Due to the intermittent nature of construction, construction noise would likely remain considerably lower than this value at Residence 1 most of the time, and implementation of the equipment noise controls and administrative measures outlined in the project's Noise Technical Memorandum (Contra Costa County 2014) would reduce impacts at Residence 1 to a less than significant level. Therefore, the proposed project would result in a less than significant impact.

(e) For a Project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the Project area to excessive noise levels?

There is no public airport located within two miles of the project area. The nearest airports are located 13 miles from the project site: Buchanan Airport approximately 13 miles northwest, and Byron Airport approximately 13 miles southwest. Therefore, the proposed project would have no impact.

(f) For a Project located within the vicinity of a private airstrip, would the project expose people residing or working in the Project area to excessive noise levels?

The project area is not located in the vicinity of a private airstrip; therefore, the proposed project would have no impact.

XIII. Population and Housing	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	::J	O	O	
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	O	O		O
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	O	O	()	

Environmental Setting

Section 15126.2(d) of the CEQA Guidelines states that agencies should discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. The discussion should also include the ways the project would remove obstacles to population growth. Increases in the population may put additional burden on community service facilities, requiring construction of new facilities that could cause significant environmental effects.

a) Would the project induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

The proposed project does not propose new housing or businesses, but would improve the structurally deficient bridge that is a part of Marsh Creek Road. The proposed project would not increase the vehicle capacity of the bridge. Therefore, the proposed project would have no impact.

b) Would the project displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?

The proposed project may necessitate the temporary or permanent acquisitions of right-of-way in order to accommodate the new alignment of the bridge. The following parcel acquisitions may require right of way acquisitions: 12801 Marsh Creek Road (APN 0711230003); 12807 Marsh Creek Road (APN 078230002); 12410 Marsh Creek Road (APN 078H10010); and 2103 Marsh Creek Road (APN 070180007).

These acquisitions would not include existing residential structures or impair the continued use of existing residential structures. Therefore, the proposed project would have a less than significant impact.

c) Would the project displace a substantial number of people, necessitating the construction of replacement housing elsewhere?

The proposed project would not displace or remove any individual residents or existing housing units. Therefore, the proposed project would have no impact.

XIV. Public Services	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
Fire protection?	O	O	181	D
Police protection?	O	O	181	O
Schools?	O	O	O	1n
Parks?	O	D	O	IIS
Other public facilities?	D	O	181	n

Comment [JG94]: Consider indirect increase in demand for police service for accident response.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altt!rt!d governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks, or other public facilities?

Fire Protection. The East Contra Costa Fire Protection District provides fire protection services and emergency services for the Marsh Creek Springs area (East Contra Costa Fire Protection District 2015). The proposed project would not increase demand for fire services nor impede existing service. Therefore, no new government facilities or expansion of existing facilities would be required. A temporary road would be maintained during construction, so access through the project area is not expected to be disrupted for more than short and intermittent periods. Therefore, proposed project impacts would be less than significant.

Police Protection. The Contra Costa County Sheriff's Department provides general public safety and law enforcement services in unincorporated areas, contract cities and special districts totaling 521 square miles (Contra Costa County 2015b). The proposed project would not increase demand for police services nor impede existing service. Therefore, no new government facilities or expansion of existing facilities would be required. A temporary road would be maintained during construction, so access through the project area is not expected to be disrupted for more than short and intermittent periods. Therefore, proposed project impacts would be less than significant.

Schools. The project area is serviced by the Mt. Diablo Unified School District (MDUSD 2015). The proposed project would not increase demand for school services and thus no new government facilities

or exp< Insion of existing facilities would be required. The closest school Is Mt. Diablo Middle School located in the City of Clayton approximately 4.5 miles west of the project area. Ac:c:ess to the school is from Marsh Creek Road. There are also no school bus routes through the project are l l [Contra Costa County 20 l J}. Therefore, the proposed project would have no impact.

Parks. The project area is not located within or near a park: the nea rt:St parks are the Mt. Diablo State Park and Clayton Ranch Open Space Preserve, both with lands approximately 17 miles to the west (Contra Costa County 2005). The wnstructed project would not increase demand for parks facilities or resources, therefore no new focilities or expansion of existing facilities would be re4uircd. As such, the proposed project would have no impact.

Other Public Facilities. The Marsh Creek Detention Facility is operated by Contra Costa County and is located less than 1 mile west of the project area, off of Marsh Creek Road. The Marsh Creek Detention Facility is a ml l l imumsecurity fodlity with a housing capacity of 256 i nmates (Contr<i Costa County 2015b). The proposed project would not increase dem< l nd for detention facilities and thus no new government facilities or expansion of existing facilities would be re4uircd. A temporary road would be maintained du l ing contrnctlon, so attess through the project area is not expected to be disrupted for more than short and intermittent periods. Therefore, proposed project i l l l llacts would be lessthan signiflcant.

XV. Recreation	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	O	O	O	I/
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	D	D	D	

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The proposed project does not include new development that could increase the use of existing parks or recreational facilities that could result in substantial physical deterioration of facilities. Therefore, the proposed project would have no impact.

b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an advere physical effect on the environment?

For the same reasons as noted under checklist item a), the proposed project would have no impact.

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

Comment [JG95]: No comments specific to this section (Neg Dec) EIR

Regulatory Background

The Contra Costa Transportation Authority (CCTA) is a public agency formed to manage the County's transportation sales tax program and conduct countywide transportation planning. CCTA is responsible for maintaining and improving the County's transportation system by planning, funding and delivering critical transportation infrastructure projects and programs that connect the communities safely and efficiently including bicycle and pedestrian projects as described in the 2009 Countywide Bike and Pedestrian Plan (CCTA 2009). In addition, the Transportation and Circulation Element of the General Plan includes goals and policies regarding Contra Costa County bikeways.

Environmental Setting

The existing bridge over Marsh Creek has been deemed structurally deficient and functionally obsolete in recent Caltrans bridge inspection reports. The purpose of the proposed project is to improve safety

Comment [ld96]: This is not the same status rating as the Caltrans structure maintenance investigations report of July 2015? Please explain the discrepancy.

on Marsh Creek Road by replacing the existing single-span bridge with a new single-span bridge that meets current design standards. The new bridge would be designed to meet current design standards (i.e., CCCPWD, Caltrans, and American Association of State Highway and Transportation Officials) and would include wider shoulders and wider lanes.

The proposed project has been designed so that existing traffic can be accommodated during construction, while minimizing impacts to the surrounding right-of-way, including existing buildings. Construction would be sequenced in a manner to minimize traffic impacts during construction. Two phases of bridge construction are expected:

- The first phase would partially construct the new bridge with traffic using the existing bridge.
- The second phase shifts both directions of traffic onto the new bridge so the existing bridge can be demolished and the new bridge can be built to full width.

During construction, the project is expected to accommodate one 12-foot wide travel lane in each direction on Marsh Creek Road through the project site throughout construction, with short infrequent periods of one lane traffic control. Construction would take up to two seasons, likely starting in the summer of 2017 and finishing by the fall of 2018, pending Caltrans and Federal approvals.

Marsh Creek Road is a narrow, two-lane rural major collector road that is widely used by commuters as an alternate to the heavily congested State Route 4. The Average Daily Traffic on this portion of Marsh Creek Road is 6,129 vehicles. The road winds through a series of tight turns in rolling terrain, serving as a vital transportation link between Central and East Contra Costa County for passenger vehicles, heavy trucks, and vehicles with trailers. Marsh Creek Road is not used by transit, including school buses through the project area (Contra Costa County 2013).

a) Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

The proposed project would maintain traffic flow and safety during construction. Construction of the new bridge would be staged to accommodate two lanes of traffic throughout construction. During the first phase of construction, traffic would be routed to the existing bridge. During the second stage of construction, traffic would be routed to the new bridge structure. A temporary partial road closure may be required over a long weekend to complete the replacement of the culvert west of the project. Local access to the existing residential driveways would be maintained at all times. Construction activities should *have* minimal interference to detour traffic. Traffic stops along the detour road may occur to allow for heavy equipment moving in and out of the work zone. Speeds may be reduced to 25 miles per hour to promote safety in the construction. This reduction in speed could cause drivers to experience traffic delays exceeding 10 minutes. The County would ensure that at least one lane would remain accessible to the public at all times during construction of the proposed project and notice of the project's start date and times of construction would be posted in area publications.

The proposed project would widen shoulders through the project area, improving pedestrian and bicycle safety. This is consistent with local and regional plans to provide safe and convenient circulation and pedestrian facilities (Contra Costa County 2005; Contra Costa Transportation Authority 2009).

Comment [ld97]: Safety to the residences in the direct area hasn't been considered.

Comment [JG98]: Does this discussion make sense? Is culvert replacement part of this review?

Comment [ld99]: Please share the drawings and placement of this culvert. Haven't seen anything on this activity / construction.

Comment [JG100]: Commenter contends that Increase to pedestrian/bicycle safety for 1000 feet on 12+ miles is insignificant.

There are no existing designated bicycle facilities within the Marsh Creek Springs area at this time (Contra Costa County 2013). While the 2009 Contra Costa Countywide Bicycle and Pedestrian Plan shows Marsh Creek Road as a proposed route, they represent corridors and general connections (vs. specific suggested alignments) to link the western and eastern parts of the County. The widened shoulders would not be designated as a bicycle facility, but the improved shoulders would provide shared use of the road for bicyclists and motorists within the project area (Contra Costa County 2013).

The proposed Project would improve safety by replacing a bridge that is structurally obsolete, widen existing shoulders, and straighten a sharp curve. Construction of the proposed project may disrupt traffic through the project area as speeds would be reduced to 25 miles per hour through the construction zone, and some delays up to 10 minutes may occur. These impacts would be temporary, localized and measures would be in place to minimize disruption as described above. Therefore, proposed project impacts would be less than significant.

Comment [ld101]: Please explain the Caltrans structure maintenance and investigations report. There is not such rating as Structurally obsolete.

b) Would the project conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?

The project would not conflict with applicable congestion management programs. The proposed project would not increase the capacity or change traffic circulation along Marsh Creek Road. Therefore, the proposed project would have no impact.

c) Would the project result in a change in air traffic patterns, including either an increase In traffic levels or a change In location that results in substantial safety risks?

The proposed project would result in no changes to air traffic patterns; therefore, the proposed project would have no impact.

d) Would the project substantially increase hazards because of a design feature (eg., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The project area ranks high for accidents within Contra Costa County (Contra Costa County). As part of the proposed project, the curve in the road would be realigned to provide a straighter approach that is safer than existing conditions. Therefore, the project would have no impact.

e) Would the project result in inadequate emergency access?

Construction of the proposed project may disrupt traffic through the project area as speeds would be reduced to 25 miles per hour through the construction zone, and there may be delays up to 10 minutes for motorists. These impacts would be temporary. Traffic control measures would be in place to minimize disruption as described above. Therefore, proposed project impacts would be less than significant.

f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

There are no existing or formalized public transit, bicycle, or pedestrian facilities in the project area. Marsh Creek Road has been identified as a route for future bicycle facilities. The proposed project

would not preclude the furure developm ent or such facilities. Therefore, the projecr would have **no impact.**

XVII. Utilities and Service Systems	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	O	()	D	181
b. Require or result in the construction of *nevi* water or vlastewater treatment faciities or expansion of existing facilities, the construction of which could cause significant environmental effects?	O	()	D	181
c. Require or tesult in the construction of *nevi* stormv'laterdrainage facilities or expansion of exist ng facilities, the construction of \Vbh could cause significant environmental effects?	O	()	D	
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	D	()	O	
e. Result in a determination by the v•astewater treatment provider that serves or may serve the project that it has adequate capacity to *serve* the project's projected demand in addition to the provider's existing commitments?	O	()	O	
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid •Naste disposal needs?	D	()		D
g. Comply with federal, state, and local statutes and regulations related to solid waste?	D	()	O	

Environmental Setting

Drinking water in Marsh Creek Springs is prnvided by the Contra Costa Water District (CCWD 2015). There is no sanitary or waste water utilities in the project area (Contra Costa County 2005).

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

The proposed project would not require or result in the need for increased wastew;itert.reatment Therefore, the proposed project would have no impact.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed project would not require or result in the need for increased water or wastew<J ter services. Therefore, the project would have no impact.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The project construction would result in the relocation of existing roadside ditches. The existing roadside ditches would provide sufficient drainage for the completed project without additional expansion or construction of new facilities. Therefore, the proposed project would have no impact.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

Due to the nature of the construction activities, there would be no need for water. The proposed project is not expected to affect any current entitlements or water supplies. Therefore, the proposed project would have no impact

e) Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The proposed project would not require or result in the need for increased wastewater treatment services. Therefore, the proposed project would have no impact

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

The proposed project would not generate the need for new solid waste facility. Solid waste generated by the proposed project would be limited to construction debris, including asphalt and concrete. This material would be disposed of off-site over the short period of time it would be generated. Therefore, the proposed project would have a less than significant impact.

g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The contractor would dispose of solid waste generated from construction in accordance with federal, state, and local regulations. Therefore, the proposed project would have no impact.

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

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Construction of the proposed project would result in less than significant impacts on certain resources, some of which require mitigation. The potential impacts of the proposed project on fish, wildlife, and other biological resources are described in detail in Section IV of this document. The potential impacts of the proposed project cultural, historic, and archaeological resources are described in detail in Section V of this document. With implementation of mitigation measures AIR-1, 0!0and 3-Hl /b, the proposed project would result in less than significant impacts on these resources.

b) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Construction of the proposed project would result in less than significant impacts on certain resources, some of which require mitigation. Within the broader context used to assess cumulative impact, the proposed project would not directly or indirectly increase [illegible] volumes to Marsh Creek Road and would improve safety within the project area by replacing an old bridge with a new bridge that meets all

Comment [JG102]: Commenter's position is General conclusion is rebuttable given evidence provided; and contends that there is potential significant environmental impacts to the project area. Comments have been provided elsewhere , in particular regarding the biological elements and impacts in immediate project area.

Comment [JG103]: Commenter's position is this general conclusion is rebuttable; and contends that there is potential significant environmental impacts to the project area as comments provided in this document su

Comment [ld104]: A substantial amou stress has been experienced by the (Dortzbachs'- 46-years residents at 12801 Marsh Creek Rd.) when NO REASONABLE **SAFETY** into and out of their property is considered, and the planned work poses a real threat to the creek channel bank adjacent to their driveway. They are also faced with the destruction of creek habitat and wildlife "incidental take" in the portion of the creek on their property. They consider the creek and its life a major source of enjoyment and continuity in their lives; this is also a MAJOR stress on them

These residents (Dortzbach's) are Senior Citizens 78 and 80 and this project is a MAJOR disruption in their lives, ever since the County sent them a letter in October 2015 regarding the proposed work. They were not informed of the proposed project by the County Public Works department until the project was at an advanced state of design.

They have been cooperative with the "Biologist" for plant/animal study, refused to tell why they there or EVEN REFER THEM TO A COUNTY REPRESENTATIVE FOR ANSWERS when Dortzbachs asked the Biologist what their reason for tagging the trees was for.

current safety standards. Therefore, the proposed project would result in less than significant impacts as related to cumulative impacts.

Comment [JG105]: The safety doesn't extend to the two affected residents right next to the project. Commenter contends that geometric configuration of 1000+ feet of superelevated roadway will encourage drivers to speed even more than current situation encourages.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Construction of the proposed project would result in less than significant impacts on certain resources that could affect human beings, some of which require mitigation. Specifically, the potential impacts of the proposed project air quality are described in detail in Section III of this document. With implementation of mitigation measure AIR-1, the proposed project would result in less than significant impacts. No other impacts that could affect human beings require mitigation. Thus, impacts would be less than significant.

References

Anchor QEA. 2015. Marsh Creek Road Bridge Replacement Project (Bridge 28C-0141) Farmland Assessment Memorandum. Prepared for Contra Costa County Public Works. Prepared by Anchor QEA. LLC. November 2015.

BAAQMD (Bay Area Air Quality Management District). 2012. California Environmental Qu lity /let Air Quality Guidelines. Updated May 2012. Available from: http://www..baaqmd gov/-/media/files/planning-and-research/ceqa/baaq mcl -ceqa• guidelines_final_may-2012.pdf?la =en. Accessed December 10.2015.

OAAQM D, 2013. Resolution No.2013-11. Resolution Adopting a Greenhouse Gas Reduction Goal and Commitment to Develop a Regional Climate Protection Strategy. Available from: Http://www.baaqmd.gov/-/media/files/planning-and-research/climate-protection-program/climareresolution.pdf?la=en. Accessed December 10,2015.

BAAQMD. 2015. Bay Area Emissions Invenwry Summary Report:: Greenhouse Gases Base Year. 2011. Available from: h ttp://www.baaq md.gov/-/medi a/Files/Pia n nini;%20and%20Research /Emission%20 Inventory/ BY2011_C:HGS ummary.ashx?la=en. Accessed December 10 2015.

BIISF.LINE ('BASELINE En.ironmental Consu ltirr g), 2014. Initial Site Assessment: M<r rsh Creek Road Brid l 1e Replacement Project. Prepared for Contra Costa County Public Work$ De lartment. April 11. 20M.

RASF.LINE. 2015. Water Quality Assessment Technical Report. Marsh Creek Road Bridge Replacement Project. Prepared for Contra Costa County Public Works Department Prepared by BASELINE Environmental Consulting. Marsh 31.2015.

BLM (Bureau of Land Management). 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public lands. BLM Instruction Memorandum No. 2008-009.

BLM. 20011. Assessment and Mitigation of Potential Impacts to Paleontological Resources. BLM Instruction Memorandum No. 200911.

I ry.rn t, W.A. and Cluett, S.E., compilers. 2002. Fault number 53a, Greenville foult zone, Clayton section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website. Available from:http://earthquakes.usgs.gov/hazards/qfaults. Accessed November 16, 2015.

California Air Resources Board (CARB). 2015. California Greenhouse Gas Emissions Inventory - 2015 Edition. Available from: http://www.arb.ca.gov/cc/invento ly/data/<lata.htm. Accessed December 10.2015.

Cal Fire (California Department of Forestry and Fire Protection). 2007. Contra Costa County Fire Hazard Severity Zones in SRA. November 5, 2007.

California Department of Conservation. 2010. Fault I L"tivit) Map of California. Avail 1 1ble from: http://maps.conservation.ca.gov/cgs/fam/. Accessed Novemoer 16. 2015.

CDFW [California Department of Fish an<l Wildlre). 2013. Californ ia N:ıtural Oivetsity Database (CN DDB),Commercial Version <lated f.'ebntary 3,2012. California Department of Fish and Game, Biogeographi c Daw Branch, Sacramento. Accessed September 12.2013.

CN PS (California Native Plant Sudety). 2013. Inventory of Rare and Endangered Plants (online edition. v7-10c). California Native Plant Society. Sacra mento, California.

CalTrans (California Department of Transportation). 2014. Historic Property Survey Report. Marsh Creek Road Bridge Replacement Project. Repott on file at the Northwest Information Center (NWIC) of the California Historical Resources Information System. Sonoma State University, Rohnert Park. California.

C< l ltrans,2015. California Scenic Highway Mapping System. Available from: httr://Mvw.dot.ca.gov/h q/ la ndAtch/ 16/livability /seen ic_high ways/i ndex.htm. Accessed November 11, 2015.

Cont:"Cesta County. 2005. Co,.tr<? Costa County General Plitll 2.005 202D Contra Cost• County Community Development Department. Martinez. California.

Con tra Costa County, 2013. Memorandu m: Traffic Tech n ical Memorandum. Prepared by Hillary Heard. Public Works. Prepared for Tom Holstein California Department of Transportation. October 15. 2014.

Contra Costa County. 20'l !ia. City/County of Contra Costa Application Form and Pianning Survey Report to Comply with And Receive Penllit Covr:lj.:& undor tho East Contr;:• Cost:) County Habitat Conservation Plan and Natural Community Conservation Plan. Arril 2015.

Contra COSt!C ounty,20ISb. Contra Costa <Aunty Website. Available from :http//www.cocontra-cosra.ca.usf. Accessed November 16 2015.

Contra Costa County, 2014. Noise Techn kal Mernorandum. Marsh Creek Road IJrldge Replacement Project (2IIC-0141). Prepared for the California Department of Transportation. October 2014.

Contra Cos a Transi t i\u thorit)'. 2009. Countywid e llike and Pedestrian Plan . Prepared for Contra Costa Tra nsit Authority. Prepared b)• Fehr & Peersand !Zisen- Letunk. Octoher 2009.

CCWD [Contract Cosm Water District). 2015. Service Area Map. Available from: http//www.ccwater.com/. Accessed '.llovember 16 2015.

East Contra Costa Cou nty Fire Protection District. 2015. Available from: httpf/wwweccfpd.org/. Accessed on Nov ember 11,2015.

Environ mental Laborutory, 1'JIJ7. Corps of Engineers Wetlands Delineation Manual. Technical report Y 87-1. U.S. Army E ngi neers Watenva)'S Experi ment Station, Vicksbur Mississippi.

Fed eral Transit Administr tion. 2006. Transit Noise and Vibration Impact Assessment. Mai• 2006. Available from: htt l>://www.Jta.dot.gov/documenL</FTA_Noise_ancLVibration_Manual.pdf.

Holland.R.. 1966. Preliminary Descriptions or !heTerrStrial l\atud l Communities of California. California Department of Fish a nd Game. The Resou rces Agency. 156 pp.

ICF International. 2014. Natural Environment Study-Minimal Impact, Byron Highway-Camino Diablo Intersection Improvements Project. Byron, Contra Costa County. November 2014.

Jones & Stokes Associates, 1996. Opportunities and Constraints for Conservation of Biodiversity in Eastern Alameda and Contra Costa Counties. Administrative Draft. April 12. Sacramento, California. Prepared for the Alameda-Contra Costa Biodiversity Working Group. Martinez, California.

Jones & Stokes Associates. 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. October. (J&S 01478.01.) http://www.co.contra-costa.ca.us/depart/cd/water/HCP/. San Jose, California.

LSA Associates, 2015. Marsh Creek Road Replacement Project Historic Property Survey Report. March 2015.

Mayer, K.E. and W.F. Laudenslayer, Jr. (eds). 1986. *A Guide to Wildlife Habitats of California*. California Department of Forestry and Fire Protection. Sacramento, California.

Mayer, K.E. and W.F. Laudenslayer, Jr. (eds.). 1999. Supplement to *A Guide to Wildlife Habitats of California*. California Department of Forestry and Fire Protection. Sacramento, California.

MDUSD (Mt Diablo Unified School District). 2015. Mt. Diablo Unified School District website. Available from: http://www.mdusd.org/. Accessed November 16, 2015.

NRCS (Natural Resources Conservation Service). 2015. Custom Soils Resource Report for Contra Costa County. November 11, 2015.

RWQCB (Regional Water Quality Control Board, Central Valley). 2013. Order R5-2013-0710. Clean up and Abatement Order for Mount Diablo Mercury mine, Contra Costa County.

Sawyer, J. O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society Press, Sacramento, California.

Stephenson, J.R., and G.M. Calcarone. 1999. Southern California mountains and foothills assessment: habitat and species conservation issues. General Technical Report GTR-PSW-172. Albany, CA: Pacific Southwest Research Station, USDA Forest Service.

U.S. Army Corps of Engineers, 2006. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. ERDC/EL TR-06-16.

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

Williams, D.F. 1986. Mammalian species of concern in California. California Department of Fish and Game Report 86-1. Sacramento, California.

WRECO. 2015. *Location Hydraulic Study Memorandum: Marsh Creek Road Bridge Replacement Project*. Prepared for Contra Costa County. Prepared by WRECO. April, 2015.

FIGURES

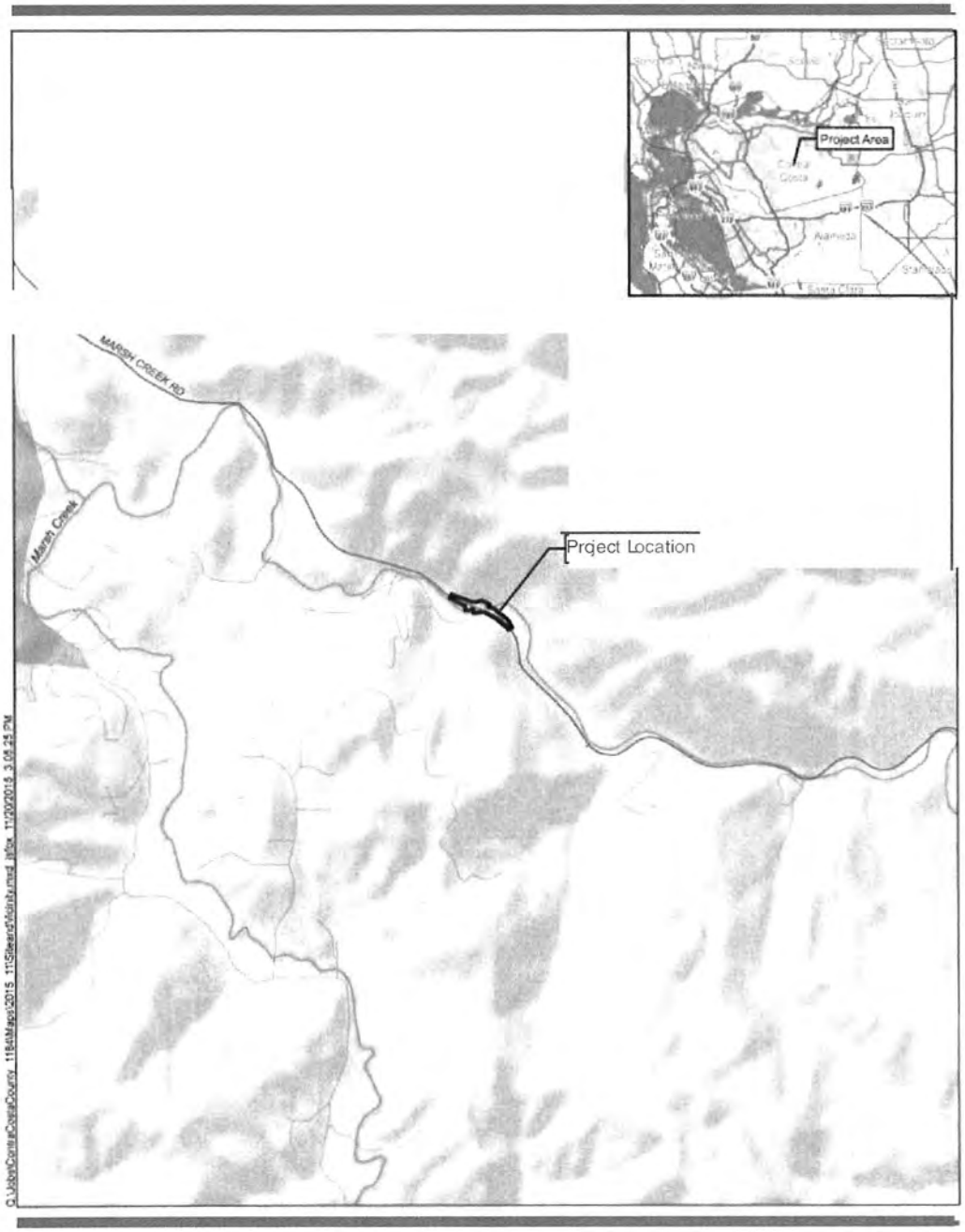

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Figure 1
Project Site and Vicinity Map
Marsh Creek Bridge 141 Replacement
Contra Costa County, California

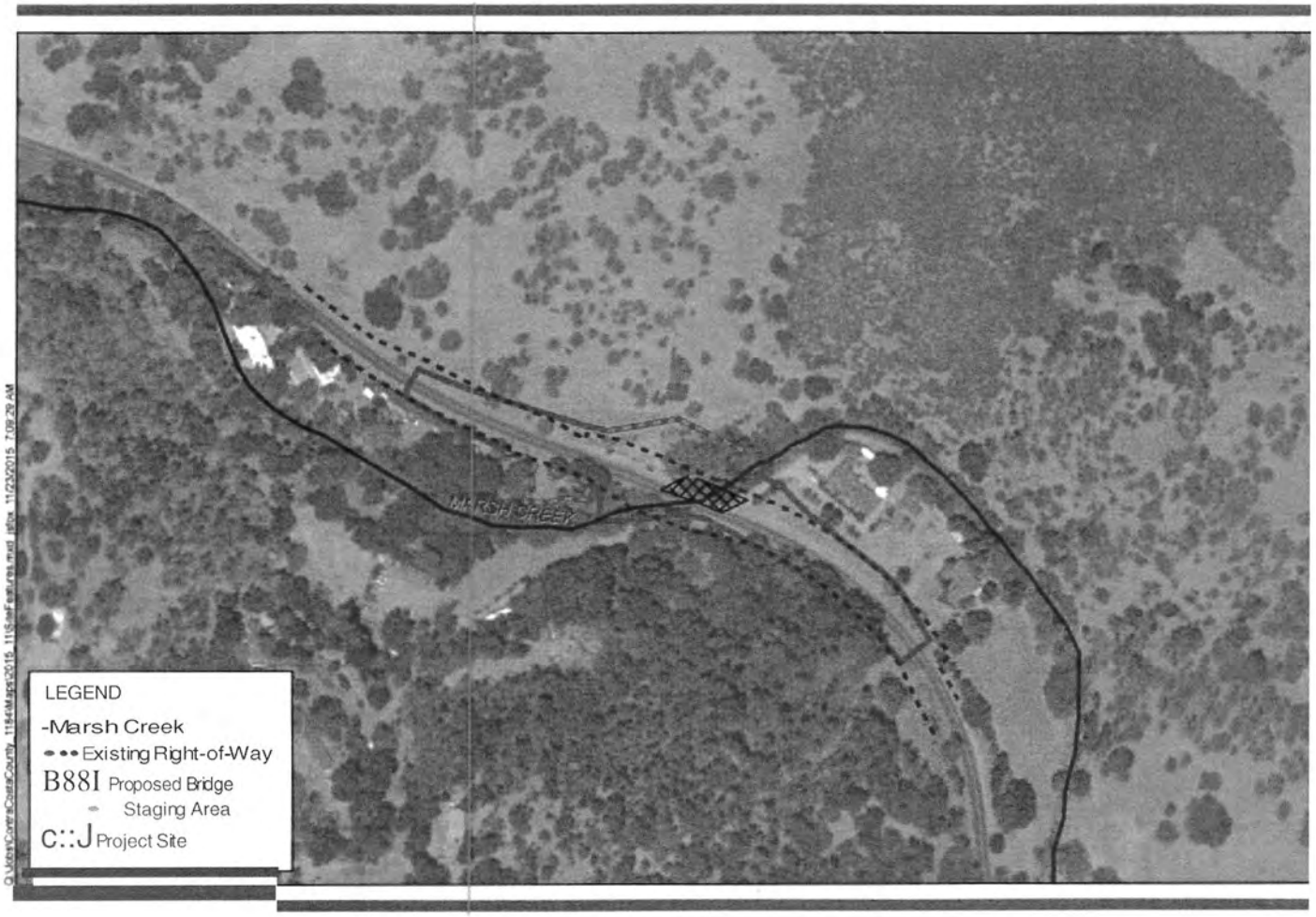

Figure 2
Site Features
Marsh Creek Bridge 141 Replacement
Contra Costa County, California

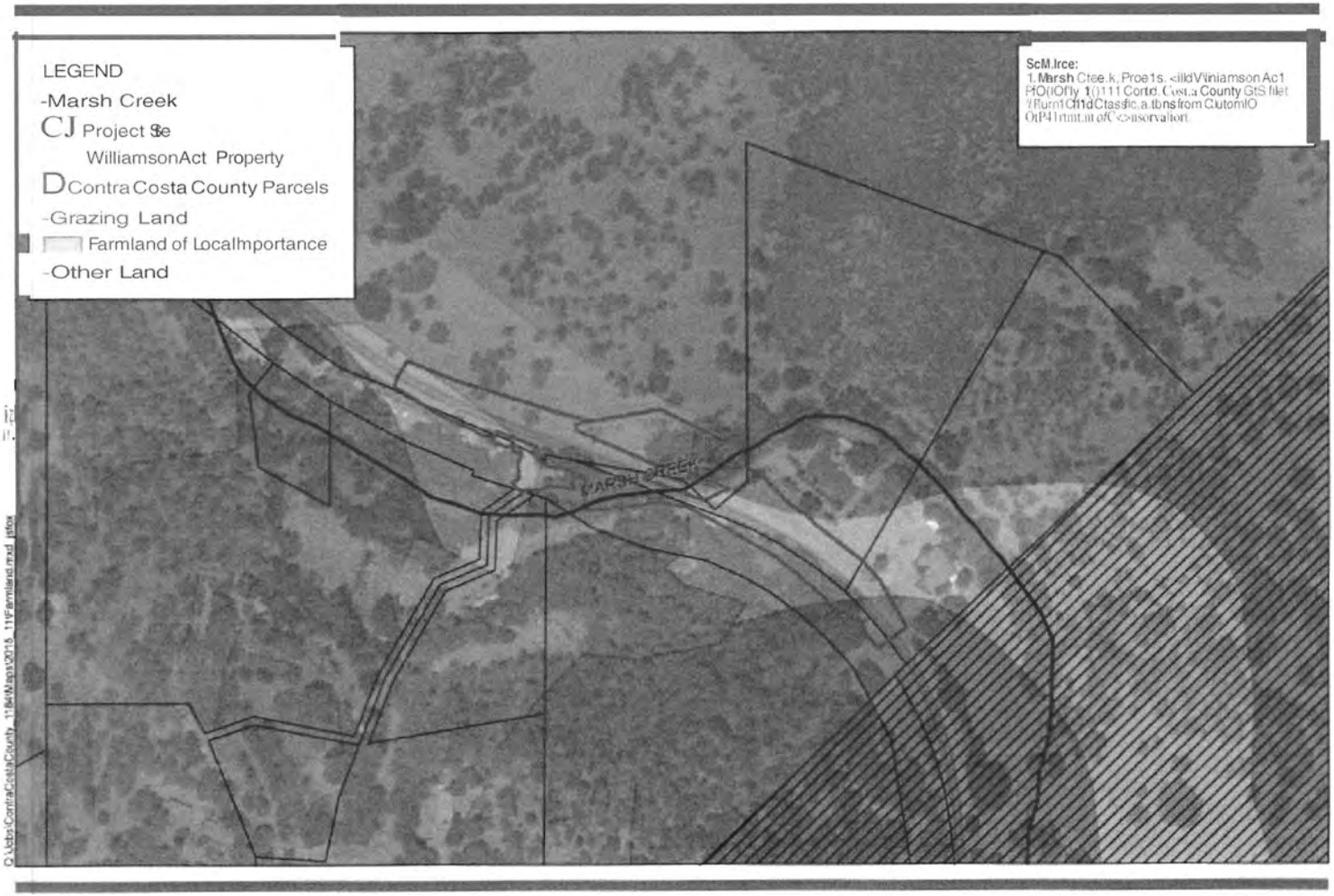

Figure 3
Potential Impact to Contra Costa County Farmland
Marsh Creek Bridge 141 Replacement
Contra Costa County, California

APPENDIX A
MITIGATION MONITORING REPORTING PLAN

Comment [JG106]: All environmental monitoring/enforcement should be responsibility of individuals OUTSIDE the direct Public Works Project/Construction Management chainof command.
Please clarify planned arrangement and describe how it will allow function to be performed independent of other project management functions

Mitigation Monitoring and Reporting Plan

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
III. AIR QUALITY					
Construction-Related Toxic Air Contaminant Impacts	MITIGATION MEASURE AIR-1: Enhanced Exhaust Emissions Reduction Measures				
	The construction contractor will implement the following BAAQMD Enhanced Exhaust Emissions Reduction Measures for Project Construction Equipment measures to further reduce construction-related exhaust emissions: • All off-road construction equipment will meet the following requirements: - All engines will meet or exceed USEPA/CARB Tier 3 off-road emission standards; or - All engines will be retrofitted with a CARB Level 2 Verified Diesel Emissions Control Strategy device.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer-Environmental Services Division	
IV. BIOLOGICAL RESOURCES					
BIO-1: Disturbance to Sensitive Habitats and Trees	MITIGATION MEASURE BIO-1: Habitat and Tree Protective Measures				
	Equipment storage, fueling, and staging areas will be sited on disturbed areas or on ruderal or non-sensitive nonnative grassland land cover types, when these sites are available, to minimize risk of direct discharge into riparian areas or other sensitive land cover types.	Prior to and during construction or project related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	No erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	All no take species will be avoided.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Biologist, Environmental Services Division	

Impact	Mitigation Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
810-Disturbance to HCP/NCCP Habitats and Trees	Construction activities will comply with the Migratory Bird Treaty Act and will consider seasonal requirements for birds and migratory non-resident species, including covered species	During construction	CCCPWD Construction Contractor	CCCPWD Biologist, Environmental Services Division	
	Temporary stream diversions if required will use sandbags or other approved methods that minimize in-stream impacts and effects on wildlife	Prior to and during construction or project related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Silt fencing or other sediment trapping method will be installed down-gradient from construction activities to minimize the transport of sediment off site.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Barriers will be constructed to keep wildlife out of construction sites, as appropriate.	Prior to and during construction or project related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	On-site monitoring will be conducted throughout the construction period to ensure that disturbance limits, best management practices, and HCP restrictions are implemented properly.	During construction	CCCPWD Biologist, Environmental Services Division	CCCPWD Resident Engineer, Environmental Services Division	
	Active construction areas will be watered regularly to minimize the impact of dust on adjacent vegetation and wildlife habitats, if warranted.	During construction	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Vegetation and debris must be managed in and near culverts and under and near bridges to ensure that entryways remain open and visible to wildlife and the passage through the culvert or under the bridge remains clear.	During construction	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Cut-and-fill slopes will be revegetated with native, non-invasive nonnative, or nonreproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions.	During construction	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	

Impact	Mitigation; Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
810-1: Disturbance to HCP/NCCP Habitats and Trees	Per the NES, tree protection fencing will be used during the construction process to prevent direct damage to trees and their growing environment located just outside of the construction site (avoided trees). The fencing will consist of blaze orange barrier fencing supported by metal ...raH.. fence posts and will be placed at or outside of the driplines of avoided trees to the extent feasible based on the heights of the area to be graded. The fencing will be installed before site preparation, construction activities or tree removal/trimming begins, and will be installed under the supervision of a qualified arborist.	Prior to site preparation, construction activities, or tree removal/trimming begin•	Certified Arborist	CCCPWD Resident Engineer, Environmental Services Division	
	Per the NES, heavy machinery • will not be allowed to operate or park within or around areas cont•ining avoided trees. If it is necessary for heavy machinery to operate within the dripline of avoided trees, then a layer of mulch or pea gravel at least 4 inches deep will be placed on the ground beneath the dripline. A 0.75 inch sheet of plywood will be placed on top of the mulch. The plywood and mulch will reduce compaction of the soil within the dripline.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Per the NES, construction materials (e.g. gravel, •11&regate, heavy equipment), project debris, and waste material will not be placed adjacent to or against the trunks of avoided trees	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Per the NES the trimming of tree canopy is required to allow the movement or construction machinery, all branches to be removed will be pruned back to an appropriately sized lateral or to the trunk by following proper pruning guidelines. All trimming will be conducted under the supervision of a certified arborist.	Prior to and during construction or project-related activities	Certified Arborist	CCCPWD Resident Engineer, Environmental Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
BIO-3: Disturbance to Special-Status **Birds During Construction**	MITIGATION MEASURE BIO-3: Migratory Bird Protective Measures				
	To the extent feasible, vegetation removal activities shall not occur during the bird breeding season or February 15 - August 31.	Prior to and during **construction or** project-related **activities**	CCCPWD Biologist, Environmental **Services Division**	CCCPWD Environmental **Services Division**	
	If vegetation removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting birds.	**Prior to** construction or project-related **activities**	CCCPWD Biologist **Environmental** Services Division	CCCPWD Environmental Services Division	
	Preconstruction surveys will be conducted no more than two weeks prior to the start of work from February 15 - August 31.	Prior to **construction or project-related activities**	CCCPWD Biologist, Environmental **Services Division**	CCCPWD Environmental **Services Division**	
	If the survey indicates the potential presence of nesting birds, a buffer will be placed around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with CDFW, and will be based to a **large extent on the nesting species and its** sensitivity to disturbance. In general buffer sizes of 0.5 mile for golden eagle, 250 feet for raptors including white-tailed kite and 50 feet for other birds should suffice to prevent disturbance to **birds nesting in an urban environment, but these** buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.	Prior to and during **construction or project-related activities**	CCCPWD **Biologist, Environmental Services Division**	CCCPWD **Environmental** Services Division	
BIO-4: Disturbance to California Red-legged Frog and Their Habitat	MITIGATION MEASURE BIO-4: California Red-legged Frog Protective Measures				
	A USFWS/CDFW-approved biologist will identify potential California red-legged frog breeding habitat (Section 6.3.1 of the HCP/NCCP, Planning Surveys). If the project fills or surrounds suitable breeding habitat, the project proponent will notify USFWS, CDFW, and the Implementing Entity of	Prior to **construction or project-related** activities	USFWS/CDFW-approved Biologist	CCCPWD Biologist, **Environmental** Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
Bio-4: Disturbance he to California Red-legged Frog and Their Habitat	presence and condition of potential breeding habitat, as described below. No preconstruction surveys are required.				
	Written notification to USFWS, CDFW, and the Implementing Entity, including photos and habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate California red-legged frog within 14 days of receiving notice from the project proponent. The applicant must allow USFWS or CDFW access to the site prior to construction if they request it.	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Service Division	CCCPWD Environmental Services Division	
	There are no restrictions under the HCP/NCCP on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individuals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW).	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
BIO-5: Disturbance to Western Pond Turtle and Their Habitat	MITIGATION MEASURE BIO-5: Payment of Development Fees				
	There are no species-specific avoidance and minimization measures required under the HCP/NCCP beyond the general landscape-level avoidance and minimization measures. Impacts to western pond turtle and their habitat would be mitigated through payment of applicable development fees and wetland mitigation fees for permanent and temporary impacts, totaling $8,321.782, as required under the HCP/NCCP (Sections 4.1.4 and 4.4.2).	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
BIO-6: Disturbance to Special-status Bats	MITIGATION MEASURE BIO-6: Special-Status Bat Protective Measures				
	All potential roost trees within the project site will be surveyed for the presence of bat roosts by a qualified biologist. Survey may entail direct inspection of the trees or nocturnal surveys. Survey will be conducted no more than two weeks prior to the initiation of tree removal and ground disturbing activities. If no roosting sites are present, then trees will be removed within 2 weeks following the survey.	Prior to construction or project related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
	If roosting habitat is present and occupied, then a qualified biologist will determine the species of bats present and the type of roost (i.e., day roost, night roost, maternity roost). If it is determined that the bats are not a special-status species and that the roost is not being used as a maternity roost, then the bats may be evicted from the roost using methods developed by a biologist who is experienced in developing and implementing bat mitigation and exclusion plans.	Prior to and during construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
BI0-6: Disturbance to Special-status Bats	f the bats arc found to be pallid bats or the roost is being used as a materity roost by any bat species, then a biologist who is experienced in bat mitigation and exclusion plans must prepare an eviction plan detailing the methods of excluding bats from the roost(s) and the methods to be used to secure the existing roost site(s) to prevent Its reuse prior to removal. Rem.ovalof the roost(s) will only occur after the eiction plan has been approved by CDFW.	Prier to and during construction or project-related activities	CCCPWO Biologist. Environmental Services Division	CCCPWO Environmental Services Dision	
	Tree removal surroundig roos trees will be conducted without damaging the roost trees.	During construction or project related activities	CCCPWO Construction Contractor	CCCPWD Resident Engineer. Environmental Services Divison	
	No dieselor gas-powered equipment wil be stored or opc.rIltc.d directly beneatha roost site.	Prior to and during construction or p oject-rated activities	CCCPWO Construction Contri'Jctor	CCCPWD Resident Engineer Environmental Scivices Division	
	All construction activity in the Vicinity of an active roost will be lirted to dayli&ht hou,.,..	During construction or p oject related activities	CCCPWO Construction Contractor	CCCPWD Resident Engeer Environmental Services Division	
	As an option, protocol-level surveys may be cooducted theyear prior to cor struction to rule out the presence of bat species in the project vicinity	Prior to construction or poject-related activities	CCCPWO Biologist. Environmental Serves Division	CCCPWO Enllironmental Se<Vices Division	
BI0-7: Disturbance	MITIGATION MEASURE 810 7: Ringtail Protective Measures				

Impact	Mitigation, Avoidance, and **Minimization Measures**	Implementation Timing	**Implementation** Responsibility	**Verification** Responsibility	**Compliance** Verification Date
to Ringtail	**To ensure the avoidance of ringtail, a** preconstruction survey will be conducted by a qualified biologist of all potentially suitable den sites (i.e., tree hollows and logs) within the project site. Any occupied dens will be flagged, and the biologist will prepare a ringtail passive relocation plan subject to the approval of CDFW. The **commencement of construction work will be** delayed until one of the following has occurred:	**Prior to** construction or >roject-related **activities**	CCCPWD Biologist, Environmental **Services Division**	CCCPWD Environmental **Services Division**	
BIO-7: Disturbance to Ringtail	• If the biologist has documented that ringtails have voluntarily vacated the den site, then construction may begin within 7 days following the observation.	Prior to and during **construction or** project-related activities	CCCPWD Biologist, **Environmental Services Division**	CCCPWD **Environmental** Services Division	
	• If the dens not vacated within 20 observation days, then the biologist may commence passive relocation in accordance with the CDFW-approved relocation plan. No relocation shall be conducted during the early pup-rearing season of May 1 to June 15.	**Prior to construction or** project-related **activities**	CCCPWD Biologist, **Environmental Services Division**	CCCPWD Environmental Services Division	
	• All activities that involve the ringtails shall be documented and reported to CDFW within 30 days of the activity.	**Prior to and during construction or** project-related activities	CCCPWD Biologist, **Environmental Services Division**	CCCPWD Environmental Services Division	
BIO-8: Disturbance to San Joaquin Kit **Fox Habitat**	MITIGATION MEASURE BIO-8: San Joaquin Kit Fox Protective Measures				
	Prior to any ground disturbance related to covered activities, a USFWS/CDFW-approved biologist will conduct a preconstruction survey in areas identified Division in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. Surveys will establish presence or absence of San Joaquin kit foxes and/or stable dens and evaluate use by kit foxes in accordance with USFWS survey	**Prior to construction or** project-related activities	CCCPWD Biologist, **Environmental Services Division**	CCCPWD **Environmental** Services	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
	guidelines. Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify san Joaquin kit foxes and/or suitable dens. Adjacent parcels under different kind ownership will not be surveyed. Status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before start of ground disturbance.				
810-8: Disturbance to San Joaquin Kit Fox Habitat	If a San Joaquin kit fox den is discovered in the development footprint, the den will be monitored for three days by a USFWS/CDFW-approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
	Unoccupied dens will be destroyed immediately to prevent subsequent use.	Prior to construction or project-related activities	CCCPWD Biologist Environmental Services Division	CCCPWD Environmental Services Division	
	If a natal or pupping den is found, USFWS and CDFW will be notified immediately. The den will not be destroyed until the pups and adults have vacated the den and then only after further consultation with USFWS and CDW.	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
	If San Joaquin kit fox activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. Known dens other than natal or pupping den use of the den can be discouraged by partially plugging the	Prior to construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
	entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied, it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of the biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).				
B-8: Disturbance to San Joaquin Kit Fox Habitat	If dens are identified in the survey area outside the disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 feet and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.	Prior to and during construction or project-related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
B10-9: Disturbance to American Badger	MITIGATION MEASURE B10-9: Conduct Preconstruction Survey for American Badger				
	If grading or construction will begin during the breeding season (March through August), a qualified biologist will conduct a survey of the grassland habitat to identify any badger burrows on the site. The survey will be conducted no sooner than two weeks prior to the start of construction.	Prior to and during construction or project related activities	CCCPWD Biologist, Environmental Services Division	CCCPWD Environmental Services Division	
	Impacts to active badger dens will be avoided by	Prior to and during	CCCPWD	CCCPWD	

Impact	Mitigation, Avoidance, and Minimization Mea urcs	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliante Verification Date
	establishing exclusion zones around all active dens, within which construction-related activities will be prohibited until dening s compete or the dens abandoned.	construction or project-related activities	Biologist, Environmental Services Division	Environmental Services Division	
	A qualified biologist will monitor each active den once per week in order to track its status and inform the CCCPWD of when a den area has been cleared for construction.	Prior to and during construction or project related activities	CCCPWO Biologist, Environmental Services Division	CCCPWO Environmental Service!. Division	
810 D: Impacts to Sensitive Natural Communities	MITIGATION MEASURE 810-IOn: Payment of Development Fees				
	Compensatory mitigation for temporary and permanent impacts to habitats will be achieved through payment by CCCPWD development fees and wetland mitigation fees. The proposed project would provide a wet and mitigation fee of $4165952 for permanent impacts to stream and riparian woodland habitat$, an a wetland mitigation fee of $25529.02 for temporary impacts to stream and riparian woodland habitats. Specific to riparian habitat, fees will offset permanent impacts to 4C linear feet of stream and permanent impact to riparian woodland as a result of the loss of 0.091 acre of riparian canopy. Additionally, the fee will offset temporary construction impact to 249 linear feet of stream and 0.306 acre of riparian habitat.	Prior to and during construction or project-related activities	CCCPWD Environmental Services Division	CCCPWO Environmental Services Division. East Contra Costa County Habitat Conservancy	
	MITIGATION MEASURE B Ob: Wetland, Pond and Stream Protective Measures				
	Prior to the start of construction, all portions of the stream be avoided by the project will be temporarily staked in the field by a qualified biologist.	Prior to construction or project related activities	CCCPWO Biol. Environmental Services Division	CCCPWD Resident Engineer, Environmental Services Division	
	Prior to the start of construction, construction	Prior to	CCCPWO	CCCPWD Resident	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
	personnel will be trained by a qualified biologist on all required avoidance and minimization measures as *well* as permit requirements.	construction or project-related activities	Biologist, Environmental Services Division	Engineer, Environmental Services Division	
	Trash generated by the project will be promptly and properly removed from the site.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	No construction or maintenance vehicles will be refueled within 200 feet of the streams unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
810-10: Impacts to Sensitive Natural Communities	Appropriate erosion-control measures (e.g., fiber rolls, filter fences) will be used on site to reduce siltation and runoff of contaminants to the stream. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and to trap reptiles and amphibians.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Fiber rolls used for erosion control will be certified as free of noxious "weed seed and will not contain plastics of any kind.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Seed mixtures applied for erosion control will not contain invasive nonnative species, and will be composed of native species or sterile nonnative species.	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	
	Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, *where* appropriate to control serious invasive plants, herbicides that have been approved for use by USEPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications	Prior to and during construction or project-related activities	CCCPWD Construction Contractor	CCCPWD Resident Engineer, Environmental Services Division	

Impact	Mitigation, Avoidance, and Minimization Measures	Implementation Timing	Implementation Responsibility	Verification Responsibility	Compliance Verification Date
	avoid or minimize impact on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control nonnative invasive species (e.g. yellow star thistle). Herbicide drift should be minimized by applying the herbicide as close to the target area as possible.				

Notes:

CCCPWD = Contra Costa County Public Works Department
HCP = Habitat Conservation Plan
USEPA = U.S. Environmental Protection Agency
CDFW = California Department of Fish and Wildlife
NCCP = Natural Community Conservation Plan
USFWS = U.S. Fish and Wildlife Service

Marsh Creek Road Bridge Replacement Project (Br. No. 28C-0141)

NES

Natural Environment Study

Contra Costa County, California

Federal Project # BRLO-5928 (107)

March 2015

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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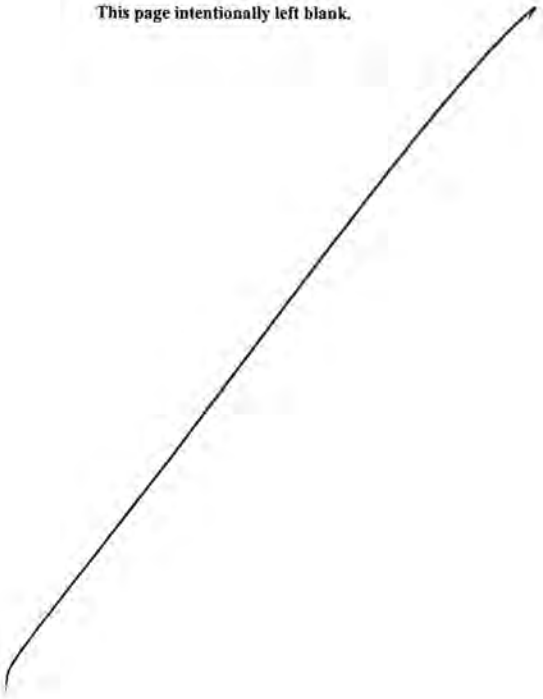

Summary

The Contra Costa County Department of Public Works (PWD), in cooperation with the California Department of Transportation District 4 (Caltrans), proposes to replace the existing Marsh Creek Road Bridge (Br. No. 28C-0141) across Marsh Creek approximately 2 miles east of Morgan Territory Road in the Clayton Area of unincorporated Contra Costa County. Marsh Creek Road is a narrow, two-lane rural collector road that is widely used by commuters as an alternate to the heavily congested State Route 4. The road serves as a vital transportation link between Central and East Contra Costa County for passenger vehicles, heavy trucks, and vehicles with trailers.

The purpose of the project is to replace the existing single-span bridge with a new single-span bridge that will provide a safe vehicular crossing over Marsh Creek on Marsh Creek Road. The existing bridge is structurally deficient and functionally obsolete. The bridge carries one lane of traffic in each direction. The width of the bridge is substandard for two-way traffic. In addition, the reinforced concrete that encases the steel truss members is cracked and spalled at numerous locations. The new bridge will meet current design standards and will include wider shoulders and wider lanes. The design and construction of the approach roadway and replacement bridge will be in compliance with PWD and Caltrans design standards, as well as the American Association of State Highway and Transportation Officials (AASHTO) guidelines.

The project is an activity covered under *Transportation Projects – Bridge Replacement, Repair, or Retrofit (Rural Infrastructure Projects)* of the Final East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). The HCP/NCCP protects and enhances ecological diversity and function within East Contra Costa County, and provides measures to avoid, minimize, and mitigate impacts on covered species and their habitats, while allowing for expansion of urban infrastructure. Activities covered under the HCP/NCCP are considered to have received Incidental Take authorization from the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW).

As required under the HCP/NCCP, species-specific planning surveys were conducted for all covered species and other special-status species potentially affected by the project. This Natural Environment Study (NES) describes the results of those surveys and identifies all applicable avoidance, minimization, and mitigation measures required under the HCP/NCCP.

protection of resources on private property secondary; damage "compensated" to govt agency. (property owner to seek compensation for lost property value + county pay for professional relocation of aquatic community

i

red = 12801 issues to take up outside EIR
purple = EIR related.
Flipped upside Down

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Natural Environment Study

Marsh Creek Road Bridge Replacement Project

(Br. No. 28C-0141)

Contra Costa County, California

Federal Project # BRLO-5928 (107)

March 2015

STATE OF CALIFORNIA
Department of Transportation
Contra Costa County Public Works

Prepared By: George Molnar Date: 4/13/15
George Molnar, Senior Biologist
(510) 236-6810
LSA Associates, Inc.
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Approved By: Hillary Heard Date: 4/14/15
Hillary Heard, Planner
(925) 313-2022
Contra Costa County Public Works Department
255 Glacier Drive
Martinez, California 94553

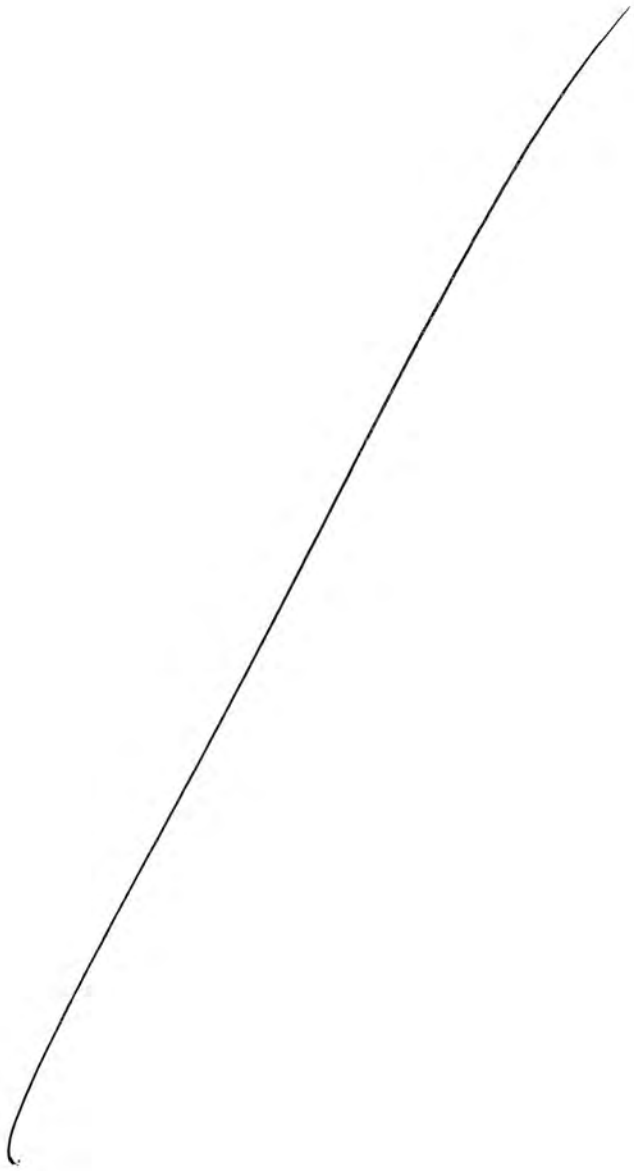
Concurred By: T. Hashem Date: 30 April 2015
~~Boris Deunert, Senior Environmental Planner~~
Office of Local Assistance
Caltrans, District 4
Oakland, California

The project will occur primarily within the existing roadway and associated existing road shoulders that do not contain suitable habitat for plant or wildlife species. However, there will be limited permanent impacts to natural and non-natural land cover types located adjacent to the existing roadway and shoulders as follows: riparian woodland (0.091 acre) (including stream woodland from top-of-bank to top-of-bank [0.058 acre], oak woodland (0.102 acre), oak savanna (0.150 acre), chaparral/scrub (0.128 acre), native grassland (0.046 acre), non-native woodland (0.021 acre), and urban (1.015 acres). Temporary impacts will occur to riparian woodland (0.306 acre), oak woodland (0.208 acre), oak savanna (0.184 acre), chaparral/scrub (0.083 acre), native grassland (0.008 acre), non-native woodland (0.031 acre), and urban (0.417 acre).

In addition, permanent impacts will occur to 64 linear feet (0.045 acre) of jurisdictional stream and 425 linear feet (0.019 acre) of non-jurisdictional ditch. Temporary impacts will occur to 273 linear feet (0.182 acre) of jurisdictional stream. Impacts to jurisdictional waters include all waters to be impacted below Ordinary High Water. The HCP/NCCP bases creek impacts on the area of creek from top of bank to top of bank, excluding portions of the stream mapped as urban land cover (i.e., under the existing bridge). The project will permanently impact 40 linear feet (0.058 acre) and temporarily impact 249 linear feet (0.289 acre) of stream from top of bank to top of bank.

The project will also result in the removal of 36 trees for replacement of the bridge. The trees to be removed consist of gray pine (*Pinus sabiniana*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), red willow (*Salix laevigata*), western sycamore (*Platanus racemosa*), California buckeye (*Aesculus californica*), California bay (*Umbellularia californica*), and cherry plum (*Prunus cerasifera*).

The following HCP/NCCP-covered and other State- and federally-listed species have the potential to occur in the BSA based on the presence of suitable habitat: California tiger salamander (*Ambystoma californiense*) (CTS), California red-legged frog (*Rana draytonii*) (CRLF), Alameda whipsnake (*Masticophis lateralis euryxanthus*) (AWS), and San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF). Other special-status species covered under the HCP/NCCP that may occur on the project site include western pond turtle (*Actinemys marmorata*) and golden eagle (*Aquila chrysaetos*). The status of Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) (HCP/NCCP covered) has changed from species of special concern to State Candidate for Listing and is included in this report. The remaining five special-status species that may occur on site include coast horned lizard (*Phrynosoma coronatum*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), ringtail (*Bassariscus astutus*), and American



The project will occur primarily within the existing roadway and associated existing road shoulders that do not contain suitable habitat for plant or wildlife species. However, there will be limited permanent impacts to natural and non-natural land cover types located adjacent to the existing roadway and shoulders as follows: riparian woodland (0.091 acre) (including stream woodland from top-of-bank to top-of-bank [0.058 acre], oak woodland (0.102 acre), oak savanna (0.150 acre), chaparral/scrub (0.128 acre), native grassland (0.046 acre), non-native woodland (0.021 acre), and urban (1.015 acres). Temporary impacts will occur to riparian woodland (0.306 acre), oak woodland (0.208 acre), oak savanna (0.184 acre), chaparral/scrub (0.083 acre), native grassland (0.008 acre), non-native woodland (0.031 acre), and urban (0.417 acre).

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The project will also result in the removal of 36 trees for replacement of the bridge. The trees to be removed consist of gray pine (*Pinus sabiniana*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), red willow (*Salix laevigata*), western sycamore (*Platanus racemosa*), California buckeye (*Aesculus californica*), California bay (*Umbellularia californica*), and cherry plum (*Prunus cerasifera*).

The following HCP/NCCP-covered and other State- and federally-listed species have the potential to occur in the BSA based on the presence of suitable habitat: California tiger salamander (*Ambystoma californiense*) (CTS), California red-legged frog (*Rana draytonii*) (CRLF), Alameda whipsnake (*Masticophis lateralis euryxanthus*) (AWS), and San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF). Other special-status species covered under the HCP/NCCP that may occur on the project site include western pond turtle (*Actinemys marmorata*) and golden eagle (*Aquila chrysaetos*). The status of Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) (HCP/NCCP covered) has changed from species of special concern to State Candidate for Listing and is included in this report. The remaining five special-status species that may occur on site include coast horned lizard (*Phrynosoma coronatum*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), ringtail (*Bassariscus astutus*), and American

badger (*Taxidea taxus*). These five species are not specifically covered by the HCP/NCCP, but are addressed in the NES due to the identification of suitable habitat within the BSA.

Protocol-level surveys have been conducted in spring of 2014 and have determined that the project will not have an adverse effect on federally-listed plant species. Planning surveys were conducted in summer of 2013 and revealed that, due to a loss of suitable habitat, the project ***may affect, is likely to adversely affect*** California tiger salamander, Alameda whipsnake, and California red-legged frog and ***may affect, is not likely to adversely affect*** San Joaquin kit fox. Critical habitat for CRLF and AWS occurs 3.6 miles and 1.0 mile from the project site, respectively, and will not be affected by the project.

All special-status animal species and State-listed Candidates that are covered under the HCP/NCCP and may be affected by the project have impact avoidance, minimization, and mitigation measures that have already been determined through prior consultation with the USFWS and the CDFW under the HCP/NCCP. Those measures applicable to the project, as well as any other necessary avoidance or minimization efforts for non-HCP/NCCP species, are provided in this NES.

Compensatory mitigation for impacts to listed species and their habitats (as well as other HCP/NCCP-covered species) will be achieved through payment by PWD of the appropriate fees required under the HCP/NCCP. A development fee of $13,909.19 will be required for permanent impacts to all habitat types, and a wetland mitigation fee of $41,659.62 will be required for permanent impacts to 0.091 acre of riparian woodland and 40 linear feet of stream. In addition, the project will involve temporary impacts to upland and stream habitats. Using the current HCP/NCCP Fee Calculator, a development fee of $2,119.99 will be required for temporary impacts to all habitat types and a wetland mitigation fee of $25,529.02 will be required for temporary impacts to 0.306 acre of riparian woodland habitat and 249 linear feet of stream. Therefore, the total combined mitigation fee for the project will be $83,217.82. The applicability and calculation of these mitigation fees is summarized in more detail in this NES.

Residents at 12801 MCR have observed for years:
- Frogs in perennial pool
- turtles in same pool
- bats all over 12801 MCR property
- kit fox (
- coyotes
- whitetail deer
- quail
- hawks (redtail, others)
- species on known
- mallard ducks raise family in pool annually
- golden eagle mating pair nest at Royal Oaks Dr.
- white tail kite

~~pay~~ payment for destruction of animals/habitat on private property without compensation to owner is Theft. Compensation claim will be made should proposed project proceed as currently ~~des~~ scoped.

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iii

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Table of Contents

List of Figures and Tables

FIGURES (Appendix A)

TABLES

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List and Definitions of Abbreviated Terms

AASHTO	American Association of State Highway and Transportation Officials
AWS	Alameda whipsnake
BA	Biological Assessment
BMPs	Best Management Practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CRLF	California red-legged frog
CTS	California tiger salamander
CWA	Clean Water Act
DPS	Distinct Population Segment
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
HBP	Federal Highway Bridge Program
HCP/NCCP	Final East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan
HTL	High tide line
LSA	LSA Associates, Inc.
MBTA	Federal Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
NWP	Nationwide Permit
OHW	Ordinary High Water Mark
PCN	Preconstruction notification

Project Site	The area within which all active construction work will occur, including temporary storage and staging areas.
Project Vicinity	The project site and surrounding region within an approximate five-mile radius of the project site, containing occurrences of special-status biota or suitable habitats for such species.
PWD	Contra Costa County Public Works Department
ROW	Right-of-way
RPR	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
SJKF	San Joaquin kit fox
SLC	State-listed Candidate
TPF	Tree Protection Fencing
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Chapter 1. Introduction

The Contra Costa County Department of Public Works (PWD), in cooperation with the California Department of Transportation District 4 (Caltrans), proposes to replace the existing Marsh Creek Road Bridge (Br. No. 28C-0141) (Project) across Marsh Creek approximately 2 miles east of Morgan Territory Road in the Clayton Area of unincorporated Contra Costa County. The Project will replace the existing single-span bridge with a new single-span bridge. The proposed bridge replacement project has been funded by the Federal Highway Bridge Program (HBP). Caltrans is the lead agency under the National Environmental Policy Act (NEPA). The County is the lead agency under the California Environmental Quality Act (CEQA).

Marsh Creek Road is a two-lane, local, rural road with average daily traffic of 6,300 vehicles (2008). The facility serves regional traffic as an alternate to State Route 4. The paved road approaches to the bridge are approximately 24 feet wide. The posted speed limit is 45 miles per hour. The existing bridge, constructed in 1948, consists of a single-span, reinforced concrete deck on non-composite steel beam girders on a large skew. The girders are directly supported by steel "H" piles at the abutments. Reinforced concrete bulkheads support the stream banks behind the "H" pile. The bulkheads do not appear to be supported on a surface foundation. The curb to curb width is approximately 26 feet, with 11-foot-wide lanes and approximately 2-foot-wide shoulders. The total structure width is 30 feet and the bridge span is 44 feet long. The bridge rail consists of a W-beam guardrail mounted on steel posts founded in concrete slab. The existing guardrail and approach railing is considered non-standard.

The Sufficiency Rating for the existing structure is 68, with a status of "Functionally Obsolete." (Sufficiency ratings are determined by the Federal Highway Administration (FHWA) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges. Sufficiency ratings range from a low of 0 to a high of 100. A sufficiency rating of less than 50 qualifies a bridge for replacement.) With a sufficiency rating of between 50 and 80, Caltrans has agreed with the PWD's determination that it is more cost effective to replace rather than rehabilitate the bridge. This bridge is eligible for replacement under the HBP.

1.1. Project Purpose

The purpose of the project is to provide a safe vehicular crossing over Marsh Creek on Marsh Creek Road by replacing the existing structurally deficient and functionally

obsolete bridge with a new bridge that meets current design standards. The design and construction of the approach roadway and replacement bridge will be in compliance with PWD and Caltrans design standards, as well as American Association of State Highway and Transportation Officials (AASHTO) guidelines.

The project is needed to replace a structurally deficient bridge with one that has safer standard shoulder widths, lane widths, and a sidewalk to accommodate pedestrians and bicyclists. The current bridge is single span, approximately 44 feet long by 30 feet wide, and carries one lane of traffic in each direction. The width of the bridge is severely substandard for two-way traffic. In addition, the reinforced concrete that encases the steel truss members is cracked and spalled at numerous locations. Vehicle weight restrictions have been posted on the bridge due to the cracking and spalling and the limited capacity of bridge structural members.

1.2. Project Description

Location. The project site is located along Marsh Creek Road in Contra Costa County, approximately 2 miles east of Morgan Territory Road in the Clayton Area (Figure 1). Specifically, the project site falls within the Antioch South 7.5-minute United States Geological Survey (USGS) quadrangle and within the NW ¼ of Section 34, Township 01N, Range 01E of the Mount Diablo Base and Meridian. The bridge is located at NAD 83 UTM 37.891635, -121.848997. The project lies within the Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) Inventory Area.

General Description. PWD, in cooperation with Caltrans, proposes to replace the existing Marsh Creek Road Bridge (Br. No. 28C-0141) across Marsh Creek in Contra Costa County, California. The purpose of the project is to replace the existing single-span bridge with a new single-span bridge. Project construction is expected to begin in 2016 and will be completed in 2017. This is considered a two season project.

Specific Project Elements. The project will involve the following specific activities:

Proposed Bridge

The proposed replacement bridge will be an approximately 90-foot-long single-span bridge. The bridge deck will be widened to provide a width of approximately 43 feet, with 12-foot-wide travel lanes, 8-foot-wide shoulders, and an approximately 1.5-foot-wide concrete barrier on each side of the new bridge (Figure 2).

The new bridge will be constructed of reinforced concrete on pre-cast and pre-stressed I-girders. The reinforced concrete bridge abutments will be supported by deep piles that will either be driven or drilled to a depth of 60 feet.

The existing structure includes tall, reinforced concrete walls that restrict the flows of Marsh Creek under the bridge. These existing walls will be removed as part of the project to open up the channel where Marsh Creek flows under the bridge. The channel work will require that Marsh Creek be dewatered in accordance with regulatory permits.

Dewatering will likely be accomplished using coffer dams according to methods recommended by CDFW. Water will be routed around the work area to maintain downstream flows. Dewatering will occur in the work area extending approximately 150 feet upstream and 130 feet downstream of the existing bridge.

Roadway Alignment

With the bridge replacement, the horizontal alignment of Marsh Creek Road will be shifted north on a parallel alignment to accommodate the wider bridge structure, and earthwork will be required along both sides of the existing roadway. The intent of the project is to leave the vertical profile of the bridge and approach roadways similar to the existing condition, depending on the results of a hydraulic analysis. If there is no change to the vertical profile of the bridge, the change in the horizontal alignment will require reconstruction of approximately 400 feet of the approach roadway on both sides of the bridge (800 feet total). Driveway conform work to the nearby residential driveways may be required.

Tree Removal

A total of 36 trees, consisting of gray pine (*Pinus sabiniana*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), red willow (*Salix laevigata*), western sycamore (*Platanus racemosa*), California buckeye (*Aesculus californica*), California bay (*Umbellularia californica*), and cherry plum (*Prunus cerasifera*) will require removal as a result of the bridge replacement work. These trees occur in the riparian woodland, oak savanna, oak woodland, chaparral/scrub, and non-native woodland land cover types (Appendix A, Figure 3).

scope of tree removal ~~replac~~ long replacement time for ~~Valley~~ Oaks, Coastal Live > 20 yrs?

3

Right-of-Way Acquisition/Easements

The widening and realignment of Marsh Creek Road to construct the new bridge may require right-of-way or temporary easements from several adjacent parcels. These easements are illustrated in Appendix A, Figure 2.

Staging

The proposed project is expected to include staged construction of the new bridge to accommodate existing traffic and minimize the shift in roadway alignment, thereby minimizing impacts to the surrounding right-of-way, including existing buildings. The centerline of the new bridge will be shifted in order to accommodate staged construction. Up to three stages of bridge construction are expected, including one stage where eastbound traffic uses the existing lane and westbound traffic occurs on the partially built bridge. The project is expected to accommodate one 12-foot-wide travel lane in each direction on Marsh Creek Road through the project site throughout construction, with short, infrequent periods of one lane traffic controls. Staging of construction materials and equipment will occur in two potential locations north and south of the road in the center of the project site (Appendix A, Figure 3, page 1 and page 2). The northern staging area will occur within oak savanna, chaparral/ scrub, and riparian areas; these impacts are included in the impact calculations. The southern staging will occur entirely within paved parking areas. The cumulative area of impact for staging use will be 0.435 acre, consisting of 0.117 acre of chaparral/scrub, 0.155 acre of oak savanna, 0.011 acre of riparian woodland, and 0.152 acre of urban.

Utility Relocation

Overhead electric, phone, and cable lines cross the creek along the south side of the road. An underground water line is attached to the downstream (north) side of the bridge. The overhead electric line poles will be relocated. The waterline attached to the existing bridge will be relocated. The exact location of relocated utilities has not yet been determined. Impact acreages and fees will be adjusted, if necessary, based on the final project plan.

Revegetation

All temporarily impacted areas where soil disturbance occurs will be hydroseeded with a native plant seed mix immediately following construction.

Suitable for habitat repair? & more needs to be done (trees, undergrowth (blackberry for example)

4

Construction

Construction will take approximately two seasons, starting in the summer of 2016 and finishing by the fall of 2017. The County's proposed schedule is tied to the availability of HBP funding.

HCP/NCCP Covered Activities. The project involves an activity covered under the HCP/NCCP (Jones and Stokes 2006). Specifically, the project is covered under *Transportation Projects – Bridge Replacement, Repair, or Retrofit (Rural Infrastructure Projects)* of the HCP/NCCP. The HCP/NCCP provides specific conditions and conservation measures for covered activities to mitigate for potential effects upon special-status species, including federally- and state-listed species.

Activities covered under the HCP/NCCP are considered to have received Incidental Take authorization from the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). As required under the HCP/NCCP, species-specific planning surveys were conducted for all covered species potentially affected by the project. This Natural Environment Study (NES) describes the results of those surveys. All project activities will follow the Best Management Practices (BMPs) and avoidance and minimization measures described in Chapter 6 of the HCP/NCCP and additional measures for non-HCP/NCCP-covered species if the HCP/NCCP measures are not applicable. These measures are described in Chapter 4 of this document.

Chapter 2. Study Methods

2.1. Regulatory Requirements

2.1.1. Federal Endangered Species Act

The USFWS has jurisdiction over federally-listed threatened and endangered plant and animal species. The Federal Endangered Species Act (FESA) protects listed species from harm or "take," broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Any such activity can be defined as a "take" even if it is unintentional or accidental. Listed plant species are typically provided less protection than listed animals.

An endangered species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Federal agencies involved in permitting projects that may result in take of federally-listed species (e.g., U.S. Army Corps of Engineers [Corps]) are required under Section 7 of the FESA to consult with the USFWS prior to issuing such permits. Any activity that could result in take of a federally-listed species, and is not authorized as part of a Section 7 consultation, requires a FESA Section 10 take permit from the USFWS. The HCP/NCCP does not require a Section 7 consultation; however an informal consultation between USFWS and Caltrans may be conducted.

Does taking of species on private property fall in this category? with temporary construction easement?

2.1.2. Clean Water Act

The Corps is responsible under Section 404 of the Clean Water Act to regulate the discharge of fill material into waters of the U.S. and their lateral limits, as defined in 33 CFR 328.3(a), including streams that are tributaries to navigable waters and their adjacent wetlands. The lateral limits of jurisdiction for a non-tidal stream are measured at the line of the ordinary high water mark (OHWM) (33 CFR 328.3[e]) or the limit of adjacent wetlands (33 CFR 328.3[b]). The lateral limits of jurisdiction in tidal waters extends to the high tide line (HTL) (33 CFR 328.4[b]). Any permanent extension of the limits of an existing water of the U.S., whether natural or man-made, results in a similar extension of Corps jurisdiction (33 CFR 328.5).

Waters of the U.S. fall into two broad categories: wetlands and other waters. Other waters include waterbodies and watercourses such as rivers, streams, lakes, springs, ponds, coastal waters, and estuaries. Wetlands include marshes, wet meadows, seeps, floodplains, basins, and other areas experiencing extended seasonal soil saturation

Seasonally or intermittently inundated features, such as seasonal ponds, ephemeral streams, and tidal marshes, are categorized as wetlands if they have hydric soils and support wetland plant communities. Seasonally inundated waterbodies or watercourses that do not exhibit wetland characteristics are classified as other waters of the U.S.

Other waters that cannot trace a continuous hydrologic connection to a navigable water of the U.S. are not tributary to waters of the U.S. and are termed "isolated waters." Wetlands that are not adjacent to other waters are termed "isolated wetlands." ("Adjacent" means bordering, contiguous, or neighboring, and includes wetlands separated from other waters by man-made dikes or barriers, natural river berms, beach dunes, etc.). Isolated wetlands and waters are jurisdictional if their use, degradation, or destruction could affect interstate or foreign commerce (33 CFR 328.3[a]). The Corps may or may not take jurisdiction over isolated wetlands, depending on the specific circumstances.

In general, a Section 404 permit must be obtained from the Corps before filling or grading wetlands or other waters of the U.S. Specific projects may qualify for authorization under a Nationwide Permit (NWP). The purpose of the NWP program is to streamline the evaluation and approval process throughout the U.S. for certain types of activities that have only minimal impacts to the aquatic environment. Many NWPs require the applicant to submit a preconstruction notification (PCN) to the appropriate Corps office and to obtain a project-specific authorization. The Corps is required to consult with the USFWS under Section 7 of the FESA if the permitted activity may result in the take of federally-listed species. The project is located within the Sacramento Corps jurisdiction.

All Corps permits require state water quality certification under Section 401 of the Clean Water Act. This regulatory program is administered by the Regional Water Quality Control Board (RWQCB). Projects that propose to fill wetlands or other waters of the U.S. must apply for water quality certification from the RWQCB. The RWQCB has adopted a policy requiring mitigation for any loss of wetlands, streams, or other waters of the U.S. The project is located within the Central Valley RWQCB jurisdiction.

does slope protection at bridge qualify as "fill"?

2.1.3. Porter-Cologne Water Quality Control Act

Under this Act (California Water Code Sections 13000–14920), the RWQCB is authorized to regulate the discharge of waste that could affect the quality of the waters of the State. Therefore, even if a project does not require a federal permit, it may still require review and approval by the RWQCB (e.g., for impacts to isolated wetlands and other waters). When reviewing applications, the RWQCB focuses on ensuring that

projects do not adversely affect the "beneficial uses" associated with waters of the State. In most cases, the RWQCB seeks to protect these beneficial uses by requiring the integration of water quality control measures into projects that will require discharge into waters of the State. For most construction projects, the RWQCB requires the use of construction and post-construction BMPs.

is project seeking RWQCB review/approval?

2.1.4. Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits the taking, hunting, killing, selling, purchasing, etc. of migratory birds, parts of migratory birds, or their eggs and nests. As used in the MBTA, the term "take" is defined as "to pursue, hunt, shoot, capture, collect, kill, or attempt to pursue, hunt, shoot, capture, collect, or kill, unless the context otherwise requires." Most bird species native to the U.S. is covered by this act.

do ducks qualify?
do quail qualify?

2.1.5. California Endangered Species Act

The CDFW has jurisdiction over state-listed endangered, threatened, and rare plant and animal species under the California Endangered Species Act (CESA). In addition, species proposed for listing under CESA are protected by its provisions. The CDFW also maintains a list of Species of Special Concern, defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Species of Special Concern are not afforded legal protection under CESA. In addition, the CDFW maintains a list of special animals (CDFG 2011). In general, this list includes those species that are at risk or are of the greatest conservation need. The project is located within the CDFW Region 3 jurisdiction.

Noted that no one bothered to consult with CDFW

2.1.6. California Fish and Game Code

The CDFW is also responsible for enforcing the California Fish and Game Code, which contains several provisions potentially relevant to construction projects. For example, Section 1602 of the California Fish and Game Code governs the issuance of Lake and Streambed Alteration Agreements by the CDFW. Lake and Streambed Alteration Agreements are required whenever project activities will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by the CDFW.

status of agreement?
consultation would be advisable prior to certifying CEQA document

The California Fish and Game Code also lists animal species designated as Fully Protected or Protected, which may not be taken or possessed without a permit from the California Fish and Game Commission and/or the CDFW. These take permits do not allow "incidental take" (IT) and are more restrictive than the take allowed under Section 2081 of the CESA. Fully Protected species are listed in Sections 3511 (birds), 4700

More reason to clarify circumstances project/adjacent property

(mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code, while Protected amphibians and reptiles are listed in Chapter 5, Sections 41 and 42.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including European starling, house sparrow, and rock pigeon, are not afforded any protection under the MBTA or California Fish and Game Code.

2.1.7. California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to "projects" proposed to be undertaken or requiring approval by state or local government agencies. Projects are defined as having the potential to adversely affect the environment. Under Section 15380 of CEQA, a species not included on any formal list "shall nevertheless be considered rare or endangered if the species can be shown by a local agency to meet the criteria" for listing. With sufficient documentation, a species could be shown to meet the definition of rare or endangered under CEQA and be considered a "de facto" rare or endangered species.

2.2. Studies Conducted

Prior to conducting fieldwork, LSA Associates, Inc. (LSA) searched the California Natural Diversity Data Base (CNDDB; CDFW 2013) for records of special-status species occurrences within 5 miles of the project site. Information regarding potentially occurring rare plants and listed species was obtained from the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2013) and an online database maintained by the Sacramento USFWS office (USFWS 2013) for the Antioch South, Clayton, Diablo, Tassajara, Byron Hot Springs, and Brentwood USGS 7.5-minute quadrangles. The *Special-Status Species Proposed for Coverage in the ECCC HCP/NCCP*, Vol. 1/Table 3-8 and Vol. 2/Appendix D were also referenced. For the purposes of this NES, special-status species are defined as follows:

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the FESA;
- Species that are listed, or designated as candidates for listing, as rare, threatened, or endangered under CESA;

- Plant species assigned California Rare Plant Ranks 1A, 1B, 2A, 2B, 3, and 4 in the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS 2013);
- Animal species designated as Species of Special Concern or Fully Protected by the CDFW;
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA guidelines; and
- Species covered under the HCP/NCCP.

Based on a review of the above sources, LSA identified the special-status plant and animal species with potential to occur in the general project vicinity. Following a site reconnaissance (planning survey) on August 30, 2013, LSA biologists were able to assess the potential for these species to occur within the Biological Study Area (BSA) based on the presence of suitable habitat, the proximity of known species occurrences, and knowledge of the species' range and/or mobility. Species requiring specific habitats not present in the BSA and project vicinity (i.e., alkaline, saline, or serpentine soils, inland dunes, vernal pools, tidal salt marsh, brackish marsh, etc.) were eliminated from consideration and are not discussed further. Fourteen (14) plant species and 12 wildlife species warranted further consideration given the presence of marginal or suitable habitat at the project site, as discussed in Chapter 3. Each of these species is briefly discussed in Chapter 4.

Potential wetlands within the BSA were delineated using the routine determination method described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987). This methodology entails examination of specific sample sites within suspected wetlands for hydrophytic vegetation, hydric soils, and wetland hydrology. By the federal definition, all three of these parameters must be present for an area to be considered a wetland. Methodology that was presented in the Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) was subsequently augmented and clarified in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 (Environmental Laboratory 2008).

The scientific and common names for plant and animal species used in this NES are from the following sources: plants, Baldwin et al. (2012) and Beidleman and Kozloff (2003); amphibians and reptiles, Crother (2008); birds, American Ornithologists' Union (1998) and supplements, subspecies names of special-status birds follow Shuford and Gardali (2008); and mammals, Jones et al. (1997) and Reid (2006). For animals, subspecies

names are used only when a specific subspecies is considered a special-status species by the CDFW, National Marine Fisheries Service (NMFS), and/or USFWS.

Further information detailing the methodology of the studies conducted is included below.

General Floral and Faunal Inventory, Plant Communities, Habitat Mapping, and Impact Assessment. Surveys within the BSA were conducted on August 30, 2013 to determine the locations of specific plant communities, map habitat types, and assess potential project impacts to habitats and special-status species. During the survey, the BSA was traversed by foot and the extent of the plant communities present at the site and potential sensitive species habitat were mapped with a Trimble Geo XT GPS unit and/or labeled on field maps. The special-status species habitat assessment focused on listed plant and animal species known to occur in the project vicinity. A general floral and faunal inventory was also completed. Natural communities and land cover types were classified in accordance with the HCP/NCCP (Chapter 3, Section 3.3.2), which describes land cover types based on Jones & Stokes (1996), Holland (1986), Mayer and Laudenslayer (1988, 1999), and the first edition of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995).

Botanical Surveys. Preliminary rare plant surveys of the project site were conducted on April 16, 2013 and June 7, 2013 by LSA's botanist Tim Milliken. These surveys were conducted from the road right-of-way prior to LSA obtaining access to the adjacent parcels. A late-summer protocol-level rare plant survey was performed according to CDFW protocol (CDFG 2000, 2009), USFWS protocol (USFWS 1996), and CNPS protocol (CNPS 2001) on August 30, 2013. An additional protocol-level rare plant survey was conducted on March 21, 2014, which confirmed absence of species that bloom earlier in the season. During the protocol-level surveys, the BSA was traversed by foot, and all plants observed were identified and recorded in field notes. Although the majority of plants observed were identified to species level in the field, some were transported back to the lab and identified with the aid of a dissecting microscope and floristic manuals, including the Jepson Manual: vascular plants of California, second edition (Baldwin et al. 2012).

Species-specific Planning Surveys. Species-specific planning surveys were conducted for the following HCP/NCCP-covered species: California tiger salamander (*Ambystoma californiense*) (CTS), California red-legged frog (*Rana draytonii*) (CRLF), western pond turtle (*Actinemys marmorata*), Alameda whipsnake (*Masticophis lateralis euryxanthus*)

(AWS), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), ringtail (*Bassariscus astutus*), Townsend's big-eared bat (*Corynorhinus townsendii townsendii*), and San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF). These surveys were conducted in accordance with the requirements of Section 6.3.1 of the HCP/NCCP and focused on identifying and evaluating potentially suitable habitat for the covered species and the presence of specific habitat features that could suggest past or current utilization by the species.

Jurisdictional Wetland Delineation. A delineation of potentially jurisdictional waters within the BSA was conducted on August 30, 2013. The delineation included areas meeting Corps criteria for wetlands and other waters of the United States subject to regulation under Section 404 of the Clean Water Act (CWA), as well as potentially jurisdictional waters of the State of California under the Porter-Cologne Water Quality Control Act. The findings and conclusions of the jurisdictional delineation were submitted to the Corps for verification on March 7, 2014.

2.3. Personnel and Survey Dates

LSA biologists Todd Catalini and Jennifer Roth conducted a survey of the BSA on August 30, 2013. LSA botanist and certified arborist, Tim Milliken, conducted a rare plant survey on the same date and an arborist survey on January 24, 2014. Additionally, Tim Milliken conducted a survey on March 21, 2014 to determine absence or presence of targeted rare plants on the project site. Principals George Molnar and Laura Lafler and Restoration Ecologist Linda Aberbom, supervised all work and guided preparation of this NES. The following table summarizes survey dates and personnel.

Table A: Survey Dates and Personnel

Date	Personnel	Purpose of Survey
April 16, 2013	Tim Milliken	Preliminary special-status plant survey
June 7, 2013	Tim Milliken	Preliminary special-status plant survey
August 30, 2013	Todd Catalini, Tim Milliken, Jennifer Roth	Jurisdictional wetland delineation, special-Status species habitat assessment/species-specific planning survey, protocol-level special-status plant survey, plant communities and habitat mapping, general floral and faunal inventory
January 24, 2014	Tim Milliken, Dan Sidle	Arborist survey, mapping, tagging, health assessment, and preservation/removal recommendations of trees on the project site
March 21,2014	Tim Milliken	Protocol-level special-status plant survey.

X — documentation collected in field?

field notes requested; (2/24) full scope of activities documented / time on site material to adequacy of this document. [Not available to review]

2.4. Agency Coordination and Professional Contacts

No meetings or discussions with the Corps, RWQCB, CDFW, or USFWS have thus far been conducted.

2.5. Limitations That May Influence Results

Findings within this report are based on data collected at the time of the site visit. Pre-construction surveys, such as breeding bird surveys, should be conducted within the BSA prior to the start of construction, as required under the guidelines in the HCP/NCCP.

Additionally, the PWD and LSA were not allowed access to one parcel (parcel # 078-090-023) out of seven that border the project site. The parcel is located on the north side of the road at the west end of the project site (Figure 2). The area was surveyed to the extent possible using the naked eye or binoculars from the road ROW.

Consultant has provided caveat to study. — Document did not describe scope of field survey + methods employed. That makes it difficult to assess mater

Chapter 3. Results: Environmental Setting

3.1. Description of Existing Biological and Physical Conditions

3.1.1. Biological Study Area (BSA)

The 0.20 mile (1,055-foot-long) project site is located along Marsh Creek Road, approximately 2 miles east of Morgan Territory Road between Clayton and Brentwood (Appendix A, Figure 1). The area surrounding the project site is hilly terrain adjacent to the creek corridor and includes sparse rural residential development and undeveloped land used primarily for grazing livestock. The predominant vegetation types in the region are oak woodland, oak savanna, chaparral, and annual grassland.

For the purposes of this NES, the BSA is defined as the boundary surrounding the footprint of the project, including right-of-way (ROW) limits, areas potentially needed for driveway realignments, and potential staging areas (Appendix A, Figure 2). The entirety of the BSA (6.333 acres) was surveyed by biologists as described in Sections 2.2 and 2.3.

3.1.2. Physical Conditions

The stretch of Marsh Creek Road within the project site is primarily bordered by oak savanna and urban (paved) to the north and oak woodland, non-native woodland, and urban (paved) to the south (Figure 3). Riparian woodland occurs along the stream segment at the bridge replacement site, and there is some chaparral/scrub (coyote brush [*Baccharis pilularis*]) adjacent to the riparian corridor on the north side of the road. The existing Marsh Creek Road ROW is paved, with compacted dirt/gravel substrate along the road shoulders. Marsh Creek flows through the BSA in an easterly direction.

3.1.3. Biological Conditions in the Biological Study Area

3.1.3.1. VEGETATION

There are two developed land cover types, non-native woodland (0.456 acre) and urban (1.902 acres), within the BSA. In addition, five natural vegetation communities are present within the BSA, including oak savanna (1.398 acres), oak woodland (1.427 acres), riparian woodland (0.832 acre), chaparral/scrub (0.233 acre), and native grassland (0.085 acre). The BSA also includes 495 linear feet (0.341 acre) of jurisdictional stream and 670 linear feet (0.030 acre) of unvegetated, non-jurisdictional ditches. Natural communities and land cover types are classified below in accordance with the HCP/NCCP (Chapter 3, Section 3.3.2), which described land cover types based on Jones

What about adjacent downstream extension of riparian habitat? That area falls within potential impact of proposed dewatering considered necessary to construct/work.

potentially affected jurisdictional stream outside BSA not considered. Need statement why these areas will be outside area of impact studied

& Stokes (1996), Holland (1986), Mayer and Laudenslayer (1988, 1999), and the first edition of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). Land cover types in the BSA are shown in Appendix A Figure 3, page 1 and page 2. Appendix B contains representative photographs of the BSA.

Developed

Developed areas within the BSA are comprised of paved or landscaped areas associated with Marsh Creek Road and adjacent properties. Developed areas in the BSA are classified as urban and non-native woodland land cover types in accordance with the HCP/NCCP.

Urban. Urban areas within the BSA are those where vegetation has been cleared and altered for transportation (Marsh Creek Road and driveways) and where residential structures and parking areas exist. Approximately 1.902 acres of urban land cover exists within the BSA.

Non-native Woodland. Approximately 0.456 acre of non-native woodland associated with privately-owned properties occurs in the BSA on both sides of Marsh Creek Road. On the east side of the road, this land cover type consists of ornamental plantings near driveways. On the south side of the road, this land cover type consists of a mix of native and non-native species but is dominated by introduced species such as Siberian elm (*Ulmus pumila*), giant reed (*Arundo donax*), Himalayan blackberry (*Rubus armeniacus*), and Canary Islands ivy (*Hedera canariensis*). Native species that are present include Fremont cottonwood (*Populus fremontii*), coast live oak, valley oak (*Quercus lobata*), blue elderberry (*Sambucus nigra* subsp. *caerulea*), white alder (*Alnus rhombifolia*), and gray pine.

Natural Communities

Natural communities (as defined in the HCP/NCCP) are described on the basis of vegetation characteristics, such as dominant species and vegetation structure. Natural communities within the study area are classified as oak savanna, oak woodland, riparian woodland, chaparral/scrub, and native grassland.

Oak Savanna

The oak savanna land cover type consists of grassland with a tree canopy cover between 5 and 10 percent. Approximately 1.398 acres of oak savanna are present on the north side of Marsh Creek Road. Native trees observed in this land cover type include coast live oak, valley oak, and gray pine. These trees occur individually or in clumps of three to

five trees. The understory component of the oak savanna is non-native grassland that is dominated by wild oats (*Avena fatua*) and ripgut brome (*Bromus diandrus*). Arroyo lupine (*Lupinus succulentus*) and soap plant (*Chlorogalum pomeridianum*) are native plants that are frequently observed in the non-native grassland north of Marsh Creek Road.

Oak Woodland

The oak woodland land cover type is defined as grassland with a tree canopy cover of 10 percent or greater. Approximately 1.427 acres of oak woodland occur on the south side of Marsh Creek Road. The tree canopy cover in this area is nearly 100 percent and is dominated by coast live oak. Although coast live oak is the dominant tree in this area, California bay and California buckeye also occur. The understory includes components of native and non-native grassland species. Native understory species include creeping wildrye (*Elymus triticoides*) and mugwort (*Artemisia douglasiana*). Non-native species observed include yellow star-thistle (*Centaurea solstitialis*), ripgut brome, and Italian thistle (*Carduus pycnocephalus*).

Riparian Woodland

The land cover type classified as riparian woodland occurs along Marsh Creek at the bridge replacement site. Approximately 0.832 acre of riparian woodland habitat occurs in the BSA. Plants observed in this land cover type include a canopy of western sycamore, California bay, California buckeye, coast live oak, and red willow. Although western sycamore and California buckeye are deciduous trees, they provide dense shade to the creek during the summer months. The understory plants on the upper banks of Marsh Creek consist of mugwort, snowberry (*Symphoricarpos albus*), and coyote brush. California grape (*Vitis californica*) and poison oak (*Toxicodendron diversilobum*) are prolific and ascend from a dense shrub layer up into the canopy of the riparian woodland. Perennial water in the Marsh Creek channel supports cattails (*Typha latifolia*) in intermittent stands throughout the length of the BSA. A small floodplain adjacent to the main channel of Marsh Creek supports facultative wetland plants such as mugwort, and non-native creeping bentgrass (*Agrostis stolonifera*).

Chaparral/Scrub

There is a total of 0.233 acre of chaparral/scrub habitat within the BSA consisting of three small patches. A small rocky area at the northwestern end of the BSA is classified as chaparral/scrub and is populated by California sagebrush (*Artemisia californica*), and another small rocky outcrop provides habitat for a small population of narrowleaf

goldenbush (*Ericameria linearifolia*). A small patch of coyote brush scrub occurs northwest of the riparian woodland on the north side of Marsh Creek Road.

Native Grassland

The land cover type classified as grassland consists of herbaceous vegetation dominated by grasses and forbs. Grassland areas in the BSA are classified as native grassland in accordance with the HCP/NCCP. There is approximately 0.085 acre of this native grassland in the BSA, including a small pocket of purple needle grass within the non-native grassland on the north side of Marsh Creek Road and two small patches of wildrye on the south side of the road.

Stream

Marsh Creek drains the eastern slopes of Mount Diablo, flowing to the north and then east into Marsh Creek Reservoir and ultimately into the Sacramento-San Joaquin River Delta northeast of the city of Oakley. The portion of the creek that occurs within the BSA flows southwest to northeast under the existing bridge (Appendix A, Figure 3 page 1 and page 2). The creek is approximately 30 feet wide at that location. The creek is characterized by a dense vegetative canopy cover as described above under "Riparian Woodland". The total potentially jurisdictional area of the creek (below Ordinary High Water) within the project site is 0.341 acre, with a length of 495 feet. The extent of this potentially jurisdictional area was mapped and the jurisdictional delineation was submitted to the Corps for verification on March 7, 2014. Stream habitat from top of bank to top of bank totals 0.579 acre.

3.1.3.2. WILDLIFE

The BSA is located within an area of limited rural development containing few barriers for local and regional wildlife movement. Substantial areas of natural habitat occur within private lands to the north and south of Marsh Creek Road and within the nearby Mount Diablo State Park. As a consequence, a wide range of animal species are likely to occur within and adjacent to the BSA.

Larger terrestrial mammals, such as the mule deer (*Odocoileus hemionus*), bobcat (*Felis rufus*), and coyote (*Canis latrans*) are known to be present in areas adjacent to the BSA. Smaller mammal species, such as pocket gopher (*Thomomys bottae*), vole (*Microtus californicus*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), gray fox (*Urocyon cinereoargenteus*), and northern raccoon (*Procyon lotor*) are resident in the Marsh Creek area. Although not observed during the planning surveys,

these species likely use the riparian woodland, oak savanna, oak woodland, and native grassland land cover types within the BSA for movement or as foraging/shelter habitat.

The riparian woodland, oak woodland, and oak savanna areas also provide suitable foraging and/or nesting habitat for a wide variety of resident and migratory bird species, including the American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), western scrub-jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), and turkey vulture (*Cathartes aura*).

Wildlife species observed in the BSA during the field survey include California quail (*Callipepla californica*), turkey vulture, mourning dove (*Zenaida macroura*), acorn woodpecker, Hutton's vireo (*Vireo huttoni*), Steller's jay (*Cyanocitta stelleri*), western scrub-jay, chestnut-backed chickadee (*Poecile rufescens*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), spotted towhee (*Pipilo maculatus*), Oregon junco (*Junco hyemalis oreganus*), western tanager (*Piranga ludoviciana*), and CRLF.

The BSA provides habitat for several special-status species and one State-listed Candidate (SLC). Marsh Creek and adjacent habitats provide suitable aquatic breeding and movement habitat for CRLF and western pond turtle. Adjacent habitats may also provide upland aestivation and movement habitat for CTS, movement and foraging habitat for AWS, roosting and foraging habitat for pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (SLC), and breeding and/or foraging/movement habitat for coast horned lizard (*Phrynosoma coronatum*), golden eagle, white-tailed kite, ringtail, American badger (*Taxidea taxus*), and SJKF. More details on special-status and SLC species are provided in Section 3.2 and Chapter 4 below.

3.2. Regional Species and Habitats of Concern

Tables B and C provide lists of special-status plant and animal species that potentially occur in the region surrounding the BSA and were compiled as described in Section 2.2. Table B includes the 14 plant species with the highest potential to occur in the BSA and 26 additional species that are not expected to occur in the BSA but are included in the table because they are covered in the HCP/NCCP or appear on USFWS, CDFW, or CNPS special-status species lists for the area. Table C includes the 12 wildlife species most likely to occur in the BSA and 21 additional species that are covered by the HCP/NCCP or appear on USFWS or CDFW special-status species lists. The USFWS, CDFW (CNDDB), and CNPS species lists are provided in Appendix C. Lists of all plant and animal species observed within the BSA are provided in Appendix D.

Was scope of consulting contract insufficient to investigate wildlife? Biologists did not even question neighbors to project in BSA to gather anecdotal information on sightings, etc.

what about ~~quail~~ ducks frequently observed by 12801 residents

CRLF + turtles observed in BSA/adjacent wetland for many years

kit fox - residents 12801 reported historical observation of kit fox family in west portion of BSA

Table B: Special-status Plant Species Potentially Occurring in the Biological Study Area and Project Vicinity

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Amsinckia grandiflora	Large-flowered fiddleneck	FE/SE/1B, HCP/NCCP-no take	Grassy openings in cismontane woodland, valley and foothill grassland, cannot occur in dense grass. Elevation: 275-550 m. Blooms: April-May.	Present	This species may occur on the steep well-drained slopes north of Marsh Creek Road in the BSA. The closest CNDDB occurrences (#s 2 and 3) are from extirpated or presumed extirpated populations approximately 2.46 miles and 4.67 miles from the site. Close to these historic native occurrences, an experimental population was initiated in the early 1990s near the Judsonville site (Lougher Ridge). This population is reportedly in decline (Carlsen et. al. 2012). Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.
Anomobryum julaceum	Slender silver moss	--/--/4	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest /damp rock and soil on outcrops, usually on roadcuts. Elevation: 100-1,000 m. Blooms: N/A	Present.	This species may occur in seasonally damp soils and rocks adjacent to Marsh Creek and Marsh Creek Road within the BSA. The closest CNDDB occurrence (# 7) is from a presumed extant population on Mt. Diablo. This occurrence has non-specific location information, but this species was not identified on the property.
Arctostaphylos auriculata	Mt. Diablo manzanita	--/--/1B, HCP/NCCP-covered	Chaparral (sandstone), cismontane woodland. Elevation: 135-650 m. Blooms: January-March.	Present	Chaparral/scrub is present in the BSA. Rock outcrop areas with sparse scrub cover occur on steep upland banks within the oak savanna. The closest CNDDB occurrence (# 20) is from a presumed extant population located approximately 1.47 miles from the site. One individual plant of common manzanita (*Arctostaphylos manzanita* subsp. *manzanita*) was observed within the coyote brush scrub. No individuals of Mt. Diablo manzanita were observed during botanical surveys.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	--/--/1B	Chaparral (rocky). Elevation: 500-1,100 m. Blooms: January-April	Present	Chaparral/scrub is present in the BSA. Rocky areas with sparse scrub cover occur on steep outcroppings within the oak savanna. The closest CNDDB occurrence (# 5) is from a presumed extant population located approximately 3.06 miles from the site. One individual plant of common manzanita (*Arctostaphylos manzanita* subsp. *manzanita*) was observed within the coyote brush scrub. No individuals of Contra Costa manzanita were observed during botanical surveys.
Astragalus tener var. *tener*	Alkali milk-vetch	--/--/1B	Mesic alkaline and adobe clay soils in valley and foothill grassland, adjacent to vernal pools. Elevation: 1-60 m. Blooms: March-June.	Absent	The habitat conditions of the BSA are unlike those required for this species. The elevation range associated with this species is more typical of delta grasslands. This species was not considered a target species.
Atriplex cordulata var. *cordulata*	Heartscale	--/--/1B	Saline or alkaline soils in chenopod scrub, meadows, and seeps. Sandy soils in valley and foothill grassland. Elevation: 0-560 m. Blooms: April-October	Absent	The habitat conditions of the BSA are unlike those required for this species. This species was not considered a target species.
Atriplex depressa	Brittlescale	--/--/1B, HCP/NCCP-covered	Wet, alkaline grassland, chenopod scrub, alkali scalded areas, and/or vernal pools. Elevation: 1-320 m. Blooms: April-October.	Absent	The habitat conditions of the BSA are unlike those required for this species. This species was not considered a target species.
Atriplex joaquinana	San Joaquin spearscale	--/--/1B, HCP/NCCP-covered	Wet, alkaline sparse grassland areas, alkaline pools. Elevation: 1-835 m. Blooms: April-October.	Absent	The habitat conditions of the BSA are unlike those required for this species. The closest CNDDB occurrence (# 45) is from a presumed extant population located approximately 4.93 miles from the site. This species was not considered a target species.
Blepharizonia plumosa	Big tarplant	--/--/1B, HCP/NCCP-covered	Valley and foothill grassland with clay to clay loam soils. Elevation: 50-505 m. Blooms: July-October.	Present	Potential to occur within the oak savanna understory and annual grassland. The closest CNDDB occurrence (# 44) is from a presumed extant population located approximately 2.01 miles from the site. No individuals of big tarplant were observed during the late summer protocol-level survey.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
California macrophylla (syn. = *Erodium macrophyllum*)	Round-leaved filaree	–/–/1B, HCP/NCCP-covered	Grassy openings in cismontane woodland, valley and foothill grassland with clay soils. Elevation: 15-1,200 m. Blooms: March-May	Present	Potential to occur within the oak savanna understory and annual grassland. The closest CNDDB occurrence (# 57) is from a presumed extant population located approximately 2.03 miles from the site. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.
Calochortus pulchellus	Mt. Diablo fairy-lantern	–/–/1B, HCP/NCCP-covered	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland, on wooded and brushy slopes. Elevation: 30-840 m. Blooms: April-June.	Present	Potential to occur within the oak savanna understory and annual grassland. The closest CNDDB occurrence (# 29) is from a presumed extant population located approximately 0.58 miles from the site. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.
Campanula exigua	Chaparral harebell	–/–/1B	Chaparral (rocky, usually serpentine). Elevation: 275-1,250 m. Blooms: May-June.	Absent	The habitat conditions of the BSA are unlike those required for this species. The BSA's elevation is below the range associated with this species. It also has more of an affinity for the serpentine slopes of Mt. Diablo. There is no serpentine in the BSA. The closest CNDDB occurrence (# 26) is from a presumed extant population located approximately 2.75 miles from the site.
Centromadia parryi subsp. *congdonii*	Congdon's tarplant	–/–/1B	Grazed and un-grazed annual grassland. Alkaline or saline soils sometimes described as heavy white clay (saline clay soil). Elevation: 1-230 m. Blooms: May-October (Nov.).	Absent	The habitat conditions of the BSA are generally unlike those required for this species.
Cordylanthus nidularius	Mt. Diablo bird's-beak	–/SR/1B	Chaparral (serpentine). Elevation: 600-800 meters. Blooms: July-August.	Absent	The habitat conditions of the BSA are generally unlike those required for this species. There is no serpentine in the BSA. The closest CNDDB occurrence (# 1) is from a presumed extant population located approximately 4.16 miles from the site.
Cryptantha hooveri	Hoover's cryptantha	–/–/1A	Inland dunes, sandy soils in valley and foothill grassland. Elevation: 9-150 m. Blooms: April-May	Absent	The habitat conditions of the BSA are generally unlike those required for this species.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	–/–/1B	Within and beside chaparral, grassy openings of cismontane woodland, sometimes mesic areas in above habitats. Elevation: 230-1,095 m. Blooms: April-June.	Present	Potential to occur within the oak woodland. The closest CNDDB occurrence (# 9) is from a presumed extant population located approximately 3.62 miles from the site. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA. Spring/summer protocol-level surveys will confirm presence/absence of this species.
Delphinium recurvatum	Recurved larkspur	–/–/1B, HCP/NCCP-covered	Wet, alkaline areas, chenopod scrub. Elevation: 3-750 m. Blooms: March- June.	Absent	The habitat conditions of the BSA are generally unlike those required for this species.
Didymodon norrisii	Norris' beard moss	–/–/2B	Cismontane woodland, lower montane coniferous forest/intermittently mesic, rock. Elevation: 600-1,973 m. Blooms: N/A	Absent	The habitat conditions of the BSA are unlike those required for this species. The BSA's elevation is below the range associated with this species. The closest CNDDB occurrence (# 35) is from a presumed extant population located approximately 3.24 miles from the site. This species was not found within the BSA.
Dirca occidentalis	Western leatherwood	–/–/1B	Broadleaved upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, and riparian woodland on brushy slopes, mesic sites. Elevation: 30-395 m. Blooms: January-March (April)	Present	Potential habitat present in the BSA, but the species is not known to occur east of the Berkeley Hills. Therefore, this species is not discussed further in this document.
Eriogonum truncatum	Mt. Diablo buckwheat	–/–/1B, no-take	Openings with bare soil in chaparral, coastal scrub, or valley and foothill grassland with dry exposed clay or sandy substrates. Elevation: 3-350 m. Blooms: April-November.	Present	Chaparral/scrub is present in the BSA. Rock outcrop areas with sparse scrub cover occur on steep upland banks within the oak savanna. However, the only known population is on the south side of Mt. Diablo, and the species is not likely to occur within or adjacent to the BSA. No individuals of Mt. Diablo buckwheat were observed during late summer protocol-level surveys.
Eschscholzia rhombipetala	Diamond-petaled California poppy	–/–/1B	Alkaline or clay soils in valley and foothill grassland. Elevation: 0-975 m. Blooms: March-April.	Absent	Not likely to occur within the oak savanna understory and annual grassland due to a lack of suitable soils. There are no occurrences of this species in the project vicinity.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Fritillaria liliacea	Fragrant fritillary	--/--/1B	Coastal scrub, valley and foothill grassland, and coastal prairie. Often on serpentine soils. Other various soils reported, though usually clay. Elevation: 3-410 m. Blooms: February-April.	Absent	Potential to occur within the oak savanna understory and annual grassland is low to none. There are no occurrences of this species in the project vicinity.
Helianthella castanea	Diablo helianthella	--/--/1B, HCP/NCCP-covered	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland, usually within rocky azonal soils. Elevation: 60–300 m. Blooms: April-June.	Present	Potential to occur within the oak woodland. The closest CNDDB occurrence (# 70) is from a presumed extant population located approximately 2.38 miles from the site. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.
Hesperolinon breweri	Brewer's western flax	--/--/1B, HCP/NCCP-covered	Serpentine chaparral, cismontane woodland, and valley and foothill grassland. Elevation: 30-900 m. Blooms: May-July.	Absent	The habitat conditions of the BSA are generally unlike those required for this species. It has an affinity for the serpentine slopes on Mt. Diablo. There is no serpentine in the BSA. The closest CNDDB occurrence (# 33) is from a presumed extant population located approximately 2.08 miles from the site.
Hibiscus lasiocarpos var. *occidentalis*	Woolly rose-mallow	--/--/1B	Freshwater marshes and swamps, riprap on sides of levees. Elevation: 0-120 m. Blooms: June-September.	Absent	The habitat conditions of the BSA are unlike those required for this species. The geographic range associated with this species relates to those of delta marshlands. This species was not considered a target species.
Lasthenia conjugens	Contra Costa goldfields	FE/--/1B, no-take	Valley and foothill grassland and cismontane woodland in vernal pools, swales, and moist depressions (alkaline). Extirpated from most of its range; extremely endangered. Elevation: 0-470 m. Blooms: March-June.	Absent	The habitat conditions of the BSA are unlike those required for this species. The geographic range associated with this species includes alkaline habitats of valley grassland/vernal pools. This species was not considered a target species.
Madia radiata	Showy madia	--/--/1B, HCP/NCCP-covered	Valley and foothill grassland and openings in cismontane woodland. Elevation: 25-1,215 m. Blooms: March-May.	Present	Potential to occur within the oak savanna. The closest CNDDB occurrence (# 27) is from a presumed extant population located approximately 4.30 miles from the site. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Malacothamnus hallii	Hall's bush-mallow	--/--/1B	Chaparral, coastal scrub. Some populations on serpentine. Elevation: 10-760 m. Blooms: May-September (October).	Absent	Chaparral and scrub land cover type is present in the BSA. The coyote brush scrub and the rock outcrop areas within the oak savanna do not meet the open chaparral habitat requirements for Hall's bush-mallow. This species has an affinity for the serpentine slopes of Mt. Diablo. There is no serpentine in the BSA. The closest CNDDB occurrence (# 36) is from a presumed extant population located approximately 3.88 miles from the site.
Monolopia gracilens	Woodland woolythreads	--/--/1B	Openings in broadleaf upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland/serpentine. Elevation: 100-1,200 m. Blooms: March-July.	Absent	This species has an affinity for serpentine soils in grasslands and within openings in chaparral and oak woodland. There is no serpentine in the BSA. The closest CNDDB occurrence (# 43) is from a presumed extant population located approximately 3.00 miles from the site.
Navarretia gowenii	Lime Ridge navarretia	--/--/1B	Chaparral, clay and serpentine soils. Elevation: 180-305 Blooms: May-June.	Absent	This species has an affinity for clay and serpentine soils in grasslands and chaparral. There is no serpentine in the BSA. There are no CNDDB occurrences within 5 miles of the project site.
Navarretia nigelliformis subsp. *nigelliformis*	Adobe navarretia	--/--/4, HCP/NCCP-covered	Valley and foothill grassland. Elevation: 100-1,000 m. Blooms: April–June.	Present	Habitat information on this species is limited. Grassland habitats are present in the BSA. Spring protocol-level surveys were conducted in 2014. This species was not observed on the Project site or within the BSA.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	FE/CE/1B	Interior sand dunes Elevation: 0-30 m Blooms: March – September.	Absent	The habitat conditions of the BSA are unlike those required for this species. The geographic range associated with this species relates to the unique sand dune habitat near the city of Antioch. This species was not considered a target species.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Phacelia phacelioides	Mt. Diablo phacelia	–/–/1B	Chaparral and cismontane woodland/rocky, strong indicator of serpentine soils Elevation: 500-1,370 m. Blooms: April-May.	Absent	The habitat conditions of the BSA are unlike those required for this species. The geographic range associated with this species relates to open rocky slopes at an elevation much higher than the BSA. The closest CNDDB occurrence (# 4) is from a presumed extant population located approximately 1.89 miles from the site. This species was not considered a target species.
Sanicula saxatilis	Rock sanicle	–/SR/1B	Rocky ridges or tallus, broadleaved upland forest, chaparral, valley and foothill grassland. Elevation: 620-1,175 m. Blooms: April-May.	Absent	The habitat conditions of the BSA are unlike those required for this species. The geographic range associated with this species relates to open rocky slopes at an elevation much higher than the BSA. This species was not considered a target species.
Senecio aphanactis	Chaparral ragwort	–/–/2B	Occurs in drying alkaline flats in cismontane woodland and coastal scrub. Elevation: 20-575 m. Blooms: January-April.	Absent	The habitat conditions of the BSA are unlike those required for this species. There are no alkaline flats in the BSA. This species was not considered a target species.
Streptanthus albidus ssp. *peramoenus*	Most beautiful jewel-flower	–/–/1B	Chaparral, cismontane woodland, valley and foothill grassland, serpentine soils. Elevation: 95-1,000 m. Blooms: March-October.	Absent	This species has an affinity for serpentine soils in grasslands and within openings in chaparral and oak woodland. There is no serpentine in the BSA. This species was not considered a target species.
Streptanthus hispidus	Mt. Diablo jewel-flower	–/–/1B	Chaparral, valley and foothill grassland/rocky. Elevation: 365-1,200 m. Blooms: March-June.	Absent	This species has an affinity for serpentine soils in grasslands and within openings in chaparral and oak woodland. There is no serpentine in the BSA. This species was not considered a target species.
Triquetrella californica	Coastal triquetrella	–/–/1B	Coastal bluff scrub, coastal scrub/soil. Elevation: 10-100 m. Blooms: N/A	Present	This species may occur in seasonally damp soils and rocks adjacent to Marsh Creek and Marsh Creek Road within the BSA.
Tropidocarpum capparideum	Caper-fruited tropidocarpum	–/–/1B, no-take	Alkaline clay soils in grassland and oak woodland (valley and foothill grassland). Elevation: 1-455 m. Blooms March-April.	Absent	The habitat conditions of the BSA are unlike those required for this species. There are no alkaline soils in the BSA. This species was not considered a target species.

Scientific Name	Common Name	Status (F/S/CRPR, HCP/NCCP)*	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Viburnum ellipticum	Oval-leaved viburnum	–/–/2B	Chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 215-1,400 m. Blooms May-June.	Present	Potential to occur within the oak woodland. The closest CNDDB occurrence (# 27) is from a presumed extant population located approximately 0.92 miles from the site. This species was not observed during botanical surveys.

* Status Codes

FE = Federally listed as endangered
FT = Federally listed as threatened
FSC = Federal Species of Concern
SE = State-listed as endangered
ST = State Threatened
SR = State Rare
SSC = State Species of Special Concern
HCP/NCCP-covered = species is covered by the HCP/NCCP
no-take = no-take species under the HCP/NCCP
CRPR = California Rare Plant Rank

California Rare Plant Ranks

1A = California Rare Plant Rank 1A: Plants presumed expirated in California and either rare or extinct elsewhere.
1B = California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
2B = California Rare Plant Rank 2B: Plants rare, threatened or endangered in California but more common elsewhere
3 = California Rare Plant Rank 3: Plants about which more information is needed – a review list
4 = Plants of Limited Distribution - A Watch List

Table C: Special-status Wildlife Species Potentially Occurring in the Biological Study Area and Project Vicinity

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Invertebrates					
Branchinecta conservatio	Conservancy fairy shrimp	FE/--/--	Large, steep-sided, alkali playa-type pools with moderately turbid water.	Absent	Playa pools are absent from the BSA and project vicinity. Watercourses are not suitable habitat.
Branchinecta longiantenna	Longhorn fairy shrimp	FE/--/--, HCP/NCCP-covered	Vernal pools, seasonal ponds, sometimes constructed features that hold water. Ponding duration can be as little as 6-7 weeks in winter or 3 weeks in spring.	Absent	Vernal pools and other features that pond water are absent from the BSA and project vicinity. Watercourses are not suitable habitat.
Branchinecta lynchi	Vernal pool fairy shrimp	FT/--/--, HCP/NCCP-covered	Vernal pools, alkali pools, stock ponds, ponds in vernal swales. Ponding duration can be as little as 6-7 weeks in winter or 3 weeks in spring.	Absent	Vernal pools and other features that pond water are absent from the BSA and project vicinity. Watercourses are not suitable habitat.
Brachinecta mesovallensis	Midvalley fairy shrimp	--/--/--, HCP/NCCP-covered	Vernal pools and a variety of constructed features. Often ponding is of shallow duration, but can occur in long-duration ponds.	Absent	Vernal pools and other features that pond water are absent from the BSA and project vicinity. Watercourses are not suitable habitat.
Callophrys mossii bayensis	San Bruno elfin butterfly	FE/--/--	Coastal mountainous areas with grassy ground cover within fog belt. Associated with host plant *Sedum spathulifolium*.	Absent	The BSA is not located within the fog belt and is not known for supporting the host plant of this species.

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT/--/--	Riparian habitat. Adults feed and lay eggs on blue elderberry (*Sambucus mexicana*) shrubs. Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for stressed elderberries. Occurs only in the Central Valley of California.	Present	The BSA contains one blue elderberry of the appropriate size for this species and several smaller shrubs. However, the BSA and project vicinity are west of the known range of the species. Therefore, this species is not discussed further in this document.
Lepidurus packardi	Vernal pool tadpole shrimp	FE/--/--, HCP/NCCP-covered	Large or small, clear or turbid, alkali or fresh water vernal pools, clay flats, alkaline pools, ephemeral stock tanks, roadside ditches, and road ruts.	Absent	Vernal pools and other features that pond water are absent from the BSA and project vicinity. Watercourses are not suitable habitat.
Fish					
Hypomesus transpacificus	Delta smelt	FT/SE/--	Sacramento-San Joaquin Delta at salinities less than 2 ppm. Generally not found in smaller freshwater streams.	Absent	Suitable habitat not present in the BSA or project vicinity.
Oncorhynchus mykiss	Central California Coast steelhead	FT/--/--	Clear, cool riffles with gravel or cobble substrate for spawning; clear, cool riffles and pools as rearing habitat.	Present	The BSA and project vicinity are outside the known range of this species. The dam at Marsh Creek Reservoir prohibits salmonids from moving upstream into Marsh Creek. Therefore, this species is not discussed further in this document.
Oncorhynchus mykiss	Central Valley steelhead	FT/--/--	Clear, cool riffles with gravel or cobble substrate for spawning; clear, cool riffles and pools as rearing habitat.	Present	The BSA and project vicinity are outside the known range of this species. The dam at Marsh Creek Reservoir prohibits salmonids from moving upstream into Marsh Creek. Therefore, this species is not discussed further in this document.

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon	FT/ST/--	Clear, cool riffles with gravel or cobble substrate for spawning; clear, cool riffles and pools as rearing habitat.	Present	The BSA and project vicinity are outside the known range of this species. The dam at Marsh Creek Reservoir prohibits salmonids from moving upstream into Marsh Creek. Therefore, this species is not discussed further in this document.
Oncorhynchus tshawytscha	Central Valley winter-run Chinook salmon	FE/SE/--	Clear, cool riffles with gravel or cobble substrate for spawning; clear, cool riffles and pools as rearing habitat.	Present	The BSA and project vicinity are outside the known range of this species. The dam at Marsh Creek Reservoir prohibits salmonids from moving upstream into Marsh Creek. Therefore, this species is not discussed further in this document.
Amphibians					
Ambystoma californiense	California tiger salamander – Central Valley DPS	FT/ST/SSC, HCP/NCCP-covered	Grassland, oak woodland, ruderal, and seasonal pool habitats. Seasonal ponds and vernal pools are necessary for breeding. Adults use mammal burrows and other underground retreats as aestivation habitat.	Present	The BSA does not contain suitable breeding habitat for this species. However, suitable or occupied breeding habitat (stock ponds) occurs in the project vicinity. Oak savanna, native grassland, and riparian habitats within the BSA contain suitable movement and/or upland aestivation habitat for this species. The nearest confirmed breeding site is 1.3 miles from the project site and an adult CTS was seen within 0.9 mile of the site.

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Rana boylii	Foothill yellow-legged frog	--/--/SSC, HCP/NCCP-covered	Streams with rocky or cobbly substrate that flow at least to May.	Present	The BSA and project vicinity have suitable habitat for this species. However, the species has not been found in recent surveys of the area and is considered extirpated from Contra Costa County (D. Muth, LSA). The nearest known population is in the upper Alameda Creek watershed in southern Alameda County. Therefore, this species is not discussed further in this document.
Rana draytonii	California red-legged frog	FT/--/SSC, HCP/NCCP-covered	Creeks, ponds, marshes. Prefers aquatic habitat with deep (2 feet or deeper) areas and undercut banks, emergent aquatic vegetation, and bank cover. Does not occur in brackish water.	Present	The BSA contains potential breeding habitat and suitable movement and upland habitat for this species. Four juveniles were observed during planning surveys of the site. The nearest known breeding location is 1.2 miles from the project site.
Reptiles					
Actinemys marmorata	Western pond turtle	--/--/SSC, HCP/NCCP-covered	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation.	Present	The BSA provides suitable aquatic and upland habitat for this species. The nearest known occurrence is located 1.4 miles from the project site.
Anniella pulchra pulchra	Silvery legless lizard	--/--/SSC, HCP/NCCP-covered	Sandy or loose loamy soils with sparse vegetation and high moisture content.	Absent	The BSA and project vicinity do not contain sandy or loose loamy soils suitable for this species.

Residents have reported this species in the wetland; they have been observed for many years, up to present (2015)

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Masticophis lateralis euryxanthus	Alameda whipsnake	FT/ST/–, HCP/NCCP-covered	Chaparral, rocky outcrops, south facing slopes and ravines within valley-foothill grassland with shrubs and oak trees in Alameda and Contra Costa counties.	Present	The oak savanna, grassland, and scrub habitats within the BSA and the project vicinity contain suitable movement and foraging habitat for this species. Suitable chaparral habitat occurs 290 feet north of the project site. The closest known occurrence of this species was recorded approximately 1.2 miles from the project site.
Phrynosoma coronatum	Coast horned lizard	–/–/SSC	Chaparral, oak savanna, and grassland habitat types with loose soils. Also in lowlands, along sandy washes with scattered low bushes.	Present	The BSA and project vicinity support suitable habitat for this species.
Thamnophis gigas	Giant garter snake	FT/ST/–, HCP/NCCP-covered	Agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands primarily within the Sacramento Valley.	Absent	The BSA and project vicinity are outside the known range of this species and do not contain suitable slow-flowing wetland/stream habitat.
Birds					
Agelaius tricolor	Tricolored blackbird	–/–/SSC, HCP/NCCP-covered (nesting colonies)	Nesting usually occurs in areas of dense cattails and/or tall bulrushes in creeks or ponds, tall mustard (*Brassica sp.*), grain stalks in fields, or Himalayan blackberry (*Rubus discolor*).	Absent	Suitable large patches of cattails, bulrushes, dense and tall ruderal plants, and grasses are absent from the BSA.
Aquila chrysaetos	Golden Eagle	BGPA/–/FP, HCP/NCCP-covered	Forests, canyons, shrub lands, grasslands, and oak woodlands. Large trees or cliffs for nesting. Open grasslands for foraging.	Present	The BSA and project vicinity provide potential nesting habitat for this species. Oak savanna and native grassland may provide suitable foraging habitat.

Residents report snakes observed at/next to BSA
- rattle snakes
- gopher snakes
- water snakes -

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Athene cunicularia	Burrowing owl	–/–/SSC, HCP/NCCP-covered	Open habitats (e.g., grasslands, agricultural areas) with mammal burrows or other features (e.g., culverts, pipes, and debris piles) suitable for nesting and roosting.	Absent	No mammal burrows or other features suitable for nesting or roosting were observed in the BSA. The BSA and project vicinity are likely too steep and wooded to provide preferred nesting/foraging habitat. The only known occurrence within the project vicinity is 4.3 miles away.
Buteo swainsoni	Swainson's hawk	–/ST/–, HCP/NCCP-covered	Open grasslands and agricultural fields. Nests in large trees such as valley oak, cottonwood, or eucalyptus.	Absent	The BSA and project vicinity do not provide suitable nesting habitat for this species. The project site is ~9-10 miles from preferred agricultural foraging habitat. The closest known occurrences are 3.3 miles and 3.7 miles from the project site at locations closer to suitable foraging habitat.
Elanus leucurus	White-tailed kite	–/–/FP, HCP/NCCP-covered no-take	Grassland and savanna for foraging. Large trees for roosting and nesting.	Present	The BSA and project vicinity provide potential nesting habitat for this species. Oak savanna and native grassland may provide suitable foraging habitat.
Falco peregrinus anatum	Peregrine falcon	–/–/FP, HCP/NCCP-covered no-take	Nests on cliffs, transmission towers, skyscrapers.	Absent	Suitable nesting habitat (cliffs, skyscrapers, transmission towers) is absent from the BSA.
Rallus longirostris obsoletus	California clapper rail	FE/SE/FP	Saltwater and brackish marshes often crossed by tidal sloughs in the San Francisco Bay. Closely associated with pickleweed.	Absent	No suitable habitat present within the BSA or project vicinity.
Sternula antillarum browni	California least tern	FE/SE/FP	Coastal estuaries, lagoons, tidal flats, salt flats.	Absent	No suitable habitat present within the BSA or project vicinity.

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Mammals					
Antrozous pallidus	Pallid bat	–/–/SSC	Usually maternity roosts occur in enclosed areas of buildings, caves, and mines. Forages in a wide variety of open habitats.	Present	The BSA and project vicinity do not contain suitable breeding habitat for this species, but do contain suitable foraging habitat. There is no habitat for maternity roosts within the BSA.
Bassariscus astutus	Ringtail	–/–/FP, HCP/NCCP-covered no-take	Mixture of forest and scrub in close association with rocky or riparian areas. Nests in rocky areas and hollow trees and logs.	Present	The BSA supports suitable foraging areas for ringtails and potentially supports denning areas in hollow trees and logs.
Corynorhinus townsendii townsendii	Townsend's big-eared bat	–/–/SLC, HCP/NCCP-covered	Usually maternity roosts occur in enclosed areas of buildings, caves, and mines. Forages along habitat edges, often gleaning insects from trees or shrubs.	Present	The BSA and project vicinity do not contain suitable breeding habitat for this species, but do provide suitable foraging habitat. There is no habitat for maternity roosts within the BSA.
Taxidea taxus	American badger	–/–/SSC	Open grassland areas with plentiful prey such as pocket gophers and ground squirrels.	Present	Marginally suitable denning, foraging, and movement habitat is present in the BSA and project vicinity. No dens or small mammal burrows were observed during planning surveys. The nearest known occurrence is 4.21 miles from the project site and was recorded in 2002.

12801 Residents report bats in vicinity of BSA (backyard of 12801 residence)

Scientific Name	Common Name	Status (F/S/CDFW, HCP/NCCP)	General Habitat Description	Habitat Present /Absent in BSA	Rationale
Vulpes macrotis mutica	San Joaquin kit fox	FE/ST/–, HCP/NCCP-covered	Annual grasslands including grasslands with vernal pools, or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Present	Marginally suitable denning, foraging, and movement habitat is present in the BSA and project vicinity. No dens or small mammal burrows were observed during planning surveys. The closest possible record is 0.47 miles from the BSA and was recorded in 1989 by an untrained observer. All other records within 5 miles of the project site occurred prior to 1993.

Residents 12801 report sightings of kit fox families in east end of their property within BSA in the last two years.

Status: FE = federally endangered; FT = federally threatened; ST = State threatened; FP = State fully protected; SLC = State-listed candidate; SSC = State species of special concern; HCP/NCCP-
covered = species is covered by the HCP/NCCP; no-take = no-take species under the HCP/NCCP

*State-listed candidate as of December 2013

Chapter 4. Results: Biological Resources, Discussion of Impacts and Mitigation

The HCP/NCCP includes measures to avoid and minimize take of covered species. The HCP/NCCP has evaluated and complied with avoidance and minimization requirements at a regional scale to eliminate the need for individual projects to evaluate avoidance and minimization at the project scale. The HCP/NCCP covers all four federally-listed species that may occur on the project site based on availability of suitable HCP/NCCP land cover types and the results of species-specific planning surveys (CTS, CRLF, AWS, and SJKF). The HCP/NCCP also covers three non-federally-listed species that may occur on-site (western pond turtle, golden eagle, Townsend's big-eared bat [SLC]). The remaining five special-status species that may occur on-site, coast horned lizard, white-tailed kite, pallid bat, ringtail, and American badger, are not specifically covered by the HCP/NCCP. However, the avoidance and minimization measures for the other HCP/NCCP-covered species, as well as fees required for permanent and temporary impacts under the HCP/NCCP adequately address any potential impacts to these species.

Species-specific planning surveys (habitat assessment surveys) are required for all activities covered under the HCP/NCCP. Planning surveys were conducted on August 30, 2013 as described in Section 2.2 of this NES. A USFWS, CDFW, and CNPS protocol-level botanical survey was also conducted within the BSA on August 30, 2013 (Section 2.2). A protocol-level botanical survey was conducted in spring, March 21, 2014 for earlier blooming species to confirm results from two preliminary botanical surveys conducted on April 16, 2013 and June 7, 2013. The results of these surveys and a discussion of potential impacts are discussed below. Avoidance and minimization measures and compensatory mitigation, as applicable, are also described for each resource.

In accordance with Chapter 6 of the HCP/NCCP, planning surveys to quantify HCP/NCCP land cover types present within the BSA were conducted in order to determine the need for additional preconstruction surveys or construction monitoring for HCP/NCCP-covered species. The HCP/NCCP land cover types, as discussed in Section 3.1.3 of this NES, include oak savanna (1.398 acres), oak woodland (1.427 acres), riparian woodland (0.832 acre), native grassland (0.085 acre), chaparral/scrub (0.233 acre), and non-native woodland (0.456 acre). The BSA also contains 495 linear feet (0.341 acre) of jurisdictional stream below Ordinary High Water and 670 linear feet (0.030 acre) of unvegetated, non-jurisdictional ditches. Approximately 1.902 acres of urban (paved) land is present in the BSA. The extent

and distribution of these land cover types within the BSA are shown in Appendix A, Figure 3, page 1 and page 2. Temporary and permanent impacts to each of the HCP/NCCP land cover types are also shown in Appendix A, Figure 3 page 1 and page 2.

4.1. Natural Communities of Special Concern

4.1.1. Waters of the United States

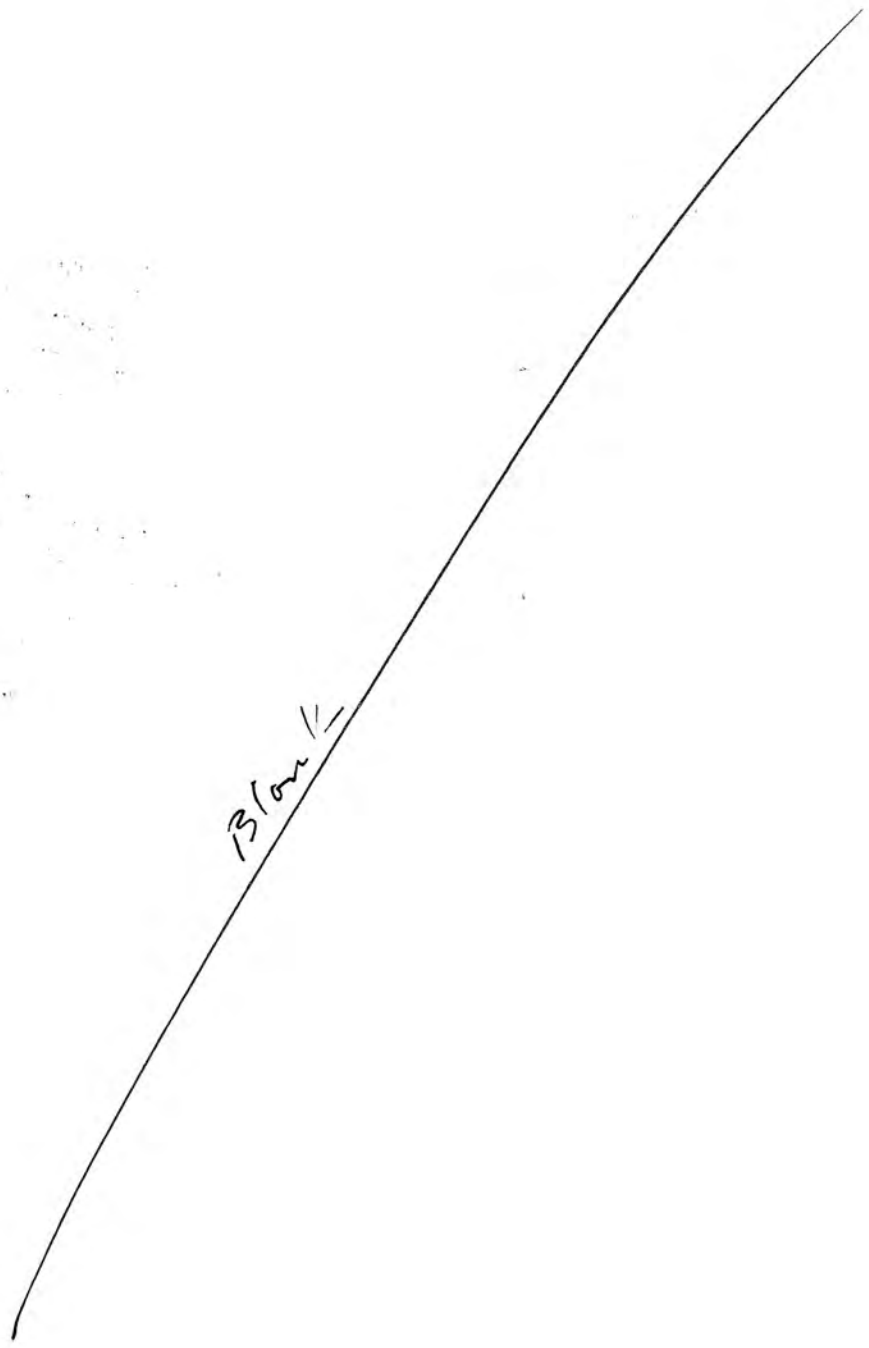
4.1.1.1. Survey Results

Approximately 0.341 acre of Marsh Creek occurs within the BSA and was delineated as a jurisdictional water of the United States. The total stream length is 495 linear feet. Approximately 670 linear feet of unvegetated, non-jurisdictional ditches also occur within the BSA. The locations of all potentially jurisdictional and non-jurisdictional features are mapped on Appendix A, Figure 3, page 1 and page 2. The wetland delineation is included in Appendix E.

4.1.1.2. Avoidance and Minimization Efforts

The grading footprint of the project has been minimized to the maximum extent practicable in order to avoid jurisdictional features. Additionally, consistent with HCP/NCCP Conservation Measure 2.12, (*Wetland, Pond, and Stream Avoidance and Minimization*; Chapter 6), the following avoidance and minimization measures will be used to protect the portions of the stream occurring within the BSA:

1. Prior to the start of construction, all portions of the stream to be avoided by the project will be temporarily staked in the field by a qualified biologist.
2. Prior to the start of construction, construction personnel will be trained by a qualified biologist on all required avoidance and minimization measures as well as permit requirements.
3. Trash generated by the project will be promptly and properly removed from the site.
4. No construction or maintenance vehicles will be refueled within 200 feet of the stream unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.
5. Appropriate erosion-control measures (e.g., fiber rolls, filter fences) will be used on site to reduce siltation and runoff of contaminants into the stream. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets will be used as a last resort because of their tendency to biodegrade slowly and to trap reptiles and amphibians.


13 1/2

6. Fiber rolls used for erosion control will be certified as free of noxious weed seed and will not contain plastics of any kind.
7. Seed mixtures applied for erosion control will not contain invasive nonnative species, and will be composed of native species or sterile nonnative species.
8. Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, where appropriate to control serious invasive plants, herbicides that have been approved for use by EPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control nonnative invasive species (e.g., yellow star-thistle). Herbicide drift should be minimized by applying the herbicide as close to the target area as possible.

Justify need for herbicide use; state circumstances where use is considered appropriate (convenience of contractor unacceptable) reason

4.1.1.3. PROJECT IMPACTS

The project will have permanent impacts to 64 linear feet (0.045 acre) of potentially jurisdictional waters (below Ordinary High Water) of the United States. The project will temporarily impact 273 linear feet (0.182 acre) of potentially jurisdictional waters of the United States. The HCP/NCCP bases creek impacts on the area of creek from top of bank to top of bank, excluding portions of the stream mapped as urban land cover (i.e., under the existing bridge). The project will permanently impact 40 linear feet (0.058 acre) and temporarily impact 249 linear feet (0.289 acre) of stream from top of bank to top of bank.

4.1.1.4. COMPENSATORY MITIGATION

Compensatory mitigation for impacts to listed species and their habitats will be achieved through the implementation of the conservation measures defined by the HCP/NCCP. These measures entail collection of mitigation fees based on formulas in the HCP/NCCP. The wetland mitigation fees for permanent and temporary impacts to 289 linear feet of intermittent stream will be $57,028.28. Additionally, the project will result in permanent (0.091 acre) and temporary (0.306 acre) impacts to riparian habitat. These impacts will require the payment of an additional wetland mitigation fee of $10,160.36. Therefore, the total wetland mitigation fee will be $67,188.64. The HCP/NCCP fee calculator worksheet for these impacts is located in Appendix F.

Mitigation proposed is inappropriate for impact to neighboring property. Please address in document mitigation measures for neighboring property or present justification for excluding mitigation to affect impacted ~~Agate~~

Under the HCP/NCCP, the mitigation fees are used to implement the following Conservation Measures within the area:

- Conservation Measure 2.2 (*Manage Wetlands and Ponds*) entails managing to increase hydrogeomorphic and ecological functions and improve wetland/aquatic habitat for

covered species. The biological goals of this measure are: to maintain or increase native emergent vegetation; reduce sediment deposition; maintain or increase capacity or ponding duration; maintain or increase connectivity; eliminate or reduce non-native plants and animals; and maintain or enhance upland habitat adjacent to wetlands.
- Conservation Measure 2.3 (*Restore Wetlands and Create Ponds*) entails creating wetlands to contribute to the recovery of target species including CTS and CRLF. The biological goals of this measure are: to increase the relative cover of native grasses and forbs; increase structural diversity; and reduce biomass and cover of exotic species.

Collecting fees for use elsewhere in the county is not an acceptable solution; compensation/restoration of affected adjacent property needs to be addressed as stated above

This conclusion subject to independent review of affected adjacent property owners ~~and~~

4.1.1.5. CUMULATIVE EFFECTS

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon aquatic and wetland habitats in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.1.2. Tree Removal

4.1.2.1. SURVEY RESULTS

The BSA contains oak savanna, oak woodland, and riparian woodland that support several native tree and shrub species, including valley oak, coast live oak, western sycamore, California buckeye, California bay, red willow, and blue elderberry.

The Arborist survey conducted for this site is reported in Appendix F.

4.1.2.2. AVOIDANCE AND MINIMIZATION EFFORTS *

The following measures are designed to avoid and minimize impacts to trees.

- **Tree Avoidance.** The project has been designed to retain as many existing trees as possible on the project site.
- **Tree Protection Fencing.** Tree Protection Fencing (TPF) will be used during the construction process to prevent direct damage to trees and their growing environment located just outside of the construction site (avoided trees). The TPF will consist of blaze orange barrier fencing supported by metal "T rail" fence posts and will be placed at or outside of the driplines of avoided trees to the extent feasible based on the limits of the area to be graded. TPF will be installed before site preparation, construction activities, or

Property owner of staging area contends that tree removal in that area can further reduced based on negotiations with public works

* success of these efforts will directly be a function of the diligence of the individuals/firms assigned to oversight duties. Property owner reserves right to monitor compliance and notify project proponent with ..

(38)

(38)

tree removal/trimming begins, and will be installed under the supervision of a qualified arborist.

- **Use of Heavy Equipment.** Heavy machinery will not be allowed to operate or park within or around areas containing avoided trees. If it is necessary for heavy machinery to operate within the dripline of avoided trees, then a layer of mulch or pea gravel at least 4 inches deep will be placed on the ground beneath the dripline. A 3/4 inch sheet of plywood will be placed on top of the mulch. The plywood and mulch will reduce compaction of the soil within the dripline.
- **Storage of Construction Materials and Debris.** Construction materials (e.g., gravel, aggregate, heavy equipment), project debris, and waste material will not be placed adjacent to or against the trunks of avoided trees.
- **Trimming.** The following tree trimming guidelines will be followed:

  1. Although no specific branch or branches are recommended for removal from avoided trees, dead, crossed, and/or malformed limbs will be removed under the supervision of a certified arborist.
  2. If the trimming of tree canopy is required to allow the movement of construction machinery, all branches to be removed will be pruned back to an appropriate sized lateral or to the trunk by following proper pruning guidelines.
  3. All trimming will be conducted under the supervision of a certified arborist.

4.1.2.3. Project Impacts

A total of 36 trees, consisting of gray pine, blue oak (*Quercus douglasii*), coast live oak, red willow, western sycamore, California buckeye, California bay, and cherry plum will require removal as a result of the Marsh Creek Road bridge replacement work. These trees occur in the riparian woodland, oak savanna, oak woodland, chaparral/scrub, and non-native woodland land cover types (Appendix A, Figure 3 page 1 and page 2.

4.1.2.4. Compensatory Mitigation

Compensatory mitigation for tree loss under the HCP/NCCP is encompassed in the payment of the HCP/NCCP permanent wetland mitigation fee of $6,511.22 for loss of riparian habitat and the development fee of $13,909.19 for permanent impacts to all land cover types (Sections 4.1.1.4 and 4.4.2).

Property owner reserves right to demand additional restoration on their land ~~if not~~ beyond fees paid to third party agency

4.1.2.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all natural resources, including native trees, in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

Property owner reserves rights to demand appropriate measures ~~not stated~~ on owners property not explicitly defined in the plan HCP/NCCP

4.2. Special-status Plant Species

One plant species, large-flowered fiddleneck (*Amsinckia grandiflora*), which is a federal and state endangered species, has the potential to occur in the BSA, based on the presence of suitable habitat (Table B).

Several other special-status plant species could also potentially occur within the BSA. These other species are: slender silver moss (*Anomobryum julaceum*), Mt. Diablo manzanita (*Arctostaphylos auriculata*; HCP/NCCP-covered), Contra Costa manzanita (*Arctostaphylos manzanita* ssp. *laevigata*), big tarplant (*Blepharizonia plumosa*, HCP/NCCP-covered), round-leaved filaree (*California macrophylla*, HCP/NCCP-covered), Mt. Diablo fairy lantern (*Calochortus pulchellus*, HCP/NCCP-covered), Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*), Mt. Diablo buckwheat (*Eriogonum truncatum*; HCP/NCCP-covered), Diablo helianthella (*Helianthella castanea*, HCP/NCCP-covered), showy madia (*Madia radiata*, HCP/NCCP-covered), adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*, HCP/NCCP-covered), coastal triquetrella (*Triquetrella californica*), and oval-leaved viburnum (*Viburnum ellipticum*).

The following discussion addresses the special-status plant species that have potential to occur within the BSA based upon suitable habitats observed during the planning survey (Table B). However, after a series of targeted surveys, none of these species appeared on site.

Special-status plant species not expected to occur within these habitats are not discussed.

4.2.1. Large-flowered fiddleneck

Large-flowered fiddleneck is a HCP/NCCP no-take species that is federally- and state-listed as endangered. It also has a California Rare Plant Rank (RPR) of 1B (rare, threatened, or endangered in California or elsewhere). Large-flowered fiddleneck is a dicotyledonous annual herb with a current range limited to Alameda, Contra Costa, and San Joaquin

40

Counties. Its habitat consists of cismontane woodland to valley and foothill grassland from 275-500 meters with a blooming period between April and May. This species has been reduced in number by a variety of factors including agriculture, development, grazing, and encroachment of non-native plants (CNPS 2012).

There are two CNDDB occurrences of large-flowered fiddleneck within 5 miles of the project site (CDFW 2013). The occurrences are 2.46 and 4.67 miles from the project site. One of these occurrences is extirpated and the other is possibly extirpated. The BSA contains suitable habitat for large-flowered fiddleneck. Spring 2014 protocol-level survey confirmed the absence of this species within the BSA.

4.2.2. Slender silver moss

Slender silver moss is a moss that is native to California and has a California Rare Plant Rank of 4. The species typically grows on damp soil or rock outcrops in broadleaved or coniferous forests. It is often found along roadcuts.

There is one CNDDB occurrence within 5 miles of the project site (CDFW 2013). The occurrence is presumed extant and is located within Mount Diablo State Park. Exact location information is unknown. The species may occur in damp soils and rock adjacent to Marsh Creek and Marsh Creek Road within the BSA. LSA's botanist conducted protocol-level plant surveys within the BSA. Four moss species were collected from the site but none were identified as the slender silver moss.

4.2.3. Mount Diablo manzanita

Mount Diablo manzanita is a HCP/NCCP-covered species with a California Rare Plant Rank of 1B. This species is endemic to Contra Costa County and occurs only on Mount Diablo and the adjacent foothills. It occurs in chaparral habitats that are between 700 – 1,860 feet above sea level and has a blooming period that lasts from January to March. Mount Diablo manzanita has a limited distribution, but does not appear to be endangered. Potential threats include loss of plants from maintenance or development activities (e.g., firebreaks, roads, trails) or adjacent disturbances that allow invasion from exotic species.

There are ten presumed extant CNDDB occurrences within the project vicinity (CDFW 2013), most within regional and state park lands. The nearest occurrence is 1.47 miles from the site. The species may occur in rock outcrops with sparse shrub cover that occur on steep upland banks within the oak savanna land cover type (mapped as small patches of chaparral/scrub) in the BSA. LSA's botanist conducted a CDFW protocol-level plant survey

41

on August 30, 2013 (Section 2.2). No individuals of Mount Diablo manzanita were observed during this survey.

4.2.4. Contra Costa manzanita

Contra Costa manzanita is endemic to Contra Costa County and has a California Rare Plant Rank of 1B. It occurs in chaparral habitats between 500 and 1,100 meters and blooms from January to April. Potential threats include road and trail maintenance and fire suppression.

There are four presumed extant CNDDB occurrences within the project vicinity (CDFW 2013). The CNDDB occurrences are all located within state and regional park lands, with the nearest one being 3.06 miles from the site. There is one additional occurrence on Save Mount Diablo property, approximately 0.9 mile from the project site. Potential habitat occurs near rock outcrops with sparse shrub cover within the oak savanna land cover type (mapped as small patches of chaparral/scrub) in the BSA. LSA's botanist conducted a CDFW protocol-level plant survey on August 30, 2013 (Section 2.2). No individuals of Contra Costa manzanita were observed during this survey.

4.2.5. Big tarplant

Big tarplant is a HCP/NCCP-covered species and has a California Rare Plant Rank of 1B. This annual species blooms in the summer from July to October. It grows in valley and foothill grassland with clay to clay loam soils. As with other tarweeds, such as *Hemizonia* and *Madia*, it probably does not compete well with non-native annual grasses and occurs where the grasses are less dense.

There are ten CNDDB occurrences of big tarplant within the project vicinity (CDFW 2013). The BSA contains oak savanna and native grassland that provide potentially suitable habitat for big tarplant. LSA's botanist conducted a CDFW protocol-level plant survey on August 30, 2013 to coincide with the species' flowering period (Section 2.2). No big tarplant individuals were observed within the BSA during this survey.

4.2.6. Round-leaved filaree

Round-leaved filaree is a HCP/NCCP-covered species and has a California Rare Plant Rank of 1B. It is an annual species that typically flowers in March, but the blooming period can extend into May in some years or localities. It grows in grassy openings in woodland and grassland that have clay soils. It does not appear to compete well with non-native annual grasses and occurs where the grasses are less dense.

42

There are two presumed extant CNDDB occurrences within project vicinity (CDFW 2013). The BSA contains annual grasslands that provide potentially suitable habitat for the round-leaved filaree. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.7. Mount Diablo fairy-lantern

Mount Diablo fairy-lantern is a HCP/NCCP-covered species and has a California Rare Plant Rank of 1B. This perennial species sprouts new leaves in late winter/early spring from an underground bulb and flowers from April to June. By late summer the leaves wither and the plant goes dormant until the following season. Mount Diablo fairy-lantern occurs in chaparral, riparian woodland, and grassland, often in the shade of trees and shrubs.

There are 20 presumed extant CNDDB occurrences of Mount Diablo fairy-lantern within the project vicinity (CDFW 2013). There is potential for this species to occur in the oak savanna understory and native grassland within the BSA. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.8. Hospital Canyon larkspur

Hospital Canyon larkspur has a California Rare Plant Rank of 1B. This perennial species sprouts new leaves from a subterranean root mass soon after the first seasonal rains. Flowers appear from April to June. Hospital Canyon larkspur grows within and beside chaparral, and/or grassy openings within woodland. Occasionally, it will occur in mesic areas in the above habitats.

There are three presumed extant CNDDB occurrences of Hospital Canyon larkspur within the project vicinity (CDFW 2013). The nearest occurrence is 3.62 miles from the site. There is potential for the species to occur within the oak woodland land cover type in the BSA. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.9. Mount Diablo buckwheat

Mount Diablo buckwheat is a HCP/NCCP no-take species and has a California Rare Plant Rank of 1B. It is an annual herb that is endemic to California and grows on sandy soils within chaparral, coastal scrub, and valley and foothill grassland habitats. It ranges in elevation from 1 to 108 feet above sea level and blooms from April to November. Potential threats include trampling and invasion of habitat by non-native plant species.

43

The species was thought to be extinct until being rediscovered in May 2005 in Mount Diablo State Park, where the only known population now occurs. The species is unlikely to occur in the BSA or project vicinity. LSA's botanist conducted a late summer CDFW protocol-level plant survey within the BSA (Section 2.2). No individuals of Mount Diablo buckwheat were observed during the survey.

4.2.10. Diablo helianthella

Diablo helianthella is an HCP/NCCP-covered species and has a California Rare Plant Rank of 1B. This perennial species sprouts new leaves from a subterranean root mass soon after the first seasonal rains. Flowers appear from April to June. Diablo helianthella grows at the edge of woodland, chaparral, or scrub often beneath the canopy. The soil preference is for rocky, azonal soils.

There are 21 presumed extant CNDDB occurrences of Diablo helianthella within the project vicinity (CDFW 2013). The nearest occurrence is 2.38 miles from the site. The BSA contains potentially suitable habitat within the oak woodland land cover type. There is potential for this species to occur in the oak savanna understory and native grassland within the BSA. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.11. Showy Madia

Showy madia is a HCP/NCCP-covered species and has a California Rare Plant Rank of 1B. This annual species germinates in the fall and overwinters in the rosette stage. In spring a main stem bolts from the rosette and flowers appear from March to May. Showy madia grows in valley and foothill grassland and openings in cismontane woodland.

There are two presumed extant CNDDB occurrences of showy madia within the project vicinity, 4.30 miles and 4.64 miles away (CDFW 2013). There is the potential for showy madia to occur within the oak savanna land cover type in the BSA. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.12. Adobe navarretia

Adobe navarretia is a HCP/NCCP-covered species and has a California Rare Plant Rank of 4. This spring blooming annual flowers from April to June. Adobe navarretia grows in seasonally wet adobe clay soils within valley and foothill grassland and sometimes vernal pools.

44

There are no occurrences of adobe navarretia within the project vicinity (CDFW 2013), and habitat information for this species is limited. The BSA contains grassland habitat that may provide habitat for this species. Spring 2014 protocol-level survey was conducted and confirmed the absence of this species within the BSA.

4.2.13. Coastal triquetrella

Coastal triquetrella has a California Rare Plant Rank of 1B. It is a moss that grows in coastal scrub habitats and ranges in elevation from 33 to 328 feet. Urbanization is its primary threat.

There is one presumed extant CNDDB occurrence the project vicinity (CDFW 2013). The occurrence is described as being on Mount Diablo and is 2.63 miles from the project site. There is potential habitat on damp soil and rocks along Marsh Creek and Marsh Creek Road within the BSA. LSA's botanist conducted CDFW protocol-level plant surveys in the BSA (Section 2.2). Four moss species were collected from the site but have none were identified as the coastal triquetrella.

4.2.14. Oval-leaved Viburnum

Oval-leaved viburnum has a California Rare Plant Rank of 2B. This species is a perennial, deciduous shrub that grows in relatively sparse scrub or chaparral. It typically blooms from April to May.

There are four presumed extant CNDDB occurrences within the project vicinity (CDFW 2013). The closest of these occurrences is approximately 0.92 mile from the site. There is the potential for this species to occur in the oak woodland land cover type present in the BSA. LSA's botanist conducted a late summer CDFW protocol-level plant survey in the BSA (Section 2.2). No individuals of the oval-leaved viburnum were observed within the BSA during the survey.

4.2.15. Special-status Plant Species Avoidance and Minimization Efforts and Cumulative Effects

Based on the results of the preliminary surveys conducted in the spring and summer and the late summer protocol-level plant survey conducted in 2013 (Section 2.2) and a spring protocol-level plant survey conducted in 2014, it appears that no special-status plant species occur within the BSA. As such, the preliminary conclusion is that the project will have *no effect* on the special-status plant species described above. Therefore, there are no species-specific avoidance and minimization measures required under the HCP/NCCP, and no compensatory mitigation is required beyond payment of the HCP/NCCP development fees and wetland mitigation fees (Sections 4.1.1.4 and 4.4.2).

Any occurances in downstream area adjacent to BSA? Provide opinion and rationale for additional field work need, if any

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon special-status native plant species in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3. Special-status Animal Species

The following HCP/NCCP-covered and other state- and federally-listed species have the potential to occur in the BSA based on the presence of suitable habitat: CTS, CRLF, AWS, and SJKF. Other special-status and SLC species covered under the HCP/NCCP that may occur on the project site include western pond turtle, golden eagle, and Townsend's big-eared bat. The remaining five special-status species that may occur on site include coast horned lizard, white-tailed kite, pallid bat, ringtail, and American badger. These five species are not specifically covered by the HCP/NCCP, but are addressed in the NES due to the identification of suitable habitat within the BSA.

43 Review protocol for mitigating potential vs: mitigating actual documented presence.

4.3.1. California Tiger Salamander (CTS)

CTS is a federally- and state-threatened species that is covered under the HCP/NCCP. CTS has three distinct population segments (DPS): the Central California DPS, the Santa Barbara County DPS, and the Sonoma County DPS. The project site is located within the range of the Central California DPS. CTS was listed as federally threatened August 4, 2004 (USFWS 2004), and critical habitat for CTS was designated on August 23, 2005 (USFWS 2005). CTS was state-listed as threatened on May 20, 2010.

Threats to CTS include urban and agricultural development, control of ground squirrels, predation by non-native species, and chemical contamination of breeding sites. Large increases in urban and agricultural development have resulted in a decrease in the number of areas known to support this species.

CTS occur in grassland, oak savanna, sparse deciduous oak woodland, and occasionally chaparral. Adults and juveniles live in California ground squirrel (*Otospermophilus beecheyi*) and other small mammal burrows during the dry season. CTS emerge from their burrows at the start of the rainy season and migrate toward breeding sites. Breeding habitat includes vernal pools, stock ponds, and other seasonal wetlands. Permanent waterbodies often contain fish and bullfrogs (*Rana catesbiana*) that feed on eggs, larvae, and adult salamanders and are

46

not typically considered suitable breeding habitat (USFWS 2004). The distance between upland sites and breeding sites can be up to 1.4 miles, depending on local topography, vegetation, and the distribution of rodent burrows (Orloff 2011).

Metamorphosis from the larval to juvenile stage occurs before the pools dry in late spring or early summer. Upon metamorphosis, juveniles move into upland habitats, where an estimated 83 percent rely on rodent burrows for shelter (Petranka 1998). Mortality of juveniles during the first summer exceeds 50 percent (Trenham 1998). CTS do not breed until they are at least 2 years old, and many do not breed until they are 4 to 6 years old. Reproductive output appears to be generally low.

4.3.1.1. Survey Results

CTS are known to occur in the project vicinity (CDFW 2013). There are 27 CNDDB occurrence records within the project vicinity (Appendix A, Figure 4). The nearest record consists of one adult found along Marsh Creek Road 0.9 mile from the project site in 1982 (Occurrence #174). The nearest breeding record is from a drainage pond located 1.3 miles from the project site where a single larva was found in 1999 (Occurrence # 486). There are numerous stock ponds within the project vicinity that provide potential breeding habitat for this species, and the site is within modeled breeding, aestivation, and movement habitat for CTS under the HCP/NCCP (HCP/NCCP Appendix D).

LSA biologists conducted a habitat assessment and planning survey for CTS on August 30, 2013 (Section 2.2). Survey results indicated that the BSA does not provide suitable breeding habitat for CTS. However, potential upland aestivation, foraging, and movement habitat does occur within the BSA. Moreover, the potential breeding habitat and known occurrences documented above are within the known migration distance of the species (up to 1.4 miles). Overall, the BSA provides approximately 1.716 acres of marginally suitable habitat, including native grassland, chaparral/scrub, and oak savanna.

Based on survey results and background information, adult CTS could potentially occur within the BSA. However, the habitat is marginally suitable for two reasons: (1) no small mammal burrows were seen in the immediate area surrounding the BSA and (2) the distance to the nearest known breeding site is near the upper limit of documented CTS movement distances.

4.3.1.2. Avoidance and Minimization Efforts

Because the BSA does not contain suitable CTS breeding habitat, there are no species-specific avoidance and minimization measures required under the HCP/NCCP beyond the

general landscape-level avoidance and minimization measures described in Section 4.4 of this document.

4.3.1.3. Project Impacts

There is no critical habitat within the project vicinity and no breeding habitat within the project impact area. However, the project will permanently impact approximately 0.324 acre of marginally suitable aestivation, foraging, and/or movement habitat for CTS, consisting of the following habitat types: native grassland, chaparral/scrub, and oak savanna. Approximately 0.275 acre of habitat will be temporarily impacted. Therefore the project *may affect, is likely to adversely affect* this species due to the loss of habitat.

4.3.1.4. Compensatory Mitigation

Compensatory mitigation for impacts to CTS (as well as other HCP/NCCP-covered species) will be achieved through payment by the PWD of development fees for permanent and temporary impacts, totaling $16,029.18, as required under the HCP/NCCP (Sections 4.1.1.4 and 4.4.2).

4.3.1.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon CTS in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.2. California Red-legged Frog (CRLF)

CRLF is a HCP/NCCP-covered species that is listed as federally threatened (USFWS 1996b) and is also a California Species of Special Concern. Critical habitat for CRLF was designated in 2010 (USFWS 2010). CRLF was formerly considered a subspecies of the northern red-legged frog (*Rana aurora*), but recent taxonomic research has documented that it is a distinct species (Crother 2008). CRLF has sustained a 75 percent reduction in its geographic range, especially in the Sierra Nevada foothills and southern California (Jennings et al. 1992). Population declines have been attributed to a variety of factors, with habitat loss and predation by non-native aquatic predators (e.g., bullfrogs, crayfish, other non-native fish) typically implicated as the primary threats to CRLF (Jennings and Hayes 1994).

CTS = Salamander

What is suitable? perennial water source suggests it probably is a good location

47

potential for "incidental take" on or next to BSA in Dorta back property (dewatering easement)

48

CRLF occur in and along freshwater marshes, streams, ponds, and other semi-permanent water sources. Optimal habitat contains dense emergent or shoreline riparian vegetation closely associated with deep (i.e., greater than 2.3 feet), still, or slow-moving water (Jennings and Hayes 1994). Cattails, bulrushes (*Scirpus* sp.), and arroyo willows (*Salix lasiolepis*) provide the habitat structure that seems to be most suitable for CRLF (Jennings and Hayes 1994). Although CRLF can occur in intermittent streams and ponds, they are unlikely to persist in streams in which all surface water disappears annually (Jennings and Hayes 1994). Suitable breeding ponds and pools usually have a minimum depth of 20 inches, but CRLF do sometimes breed successfully in pools as shallow as 10 inches (Fellers 2005). Regardless of water depth, suitable breeding habitat must contain water during the entire development period for eggs and tadpoles (typically March through August).

Adult CRLF are primarily aquatic, although adjacent upland habitats are also important since they are used by adults and juveniles for escaping high water during flood events, aestivating, and dispersing to other aquatic habitats. During times of dispersal, CRLF are known to move more than 1 mile through upland habitats to reach other sources of water (USFWS 2002a).

4.3.2.1. Survey Results

CRLF are known to occur in the project vicinity (CDFW 2013). There are 30 documented CNDDB occurrences within 5 miles of the project site (Appendix A, Figure 4). The nearest record, prior to surveys conducted for this project, consists of one adult seen in Marsh Creek 0.51 mile from the project site in 1982 (Occurrence #135). The nearest breeding record is from a stock pond located 1.2 miles from the project site that was found in 2006 (Occurrence #903). The site is within the area of modeled migration and aestivation habitat for CRLF under the HCP/NCCP (HCP/NCCP Chapter 4: Figure 4-3).

LSA biologists conducted a habitat assessment and planning survey for CRLF on August 30, 2013 within the BSA (Section 2.2). Four juvenile CRLF were seen during the survey. Pools within Marsh Creek provide potential breeding habitat for CRLF. In addition, the BSA contains potential upland aestivation, foraging, and/or dispersal habitat, including native grassland, chaparral/scrub, oak savanna, oak woodland, riparian woodland, and stream. Overall, the BSA provides approximately 0.341 acre of suitable breeding habitat and 3.975 acres of suitable upland habitat for this species.

4.3.2.2. Avoidance and Minimization Efforts

A USFWS/CDFW-approved biologist will identify potential CRLF breeding habitat (Section 6.3.1 of the HCP/NCCP, *Planning Surveys*). If the project fills or surrounds suitable breeding habitat, the project proponent will notify USFWS, CDFW, and the Implementing Entity of the

When will biologist do this identification? It needs to be done before design

presence and condition of potential breeding habitat, as described below. No preconstruction surveys are required.

This statement needs to be substantiated

Written notification to USFWS, CDFW, and the Implementing Entity, including photos and habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate CRLF within 14 days of receiving notice from the project proponent. The applicant must allow USFWS or CDFW access to the site prior to construction if they request it.

Commenter believes that a biological assessment of CRLF presence needs to happen before design is finalized, or consultation at a minimum relative to planned activity in the creek. Relocation plan should be developed ahead of time since this discovery is a sure thing

There are no restrictions under the HCP/NCCP on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individuals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW).

4.3.2.3. Project Impacts

The nearest critical habitat for CRLF occurs 3.6 miles away from the project site and will not be impacted by the proposed project. However, approximately 0.045 acre of aquatic breeding habitat and 0.517 acre of upland aestivation, foraging, and/or dispersal habitat will be permanently impacted by construction activities. An additional approximately 0.182 acre of suitable aquatic habitat and 0.789 acre of suitable upland habitat will be temporarily impacted. Therefore the project ***may affect, is likely to adversely affect*** this species due to the loss of habitat.

4.3.2.4. Compensatory Mitigation

Compensatory mitigation for impacts to CRLF (as well as other HCP/NCCP-covered species) will be achieved through payment by the PWD of development fees and wetland mitigation fees for permanent and temporary impacts, totaling $83,217.82, as required under the HCP/NCCP (Sections 4.1.1.4 and 4.4.2).

damage to neighbor property habitat 50 compensated by payment to a third party

4.3.2.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon CRLF in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.3. Western Pond Turtle

Western pond turtle is a HCP/NCCP-covered species and a California Species of Special Concern. Threats to western pond turtles include habitat loss and the introduction of non-native predators and competitors.

Western pond turtles occupy permanent and intermittent ponds and creeks (Ernst and Lovich 2009). These turtles generally prefer deep (greater than 2 feet), quiet pools along streams, but they also occur in ponds, including constructed ranch ponds. Important habitat features include basking sites and suitable aquatic hiding areas such as undercut banks, logs, rocks, aquatic vegetation, and/or mud and leaf-litter.

Another important element of suitable habitat is the presence of nearby upland nesting areas. Turtles nest on grassy, sunny slopes adjacent to aquatic habitat (Bury et al. 2012). Most nest sites occur within 16 to 263 feet of the water, but nests have been found up to 1,640 feet from the water's edge. Nesting typically occurs between May and July when females leave aquatic habitats in search of nest sites. Clutch size ranges from 1 to 13 eggs, and incubation lasts for 94 to 122 days. In Central California, hatchling turtles may emerge in the fall of the year they hatch or may overwinter in the nest, emerging the following spring.

4.3.3.1. Survey Results

Western pond turtle is known to occur in the project vicinity (CDFW 2013). There are six CNDDB occurrence records within 5 miles of the project site (Appendix A, Figure 4). The nearest record is 1.39 miles from the project site (Occurrence #278).

LSA biologists conducted a habitat assessment and planning survey for western pond turtles on August 30, 2013 (Section 2.2). No pond turtles were observed during the survey. However, the BSA does provide suitable aquatic and upland habitat for western pond turtles. Overall, the BSA provides approximately 4.083 acres of suitable native grassland, oak savanna, oak woodland, riparian woodland, and stream habitat for this species.

(12801) Residents observed turtles in perennial stream yearly since 1968. They can be presumed to breed there as well as juveniles & adults have been observed as close as 50 feet from edge of existing bridge. Dewatering of 150' downstream area will certainly disrupt/destroy these animals.

4.3.3.2. Avoidance and Minimization Efforts

There are no species-specific avoidance and minimization measures required under the HCP/NCCP beyond the general landscape-level avoidance and minimization measures described in Section 4.4 of this document.

4.3.3.3. Project Impacts

Approximately 0.389 acre of native grassland, oak savanna, oak woodland, and riparian woodland that provide suitable foraging, dispersal, and/or breeding habitat for western pond turtle will be permanently impacted by construction activities. Approximately 0.706 acre of habitat will be temporarily impacted by the project. In addition, 0.045 acre of stream will be permanently impacted during the bridge replacement, and 0.182 acre will be temporarily impacted. Therefore the project *may affect, is likely to adversely affect* this species due to the loss of habitat.

4.3.3.4. Compensatory Mitigation

Compensatory mitigation for impacts to western pond turtle (as well as other HCP/NCCP-covered species) will be achieved through payment by the PWD development fees and wetland mitigation fees for permanent and temporary impacts, totaling $83,217.82, as required under the HCP/NCCP (Sections 4.1.1.4 and 4.4.2).

Same comment as other species occupants

Similar to CRLF, conditions need to be surveyed ahead of time and relocation planned prior to construction start. Residents should be allowed input and access to biologists performing relocation planning/execution

4.3.3.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon the western pond turtle in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.4. Alameda Whipsnake

AWS (*a.k.a.*, Alameda striped racer) is a HCP/NCCP-covered and federally- (USFWS 1997) and state-listed threatened species that occurs in the Inner Coast Ranges of western and central Contra Costa and Alameda counties. Existing development (roads, highways, urban growth) has fragmented the originally continuous range of AWS into what are considered five separate populations, including Tilden-Briones, Oakland-Las Trampas, Hayward-Pleasanton Ridge, Mount Diablo-Black Hills, and Sunol-Cedar Mountain (USFWS 1997, 2002b).

Habitats essential to the conservation of AWS include the following scrub communities: mixed chaparral, Diablan sage scrub, northern coastal scrub, and chamise-redshank chaparral (Stebbins 2003). Primary constituent elements (USFWS 2006) may also be found in grasslands, open-canopy oak and oak-bay woodlands, and riparian communities of various compositions in the vicinity of scrub or chaparral. AWS use grasslands and rock outcrops for foraging and, occasionally, for laying eggs in grassy fields. The value of heavily grazed grasslands is limited, particularly where there is a lack of taller (6 inches or greater) cover which increases the risk of predation on whipsnakes by raptors.

Rock outcrops and talus with deep crevices and rodent burrows are required habitat attributes for a given site to support AWS. These features serve both as nightly retreats and winter hibernation sites and, in the case of outcrops, as prime habitat for the preferred prey of AWS, the western fence lizard (*Sceloporus occidentalis*). Prime habitats have high populations of western fence lizard and usually at least one other lizard species (Swaim and McGinnis 1992). Swaim (1994) described the concept of "core areas" of concentrated AWS habitat, centered on open or partially open canopy scrub on slopes facing the south, east, southeast, and southwest, or in nearby grassland habitats having the same aspects and occurring within 500 feet of scrub.

AWS have been observed to have home ranges of up to 22 acres (Swaim 1994). Assuming a roughly equal radius of foraging in all directions, an individual AWS may be assumed to range up to 550-600 feet away from its core habitat. Additionally, a recent review indicates that adult males and dispersing juveniles have been observed up to 4 miles from scrub habitat (most observations were within 1 mile) (Jones and Stokes 2006).

AWS breed from March through June and lay clutches of 6-11 eggs from May through July in underground rodent burrows or in protected areas such as crevices in rock outcrops. Young hatch and emerge from late summer to early fall. Adult and juvenile snakes typically retreat to hibernation sites during the winter.

4.3.4.1. SURVEY RESULTS

AWS is known to occur in the project vicinity (CDFW 2013). There are 43 known occurrences within 5 miles of the project site (Figure 4), and the BSA lies within the area of modeled movement habitat for AWS under the HCP/NCCP (HCP/NCCP Chapter 4: Figure 4-2).

LSA biologists conducted a habitat assessment and planning survey for AWS within the BSA on August 30, 2013 (Section 2.2). Chaparral/scrub habitat within the BSA consists of a patch of coyote brush north of the creek and small patches (i.e., a few plants) of California sage and

53

narrowleaf goldenbush. However, there is a larger stand of suitable chaparral habitat approximately 300 feet to the east of the BSA, and AWS may use the native grassland, chaparral/scrub, oak savanna, oak woodland, and riparian woodland habitats within the BSA as movement and foraging habitat. Overall, the BSA contains approximately 3.975 acres of suitable AWS movement and foraging habitat.

4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

The HCP/NCCP does not require any species-specific avoidance and minimization measures for AWS beyond the general landscape-level avoidance and minimization measures described in Section 4.4 of this document.

4.3.4.3. PROJECT IMPACTS

The nearest critical habitat for AWS is 1.0 mile away from the project site and will not be impacted by the proposed project. However, approximately 0.517 acre of native grassland, chaparral/scrub, oak savanna, oak woodland, and riparian woodland that provide suitable movement and foraging habitat for AWS will be permanently impacted by construction activities. An additional approximately 0.789 acre of habitat will be temporarily impacted. Therefore the project ***may affect, is likely to adversely affect*** this species due to the loss of habitat.

4.3.4.4. COMPENSATORY MITIGATION

Compensatory mitigation for impacts to AWS (as well as other HCP/NCCP-covered species) will be achieved through payment by the PWD of development fees for permanent and temporary impacts, totaling $16,029.18 as required under the HCP/NCCP (Section 4.4.2).

4.3.4.5. CUMULATIVE EFFECTS

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon AWS in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.5. Coast Horned Lizard

Coast horned lizard is a California Species of Special Concern. This species occurs throughout much of California, west of the desert and Sierra Nevada highlands from the San Francisco Bay Area to the Baja California border (Nafis 2013, Stebbins 2003). Populations in

54

lowland areas are greatly reduced due to urban and agricultural development, especially deep-disc plowing. The species is also threatened by the spread of non-native Argentine ants (*Linepithema humile*) that are displacing the native ants on which coast horned lizards feed.

Coast horned lizards occur in chaparral, grassland, woodland, and coniferous forest habitats with open areas and loose soils (Nafis 2013, Stebbins 2003). They are often found in lowlands along sandy washes with scattered shrubs. This species requires open areas for basking, shrubs for cover, and patches of loose soil for burying and breeding. Eggs are laid in loose, well-aerated soils between April and July, and young hatch between August and September. Clutch size ranges from 6 to 21 eggs. Coast horned lizards feed primarily on ants, but will also eat termites, beetles, wasps, flies, and grasshoppers.

4.3.5.1. Survey Results

Coast horned lizard is known to occur in the project vicinity (CDFW 2015), with one CNDDB occurrence within 5 miles of the project site. The occurrence was recorded in 2002, 4.71 miles away from the project site (Appendix A, Figure 4).

LSA biologists conducted a habitat assessment and planning survey for coast horned lizard within the BSA on August 30, 2013 (Section 2.2). Survey results verified that the BSA contains 1.716 acre of native grassland, oak savanna, and chaparral land cover types that provide potentially suitable foraging and movement habitat for this species.

4.3.5.2. Avoidance and Minimization Efforts

There are no species-specific avoidance and minimization measures required under the HCP/NCCP beyond the general landscape-level avoidance and minimization measures described in Section 4.4 of this document.

4.3.5.3. Project Impacts

Approximately 0.324 acre of native grassland, oak savanna, and chaparral land cover types that provide suitable habitat for coast horned lizard will be permanently affected by construction activities. In addition, approximately 0.275 acre of habitat will be temporarily impacted. Therefore the project ***may affect, is likely to adversely affect*** this species due to the loss of suitable habitat.

4.3.5.4. Compensatory Mitigation

Compensatory mitigation is not required under the HCP/NCCP beyond the payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $16,029.18 (Section 4.4.2).

55

4.3.5.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Although the coast horned lizard is not a HCP/NCCP-covered species, the HCP/NCCP nevertheless takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all habitat types, including those suitable for coast horned lizard. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.6. Golden Eagle

Golden eagle is a HCP/NCCP-covered, no-take species that is fully-protected under California Fish and Game Code. Existing threats to golden eagle survival include both foraging and nesting habitat loss; human disturbance of nesting birds; and direct fatalities from wind turbine strikes, electrocution, and poisoning.

Golden eagles mainly forage in open grassland or oak savanna areas. Fewer occur in oak woodlands and open shrublands (Hunt et al. 1998). Large trees and secluded cliffs with overhanging ledges are used for nesting and cover. Suitable nest trees include several species of oak (*Quercus* spp.), gray pine, Coulter pine (*Pinus coulteri*), California bay, eucalyptus (*Eucalyptus* spp.), and western sycamore (Hunt et al. 1998). Preferred territory sites have a suitable nest site, a dependable food supply (medium to large mammals and birds), and broad expanses of open country for foraging.

Golden eagles primarily prey on rabbits, hares, and rodents, but also take other mammals, birds, reptiles, and some carrion (Olendorff 1976, Hunt et al. 1998). California ground squirrels and black-tailed jackrabbits (*Lepus californicus*) are the two most important prey species for the golden eagle within the inventory area (Hunt et al. 1998). Eagles typically hunt by using favorite perches located near areas that have regular updrafts to facilitate soaring to heights from which they can scan their hunting areas (Johnsgard 1990).

4.3.6.1. Survey Results

There is one golden eagle nest confirmed within the project vicinity, approximately 2.45 miles away (Terry Hunt, Contract Raptor Biologist, East Bay Regional Park District, pers. comm.). No nests were observed by LSA biologists during planning surveys in the BSA, and large trees near the project site are unlikely to provide suitable nesting habitat due

56

to human activity along Marsh Creek Road. The native grassland and oak savanna provide marginally suitable foraging habitat for this species.

4.3.6.2. Avoidance and Minimization Efforts

Prior to implementation of covered activities, a qualified biologist will conduct a preconstruction survey to establish whether nests of golden eagles are occupied (see Section 6.3.1, *Planning Surveys*, of the HCP/NCCP). If nests are occupied, minimization requirements and construction monitoring will be required.

Covered activities will be prohibited within 0.5 mile of active nests. Nests can be built and active at almost any time of the year, although mating and egg incubation occurs late January through August, with peak activity in March through July. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer should be implemented, the Implementing Entity will coordinate with CDFW/USFWS to determine the appropriate buffer size.

Construction monitoring will focus on ensuring that no covered activities occur within the buffer zone established around an active nest. Although no known golden eagle nest sites occur within or near the Urban Limit Line, covered activities inside and outside of the Preserve System have the potential to disturb golden eagle nest sites. Construction monitoring will ensure that direct effects to golden eagles are minimized.

4.3.6.3. Project Impacts

With implementation of the avoidance and minimization measures described in Section 4.3.6.2, the project will not cause any direct permanent or temporary impacts to golden eagle breeding habitat.

4.3.6.4. Compensatory Mitigation

The project will not cause impacts to golden eagle breeding habitat. Compensatory mitigation is not required under the HCP/NCCP beyond the payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $16,029.18 (Section 4.4.2).

4.3.6.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future

57

covered activities (including all rural infrastructure projects) upon the golden eagle in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.7. White-tailed Kite

White-tailed kite is a no-take species designated by the CDFW as fully protected. The bulk of the state's population is found in lowlands and foothills west of the Sierra Nevada, where they are often seen year-round (Peeters and Peeters 2005). White-tailed kite numbers appear to be declining. Primary threats include urban development and modern farming techniques that eliminate cover for their primary prey (voles).

White-tailed kites are found primarily in open grassland, agricultural, wetland, oak savanna, and oak woodland habitats (Dunk 1995). Riparian areas near open foraging habitat may also be used for nesting. Suitable nest sites include a wide variety of trees and shrubs that may be isolated or located within woodland habitats in close proximity to open foraging habitats.

White-tailed kites hunt by hovering 16-82 feet above the ground and dropping straight down onto prey items. Kites primarily prey on small mammals, although small birds, lizards, and insects may also be taken.

4.3.7.1. Survey Results

White-tailed kites are not known to nest within the project vicinity, and no white-tailed kites or kite nests were observed in the BSA during planning surveys. Large trees near the project site are unlikely to provide suitable nesting habitat due to human activity along Marsh Creek Road. The native grassland and oak savanna land cover types provide marginally suitable foraging habitat for this species.

4.3.7.2. Avoidance and Minimization Efforts

White-tailed kite is not covered under the HCP/NCCP. However, the nests of all native bird species are protected under the federal MBTA and the California Fish and Game Code. Under this legislation, destroying active nests, eggs, and young is illegal. The following measures will be implemented to protect white-tailed kites and other nesting birds.

1. To the extent feasible, vegetation removal activities will not occur during the breeding season of February 15 through August 31.
2. If vegetation removal must occur during the breeding season, all sites will be surveyed by a qualified biologist to verify the presence or absence of nesting birds.

58

3. Preconstruction surveys will be conducted no more than two weeks prior to the start of work from February 15 through August 31.

4. If the survey indicates the potential presence of nesting birds, a buffer will be placed around the nest in which no work will be allowed until the young have successfully fledged or the nest has failed. The size of the nest buffer will be determined by a qualified biologist in consultation with the CDFW, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 250 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in an urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

4.3.7.3. Project Impacts

With implementation of the avoidance and minimization measures described in Section 4.3.7.2, the project will not cause any direct permanent or temporary impacts to white-tailed kite breeding habitat.

4.3.7.4. Compensatory Mitigation

The project will not cause impacts to white-tailed kite breeding habitat. Compensatory mitigation is not required under the HCP/NCCP beyond the payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $16,029.18 (Section 4.4.2).

4.3.7.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Although the white-tailed kite is not a HCP/NCCP-covered species, the HCP/NCCP nevertheless takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all habitat types, including those suitable for white-tailed kite. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization and mitigation conditions are implemented.

4.3.8. Pallid Bat

The pallid bat is a California Species of Special Concern. Pallid bats occur in deserts, grasslands, shrublands, woodlands, and forests and are most commonly found in dry habitats. Pallid bats roost alone, in small groups, or gregariously with hundreds of individuals. Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees, and various

59

human structures such as bridges (especially wooden and concrete girder designs), barns, porches, bat boxes, and both human-occupied and vacant buildings. Tree roosts occur in basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards (Sherwin and Rambaldini 2005). Maternity roosts generally occur in structures, caves, or mines that provide enough space for at least small groups of bats. Roosts generally have unobstructed entrances/exits, and are high above the ground, warm, and inaccessible to terrestrial predators. Although year-to-year and night-to-night roost reuse is common, they may regularly switch day roosts.

Pallid bats have larger eyes than most other species of bats in North America and have pale, long, and wide ears. Their fur is generally lightly colored. Pallid bats are insectivores and are capable of consuming up to half their weight in insects every night. Although they normally catch their prey on the ground, they usually transport their prey to their night roost to eat it. Their large ears allow them to hear the footsteps of insects on the ground, and they use their voices to make ultrasonic sounds that bounce back to their ears. The reflected sound waves let them sense flying insects and know the environment they are flying through (Orr 1954, Ball 1998).

The mating season ranges from October to February. Female bats give birth to twins during early June. In four or five weeks the young are capable of making short flights. They do not attain adult size until about eight weeks of age and do not become sexually mature until after approximately two years (Orr 1954, Ball 1998).

4.3.8.1. Survey Results

The potential for pallid bats to occur on the project site is low and the project is unlikely to affect this species. Although the species was known to occur historically within the project vicinity, there are no records of occurrence for the past half century. The closest occurrence, recorded in 1929, is approximately 1 mile from the project site (CDFW 2013).

Pallid bats were not observed during the planning survey, nor did biologists observe any evidence of possible pallid bat roosting sites. Nevertheless, the species' occurrence in the area may be under-reported, and suitable foraging habitat for pallid bats occurs within the site's annual grasslands and at the edges of the oak savanna. Larger trees on the site could potentially provide suitable day and night roosting habitat where hollowed trunks and branches have developed. Suitable habitat for maternity roosts does not occur on site due to the absence of structures, mines, and caves. The bridge does not provide suitable roosting habitat.

Residents @ 12801 have reported numerous bat sightings on their property typically spring – Summer annual. every year since move-in to residence 1969.

60

60

4.3.8.2. Avoidance and Minimization Efforts

The project could affect pallid bats if the species were to establish day or night roosts within large trees on the site prior to the commencement of work. To avoid harm to this species, the following measures will be implemented:

1. All potential roost trees within the project site will be surveyed for the presence of bat roosts by a qualified biologist. The survey may entail direct inspection of the trees or nocturnal surveys. The survey will be conducted no more than two weeks prior to the initiation of tree removal and ground disturbing activities. If no roosting sites are present, then trees will be removed within two weeks following the survey.
2. If roosting habitat is present and occupied, then a qualified biologist will determine the species of bats present and the type of roost (i.e., day roost, night roost, maternity roost). If it is determined that the bats are not a special-status species and that the roost is not being used as a maternity roost, then the bats may be evicted from the roost using methods developed by a biologist experienced in developing and implementing bat mitigation and exclusion plans.
3. If the bats are found to be pallid bats or the roost is being used as a maternity roost by any bat species, then a biologist experienced in bat mitigation and exclusion plans must prepare an eviction plan detailing the methods of excluding bats from the roost(s) and the methods to be used to secure the existing roost site(s) to prevent its reuse prior to removal. Removal of the roost(s) will only occur after the eviction plan has been approved by CDFW.
4. Tree removal surrounding roost trees will be conducted without damaging the roost trees.
5. No diesel or gas-powered equipment will be stored or operated directly beneath a roost site.
6. All construction activity in the vicinity of an active roost will be limited to daylight hours.

4.3.8.3. Project Impacts

The project will not cause direct temporary or permanent impacts to pallid bat roosting sites. The BSA does not provide suitable habitat for the establishment of maternity roosts by pallid bats. Trees within and adjacent to the BSA may provide suitable habitat for the establishment of day and night roosts by pallid bats, although no evidence of such roost occurrence has been observed. The avoidance and minimization measures outlined above will be implemented for any roosts found prior to or during construction. The project will result in an

indirect impact to pallid bats due to the loss of trees that could provide suitable future habitat for day and/or night roosts.

4.3.8.4. Compensatory Mitigation

The only potential impact of the project will be the removal of trees that could provide suitable day and/or night roosts for pallid bats in the future. Compensatory mitigation for the loss of these trees will be accomplished through payment by the PWD of the HCP/NCCP development fees and wetland mitigation fees (Sections 4.1.1.4 and 4.4.2).

4.3.8.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Although the pallid bat is not a HCP/NCCP-covered species, the HCP/NCCP nevertheless takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all habitat types, including those suitable for pallid bat. Under the HCP/NCCP, the impacts of all such future covered activities will be negligible, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.9. Ringtail

Ringtail is a fully protected species under the California Fish and Game Code. In California, ringtails occur primarily in the Coast and Sierra Nevada mountain ranges from Oregon to the California-Mexico border (Belluomini 1980).

Ringtails occur in a mixture of forest and scrub habitats in close association with rocky areas or riparian areas (Ahlborn and White 1990). They usually occur within 0.62 mile of permanent water. Ringtails take cover in hollow trees, hollow logs, cavities in talus or other rocky areas, and other suitable cavities.

One litter of young (an average of three individuals) is born in May or June. Nest sites are found in rock recesses, hollow trees, hollow logs, abandoned burrows, or wood rat nests.

Primary prey includes wood rats, mice, and rabbits. Ringtails will also eat birds and eggs, reptiles, invertebrates, fruit, nuts, and carrion. Probable predators include bobcats, coyotes, foxes, raccoons, and great horned owls.

4.3.9.1. Survey Results

The potential for ringtails to occur on the project site is low, and the project is unlikely to affect this species. Only two known records exist for ringtails in Contra Costa County, one of which is in the Los Vaqueros watershed. No evidence of their occurrence was observed during the planning survey. Nevertheless, potentially suitable habitat for ringtails occurs in the oak savanna, oak woodland, chaparral/scrub, and riparian woodland land cover types within and adjacent to the BSA. Additionally, large trees on the site could support hollowed recesses potentially large enough to provide cover for the ringtail.

4.3.9.2. Avoidance and Minimization Efforts

Under California Fish and Game Code, take of all fully protected species is prohibited. The project could potentially result in take of individual ringtails if they were to establish dens in the BSA. Therefore, a preconstruction survey will be conducted by a qualified biologist of all potentially suitable den sites (i.e., tree hollows and logs) within or near the BSA. Any occupied dens will be flagged, and the biologist will prepare a ringtail passive relocation plan subject to the approval of CDFW. The commencement of construction work will be subject to the following conditions:

1. If the biologist has documented that ringtails have voluntarily vacated the den site, then construction may begin within 7 days following this observation.
2. If the den is not vacated within 20 observation days, then the biologist may commence passive relocation in accordance with the CDFW-approved relocation plan. No relocation may occur during the early pup-rearing season of May 1 to June 15.

All activities that involve the ringtail will be documented and reported to the CDFW within 30 days of the activity.

4.3.9.3. Project Impacts

The project is unlikely to affect suitable ringtail den sites. The avoidance and minimization measures described above will be implemented for any sites occupied prior to or during construction. Permanent impacts to habitat could occur if unoccupied sites are damaged or removed.

4.3.9.4. Compensatory Mitigation

Avoidance and minimization measures will be implemented. Therefore, no project impacts to ringtails are expected and no compensatory mitigation is prescribed beyond payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $83,217.82 as required under the HCP/NCCP (Section 4.4.2).

63

4.3.9.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Although the ringtail is not a HCP/NCCP-covered species, the HCP/NCCP nevertheless takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all habitat types, including those suitable for ringtail. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.10. Townsend's Big-eared Bat

The Townsend's big-eared bat is a California State-listed Candidate as of December 2013 and a HCP/NCCP-covered species. This bat species inhabits a wide variety of habitats. It roosts in the open, hanging from walls and ceilings of buildings, caves, and mines. It has also been reported to utilize bridges, rock crevices and hollow trees as roost sites. Maternity roosts occur in caves, mines, and buildings (Jones and Stokes 2006).

This species hibernates during the winter, often when temperatures are around 32° to 53°F. Hibernation occurs in tightly packed clusters, which may help stabilize body temperature against the cold. Winter hibernating colonies are composed of mixed-sexed groups although males often hibernate in warmer places than females and are more easily aroused and active in winter than females. Hibernating colonies can range in size from a single individual to colonies of several hundred animals (Harris 2000, Sherwin and Piaggio 2005). Buildings, mines, and caves are used for hibernation.

The mating season for Townsend's big-eared bats takes place between October and February. Courtship rituals are initiated by the male. The female stores the male's sperm in her reproductive tract until ovulation and fertilization begin in the spring.

During summer, males and females occupy separate roosting sites. Males live a solitary lifestyle away from females. Females and their pups form maternity colonies, which often number from around 12 to 200 bats (Harris 2000). Maternity colonies form between March and June (based on local climactic factors), and females bear a single pup between May and July (Sherwin and Piaggio 2005). The pups are completely weaned at 6 weeks (Pearson et al. 1952).

Bats have been observed by 12801 residents Since 1969 Same as Sect. 4.3.8

64

4.3.10.1. SURVEY RESULTS

The potential for Townsend's big-eared bats to occur on the project site is low, and the project is unlikely to affect this species. The species is not known to occur within the project vicinity (CDFW 2013) and was not observed during the planning surveys, nor did biologists observe any evidence of possible roosting sites. Nevertheless, suitable foraging habitat for Townsend's big-eared bats occurs within the site's native grasslands and at the edges of the oak savanna. Additionally, larger trees on the site could potentially provide suitable day and/or night roosting habitat where hollowed trunks and branches have developed. Suitable habitat for maternity roosts does not occur on site due to the absence of structures, mines, and caves. The bridge does not provide suitable roosting habitat.

4.3.10.2. AVOIDANCE AND MINIMIZATION EFFORTS

The project could affect Townsend's big-eared bats if the species were to establish day or night roosts within large trees on the site prior to the commencement of work. In accordance with the HCP/NCCP, a preconstruction survey will be conducted to determine whether trees at the project site are occupied or whether they show signs of recent previous occupation. The preconstruction surveys will determine what avoidance and minimization requirements are triggered before construction and whether construction monitoring is necessary.

In accordance with the HCP/NCCP, although it is highly unlikely that this species is present, likely to be discovered or that there will be evidence of recent prior occupation, construction will be scheduled such that it minimizes impacts on Townsend's big-eared bat. Planning surveys indicated that there is no suitable habitat for maternity or hibernation roosts on the site. However if such sites are discovered they will be sealed before the hibernation season (November–March), as will nursery sites before the nursery season (April–August). If the site is occupied, then the action will occur either prior to or after the hibernation season for hibernacula and after August 15 for nursery colonies. Construction will not take place as long as the site is occupied.

4.3.10.3. PROJECT IMPACTS

The project could potentially affect small day or night roosts that might occur in hollowed areas of large trees within the project site. The avoidance and minimization measures described above will be implemented for any roosts found prior to or during construction. The project will have the potential to cause an indirect impact to Townsend's western big-eared bats as a result of the removal of several trees that could provide suitable future roosting habitat for this species.

65

4.3.10.4. COMPENSATORY MITIGATION

The only potential impact of the project will be the removal of trees that could provide suitable future day and/or night roosts for Townsend's western big-eared bats. Compensatory mitigation for the loss of these trees will be accomplished through payment by the PWD of the HCP/NCCP development fees and wetland mitigation fees (Sections 4.1.1.4 and 4.4.2)

4.3.10.5. CUMULATIVE EFFECTS

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon the Townsend's western big-eared bat in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.11. American Badger

American badger is a California Species of Special Concern. American badger historically occurred throughout California, with the exception of coastal forests in the northwestern part of the state, but is in decline and has been extirpated from parts of its former range (Williams 1986). Primary threats are urban and agricultural development, shooting and trapping, and rodent (prey) poisoning.

Badgers are found in open habitats including grasslands, savannas, and mountain meadows near timberline. Important habitat elements include sufficient food, friable soils, and relatively open, uncultivated ground. Burrowing rodents such as gophers and ground squirrels are primary prey for badgers, but they will also prey on other small mammals, reptiles, birds and eggs, and insects.

4.3.11.1. SURVEY RESULTS

There is one CNDDB occurrence within the project vicinity, 4.21 miles away (Occurrence #185). There is suitable habitat in the native grassland and oak savanna land cover types within the BSA. However, the potential for occurrence is low due to a lack of potential den sites in the area; no dens or other signs of American badgers were observed during the planning survey.

4.3.11.2. AVOIDANCE AND MINIMIZATION EFFORTS

The site supports suitable breeding and foraging habitat for American badger. The following avoidance and minimization measures will be implemented to avoid impacts to badgers:

66

1. If grading or construction will begin during the breeding season (March – August), a qualified biologist will conduct a survey of the grassland habitat to identify any badger burrows on the site. The survey will be conducted no sooner than two weeks prior to the start of construction.

2. Impacts to active badger dens will be avoided by establishing exclusion zones around all active dens, within which construction-related activities will be prohibited until denning is complete or the den is abandoned.

3. A qualified biologist will monitor each active den once per week in order to track its status and inform the PWD of when a den area has been cleared for construction.

4.3.11.3. PROJECT IMPACTS

The project is unlikely to affect suitable American badger den sites. The avoidance and minimization measures described above will be implemented for any sites occupied prior to or during construction. Permanent impacts to habitat could occur if unoccupied sites are damaged or removed.

4.3.11.4. COMPENSATORY MITIGATION

Avoidance and minimization measures will be implemented. Therefore, no project impacts to American badgers are expected and no compensatory mitigation is prescribed beyond payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $16,029.18 as required under the HCP/NCCP (Section 4.4.2).

4.3.11.5. CUMULATIVE EFFECTS

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. Although the American badger is not a HCP/NCCP-covered species, the HCP/NCCP nevertheless takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon all habitat types, including those suitable for American badger. Under the HCP/NCCP, the impacts of all such future covered activities will be insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.3.12. San Joaquin Kit Fox

SJKF is a HCP/NCCP-covered species listed as federally endangered and state threatened. SJKF was once widely distributed on the San Joaquin Valley floor and in the adjacent low

foothills. Its range has now been substantially reduced; the species is now primarily found only in Fresno, Kern, Kings, Monterey, San Luis Obispo, and Tulare counties.

SJKF generally inhabit areas where slopes are less than 40 percent. They prefer open valley and foothill areas with low vegetation supporting saltbush scrub (southern range) and/or grassland (northern range). Kit foxes prey primarily on rabbits, kangaroo rats, and, especially in the northern part of their range, California ground squirrels. They are opportunistic and will prey on birds, small rodents, reptiles, and arthropods and will scavenge for carrion, particularly road kills.

SJKF construct dens in loose textured soils on well-drained sites; they do not den in wetland soils. SJKF dens are most often found on gentle slopes (less than 28 percent), with natal and pupping dens on more level ground. Active dens may show signs of activity, such as recent digging, tracks, fresh scat, fleas and flies, or prey remains. Such signs of occupancy are at times absent at active dens, so any burrow in suitable habitat with the appropriate size and shape is considered to be a potential den by the USFWS and CDFW. Potential dens may serve as escape cover, even if not used for other activities. Family groups and individuals will use many dens throughout the year, and families may change natal dens once or twice per month. Individual foxes may use up to two dozen dens, and any particular den is, therefore, likely to be vacant. Natal dens are used in successive years by the same mated pair or family group, and den sites may be used by successive generations of foxes.

4.3.12.1. SURVEY RESULTS

SJKF is known to occur in the project vicinity (CDFW 2013). There are four records of SJKF occurrences within 5 miles of the project site (Appendix A, Figure 4). An unverified occurrence is approximately 0.5 mile from the site (Occurrence #574). One adult was observed at this location by an "untrained observer" in 1989 (CDFW 2013). All other SJKF sightings occurred prior to 1993. The BSA lies within the known foraging range (1 to 12 miles) of recorded den sites (USFWS 1998), but is outside of modeled suitable habitat for SJKF under the HCP/NCCP (HCP/NCCP Chapter 4; Figure 4-1).

LSA biologists conducted a habitat assessment and planning survey for SJKF within the BSA on August 30, 2013 (Section 2.2). Survey results verified that the BSA contains 1.483 acres of native grassland and oak savanna land cover types that provide potentially suitable foraging, movement, and denning habitat for SJKF. No evidence of SJKF dens was observed in the BSA. The BSA and surrounding area are likely too steep to provide preferred breeding habitat.

12801 Residents reported annual sightings of kit foxes (mothers bringing ~~young~~ pups outside to train) in area at westernmost of 67/BSA - usually seen in grassy area by hillside. Sightings have been mostly in late spring/early summ

See resident observations. cant exclude possibility of onsite den.

68

Based on survey results, SJKF could potentially occur in the BSA. However, the potential for occurrence is low due to the marginal nature of the habitat for this species and the absence of observations in Contra Costa County since 1993. Although there have been occurrences of SJKF within the HCP/NCCP area, the most recent surveys have found no evidence of occupancy in the project vicinity (HCP/NCCP Volume 2 – Appendix D Species Profiles).

4.3.12.2. Avoidance and Minimization Efforts

Although the occurrence of SJKF within the BSA is unlikely, the site nevertheless supports marginally suitable foraging and movement habitat. Although suitable burrows large enough for breeding were not identified during the planning surveys, there is still the potential for burrows to be created prior to construction. Therefore, pre-construction surveys will be conducted as described below.

Prior to any ground disturbance related to covered activities, a USFWS/CDFW-approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for SJKF. The surveys will establish the presence or absence of SJKF and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999). Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify SJKF and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities. If SJKF and/or suitable dens are identified in the survey area, the measures described below will be implemented.

1. If a SJKF den is discovered in the development footprint, the den will be monitored for three days by a USFWS/CDFW-approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.
2. Unoccupied dens will be destroyed immediately to prevent subsequent use.
3. If a natal or pupping den is found, UFWS and CDFW will be notified immediately. The den will not be destroyed until the pups and adults have vacated the den and then only after further consultation with USFWS and CDFW.
4. If SJKF activity is observed at the den during the initial monitoring period, the den will be monitored for an additional five consecutive days from the time of the first

Survey should take place during time periods when foxes raise young and during periods of activity (early morning/ early evening.)

Do this well before construction since prime habitat is primary support area and first to be developed.

69

observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of the biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).

5. If dens are identified in the survey area outside the disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 feet and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by SJKF.

4.3.12.3. Project Impacts

Approximately 0.196 acre of native grassland and oak savanna that provide marginally suitable habitat for SJKF will be permanently affected by construction activities. In addition, approximately 0.192 acre of habitat will be temporarily impacted. Therefore the project ***may affect, is not likely to adversely affect*** this species due to the loss of marginally suitable habitat.

4.3.12.4. Compensatory Mitigation

Compensatory mitigation for impacts to SJKF (as well as other HCP/NCCP-covered species) will be achieved through payment by the PWD of the HCP/NCCP development fees for permanent and temporary impacts, totaling $16,029.18 as required under the HCP/NCCP (Section 4.4.2).

again pay a third party. Compensation to property owner?

4.3.12.5. Cumulative Effects

This project is covered by the East Contra Costa County HCP/NCCP which was developed to protect natural resources while streamlining the environmental permitting process. The project is located in HCP/NCCP Zone 2 (Natural Lands) and is covered under rural infrastructure projects. The HCP/NCCP takes into account the cumulative effects from future covered activities (including all rural infrastructure projects) upon the SJKF in the Zone 2 vicinity. Under the HCP/NCCP, the impacts of all such future covered activities will be

70

insignificant, provided that all required avoidance, minimization, and mitigation conditions are implemented.

4.4. HCP/NCCP Summary of Impacts, Required Avoidance and Minimization Efforts, and Compensatory Mitigation

The project will involve a bridge replacement and related roadwork along 0.20 mile (1,055 feet) of roadway along Marsh Creek Road in Contra Costa County, resulting in permanent impacts to HCP/NCCP land cover types adjacent to the existing roadway and shoulders as follows: riparian woodland (0.091 acre), oak woodland (0.102 acre), oak savanna (0.150 acre), chaparral/scrub (0.128 acre), native grassland (0.046 acre), non-native woodland (0.021 acre), and urban (1.015 acres). Temporary impacts will occur to riparian woodland (0.306 acre), oak woodland (0.208 acre), oak savanna (0.184 acre), chaparral/scrub (0.083 acre), native grassland (0.008 acre), non-native woodland (0.031 acre), and urban (0.417 acre).

In addition, permanent impacts will occur to 64 linear feet (0.045 acre) of jurisdictional stream below Ordinary High Water and 425 linear feet (0.019 acre) of non-jurisdictional ditch. Temporary impacts will occur to 273 linear feet (0.182 acre) of jurisdictional stream below Ordinary High Water. The HCP/NCCP bases creek impacts on the area of creek from top of bank to top of bank, excluding portions of the stream mapped as urban land cover (i.e., under the existing bridge). The project will permanently impact 40 linear feet (0.058 acre) and temporarily impact 249 linear feet (0.289 acre) of stream from top of bank to top of bank.

Does this include wetland immediately adjacent to BSA? Define a temporary impact. Repopulation within a year? 2 years? 5 years?

The project will also result in the removal of 36 trees for replacement of the bridge. The trees to be removed consist of gray pine, blue oak, coast live oak, red willow, western sycamore, California buckeye, California bay, and cherry plum.

As described in Section 4.2, protocol-level surveys were conducted in spring and summer of 2013 and spring 2014 these surveys determined that no plants occur within the BSA therefore there will be no impacts to large-flowered fiddleneck, the only federally-listed plant species with suitable habitat Surveys have indicated that there will be no adverse effect on any special-status plant species.

The BSA contains suitable habitat for three federally-listed, HCP/NCCP-covered wildlife species: CTS, CRLF, and AWS. There are also documented occurrences of all three species within or near the project vicinity. CRLF were found during planning surveys of the BSA. Suitable habitat for the other two species is present within the BSA. Therefore, the project

71

may affect, is likely to adversely affect these federally-listed animal species. The BSA also contains marginally suitable habitat for SJKF, another federally-listed, HCP/NCCP-covered species, though no SJKF have been observed in the project vicinity since 1993. Therefore, the project ***may affect, is not likely to adversely affect*** this species. Habitat impacts for these species are summarized in Table D.

As described in Section 4.3, eight additional special-status and SLC wildlife species have a limited potential to occur within the BSA based on the mapped HCP/NCCP land cover types and the results of the planning survey: western pond turtle (HCP/NCCP-covered), coast horned lizard, golden eagle (HCP/NCCP-covered and no-take), white-tailed kite (no-take under the HCP/NCCP), pallid bat, Townsend's western big-eared bat (HCP/NCCP-covered), ringtail (no-take under the HCP/NCCP), and American badger.

There is suitable breeding and movement habitat for western pond turtles in Marsh Creek and adjacent uplands (Table D). The BSA also provides suitable foraging and movement habitat for coast horned lizard (Table D) and suitable foraging habitat for golden eagle and white-tailed kite.

They do breed + live there - its a fact.

There is suitable foraging habitat within the BSA for pallid bats and Townsend's western big-eared bats. However, the potential for these two species to occur in the BSA is low due to the lack of recent records of occurrence within the project vicinity and a lack of appropriate roosting habitat in or near the site. In addition, no evidence of bat roosting was observed during the planning surveys.

The BSA contains marginally suitable nesting and denning habitat for ringtail and American badger, though the potential for these species to occur in the BSA is low due to the small number of records of occurrence in the vicinity and no evidence of occurrence during planning surveys.

Table D: Special-status Wildlife Species Habitat Impacts

HCP/NCCP Land Cover Type	Wildlife Use	Existing in BSA (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
CTS, Federal Threatened, State Threatened, CDFW Species of Special Concern (HCP/NCCP-covered)				
Oak Savanna	Aestivation Movement Foraging	1.398	0.150	0.184
Chaparral/Scrub	Movement Foraging	0.233	0.128	0.083

72

HCP/NCCP Land Cover Type	Wildlife Use	Existing in BSA (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
Native Grassland	Aestivation Movement Foraging	0.085	0.046	0.008
CRLF, Federal Threatened, CDFW Species of Special Concern (HCP/NCCP-covered)				
Stream	Breeding Movement Foraging	0.341	0.045	0.182
Riparian Woodland	Aestivation Movement Foraging	0.832	0.091	0.306
Oak Savanna	Aestivation Movement Foraging	1.398	0.150	0.184
Oak Woodland	Aestivation Movement Foraging	1.427	0.102	0.208
Chaparral/Scrub	Movement Foraging	0.233	0.128	0.083
Native Grassland	Aestivation Movement Foraging	0.085	0.046	0.008
Western Pond Turtle, CDFW Species of Special Concern (HCP/NCCP-covered)				
Stream	Foraging Movement	0.341	0.045	0.182
Riparian Woodland	Foraging Movement	0.832	0.091	0.306
Oak Woodland	Movement	1.427	0.102	0.208
Oak Savanna	Breeding Movement	1.398	0.150	0.184
Native Grassland	Breeding Movement	0.085	0.046	0.008
Alameda Whipsnake, Federal Threatened, State Threatened (HCP/NCCP-covered)				
Riparian Woodland	Movement Foraging	0.832	0.091	0.306
Oak Woodland	Movement Foraging	1.427	0.102	0.208
Oak Savanna	Movement Foraging	1.398	0.150	0.184
Chaparral/Scrub	Movement Foraging	0.233	0.128	0.083
Native Grassland	Movement Foraging	0.085	0.046	0.008

73

HCP/NCCP Land Cover Type	Wildlife Use	Existing in BSA (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
Coast Horned Lizard, CDFW Species of Special Concern				
Oak Savanna	Movement Foraging	1.398	0.150	0.184
Chaparral/Scrub	Movement Foraging	0.233	0.128	0.083
Native Grassland	Movement Foraging	0.085	0.046	0.008
San Joaquin Kit Fox, Federal Endangered, State Threatened (HCP/NCCP-covered)				
Oak Savanna	Breeding Foraging Movement	1.398	0.150	0.184
Native Grassland	Breeding Foraging Movement	0.085	0.046	0.008

As described in Section 4.3, a range of species-specific avoidance and minimization measures will be implemented in compliance with the requirements of the HCP/NCCP. Additional landscape- and natural community-level measures that are applicable to the project are included in Section 4.4.1 below. Compensatory mitigation will also be provided in the form of payment of $83,217.82 in impact fees, in compliance with the requirements of the HCP/NCCP, as detailed in Section 4.4.2.

again payment to a third party for damage inflicted on adjacent private property

4.4.1 HCP/NCCP Avoidance and Minimization Efforts

The proposed project has been designed to be consistent with HCP/NCCP Conservation Measure 1.14 *Design Requirements for Covered Roads Outside the Urban Development Area* (Chapter 6). In compliance with that measure, the following avoidance and minimization measures will be used for protection of the biological resources within the BSA and project vicinity:

1. Equipment storage, fueling, and staging areas will be sited on disturbed areas or on ruderal or non-sensitive nonnative grassland land cover types, when these sites are available, to minimize risk of direct discharge into riparian areas or other sensitive land cover types.
2. No erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks.
3. All no-take species will be avoided.

possible if area dewatered? What is solution proposed?

74

4. Construction activities will comply with the Migratory Bird Treaty Act and will consider seasonal requirements for birds and migratory non-resident species, including covered species.
5. Temporary stream diversions, if required, will use sand bags or other approved methods that minimize in-stream impacts and effects on wildlife.
6. Silt fencing or other sediment trapping method will be installed down-gradient from construction activities to minimize the transport of sediment off site.
7. Barriers will be constructed to keep wildlife out of construction sites, as appropriate.
8. Onsite monitoring will be conducted throughout the construction period to ensure that disturbance limits, BMPs, and HCP restrictions are being implemented properly.
9. Active construction areas will be watered regularly to minimize the impact of dust on adjacent vegetation and wildlife habitats, if warranted.
10. Vegetation and debris must be managed in and near culverts and under and near bridges to ensure that entryways remain open and visible to wildlife and the passage through the culvert or under the bridge remains clear.
11. Cut-and-fill slopes will be revegetated with native, non-invasive nonnative, or non-reproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions.

4.4.2 Compensatory Mitigation

Compensatory mitigation for impacts to listed species and their habitats will be achieved through payment of development fees and wetland mitigation fees for permanent and temporary impacts, as outlined in the HCP/NCCP. The Marsh Creek Road Bridge Replacement Project falls in Zone 2 (Natural Lands) of the HCP/NCCP Zone Map. The fee calculations below are based on the March 15, 2015 fee calculator worksheets. Actual fees paid will be based on those that are in place when the project is advertised for construction.

A development fee for permanent impacts will be required for permanent impacts to all habitats (Table E). Land cover types included in the permanent impact calculations are native grassland, chaparral/scrub, oak savanna, oak woodland, non-native woodland, and riparian woodland.

Property owner will seek compensation as well.

It is an impact and an estimate should be included in EIR

7.5

Table E: Development Fee for Permanent Impacts

Permanent Impacts	Cost	Permanent Development Fee
0.538	$25,853.51	$13,909.19

A development fee for temporary impacts will be required for temporary impacts to all habitats (Table F). Land cover types included in the temporary impact calculations for the development fee include native grassland, chaparral/scrub, oak savanna, oak woodland, non-native woodland, and riparian woodland.

Table F: Development Fee for Temporary Impacts

Temporary Impacts	Cost	Years of Disturbance	Temporary Development Fee
0.820	$25,853.51	3/30	$2,119.99

A wetland mitigation fee will also be required for permanent impacts to 40 linear feet of stream and permanent impacts to riparian woodland as a result of the loss of 0.091 acre of riparian canopy (Table G).

Table G: Wetland Mitigation Fee for Permanent Impacts

Habitat Type	Permanent Impacts	Cost	Wetland Mitigation Fee
Riparian Woodland	0.091	$71,551.82	$6,511.22
Stream ≥ 25 feet	40	$878.71	$35,148.40

A wetland mitigation fee will also be required for temporary impacts to 249 linear feet of stream and 0.306 acre of riparian habitat (Table H).

Table H: Wetland Mitigation Fee for Temporary Impacts

Habitat Type	Temporary Impacts	Cost	Years of Disturbance	Wetland Mitigation Fee
Riparian Woodland	0.306	$71,551.82	5/30	$3,649.14
Stream ≥ 25 feet	249	$878.71	3/30	$21,879.88

In summary, a development fee of $13,909.19 will be required for permanent impacts. Additionally, the project will be subject to a development fee of $2,119.99 for temporary

76

impacts to all habitats, a wetland mitigation fee of $41,659.62 for permanent impacts to stream and riparian woodland habitats, and a wetland mitigation fee of $25,529.02 for temporary impacts to stream and riparian woodland habitats. Therefore, the total combined mitigation fee for the project will be $83,217.82. The HCP/NCCP fee calculator worksheets for permanent and temporary impacts are included as Appendix G.

77

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78

Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act Consultation Summary

The project is a covered project in the *East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan*. Consultation with USFWS occurred during the HCP/NCCP approval process for the four federally-listed species (SJKF, CTS, CRLF, and AWS) that could be impacted by the project. The HCP/NCCP serves as an incidental take permit for these species provided that the specific reporting requirements of the HCP/NCCP are followed, the specific avoidance and minimization measures dictated by the HCP/NCCP are complied with, and the appropriate mitigation fees are paid. Compliance with each of these HCP/NCCP requirements is documented in this report.

A Biological Assessment (BA) following the Caltrans format has been prepared and provides an analysis of biological resources within the project vicinity and a determination of impacts.

5.2. California Endangered Species Act Consultation Summary

The project will provide mitigation in accordance with the provisions of the *East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan* thereby avoiding the need for consultation with the CDFW. A list of all special-status species afforded federal, state, or local protection evaluated during the assessment are discussed in this NES. Consultation with the CDFW occurred during the HCP/NCCP approval process for state-listed species affected by the project. The HCP/NCCP serves as an incidental take permit for these species provided that the specific reporting requirements of the HCP/NCCP are followed, the specific avoidance and minimization measures dictated by the HCP/NCCP are complied with, and the appropriate mitigation fees are paid. Compliance with each of these HCP/NCCP requirements is documented in this report. The project has been designed to avoid potential impacts to both HCP/NCCP-covered species and species protected only under CEQA through implementation of avoidance and minimization measures. Project timing, preconstruction surveys, and implementation of buffers around any potential nests or occupied dens will avoid potential impacts to these species. Compensatory mitigation for HCP/NCCP-covered species will provide for loss of habitat for species protected under CEQA.

This occurred prior to project. scope of protection recommended by USFWS not disclosed as it pertains to adjacent potentially affect property

These actions are not defined sufficiently as to timing of actions; some of this work necessary to validate/ conclusion of EIR doc under consideration

5.3. Wetlands and Other Waters Consultation Summary

A delineation study was conducted within the BSA on August 30, 2013 following the methods outlined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* ("Arid West Supplement," Corps 2006). A delineation report has been prepared for review by the Corps and is located in Appendix E. Applications for a Corps 404 permit and a RWQCB 401 permit will be required for the bridge replacement and will be completed and submitted in the future.

Has any feed back from USACE been received? Solicited?

5.4. California Fish and Game Code Section 1602 Summary

A delineation study was conducted within the BSA on August 30, 2013 following CDFW protocols which identified jurisdictional features in the BSA. The application for a streambed alteration agreement will be completed and submitted to CDFW Region 3 in the future.

same as USACE comment

5.5. Invasive Species

To avoid the introduction of invasive species into the BSA during project construction, contract specifications will include, at a minimum, the following measures:

- All earthmoving equipment to be used during project construction will be thoroughly cleaned before arriving on the project site.
- All seeding equipment (i.e., hydroseed trucks) will be thoroughly rinsed at least three times prior to arriving at the project site and beginning seeding work.
- The tank of the hydroseed trucks will be thoroughly rinsed at least three times prior to arriving at the project site.

To avoid spreading any non-native invasive species already existing on-site, to off-site areas, all equipment will be thoroughly cleaned before leaving the site.

5.6. Migratory Bird Treaty Act and California Fish and Game Code (Breeding Birds)

Most existing vegetation within the project vicinity has at least some potential to support nests of native birds protected under the MBTA and California Fish and Game Code. To reduce the likelihood of birds establishing nests in the construction zone, vegetation in the project vicinity may be mowed prior to the start of the nesting season (February 15). Similarly, potential nest trees that will be eliminated as part of the project may be removed.

8C

prior to the start of the nesting season. Construction activities during the nesting season (February 15–August 31), including any removal of vegetation in the project vicinity, will be conducted in a manner that avoids direct impacts to nesting birds via a preconstruction survey as described in Section 4.3. Buffers for songbird nests can be on the order of 50 to 100 feet, with the precise width determined by the biologist conducting the preconstruction survey based on nest site characteristics and the acclimation of the nesting birds to disturbance. Thus, the project is not expected to result in direct impacts to nesting birds.

81

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82

MARSH CREEK BRIDGE POOL
HYDROGEOLOGIC INVESTIGATION

Report prepared for:

Contra Costa County
Environmental Services Division

Prepared by:

Zan Rubin
Krysia Skorko
Barry Hecht

Balance Hydrologics, Inc.

April 2016

A report prepared for:

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Marsh Creek Bridge Pool Hydrogeologic Investigation

 Project Assignment: 216027
by

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Geomorphologist/Hydrologist

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April 13, 2016

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

EXECUTIVE SUMMARY

This study assesses potential impacts of reconstructing Bridge No. 28C-0141 along Marsh Creek in Contra Costa County on yields from a reported spring and on the perenniality of the pools downstream of the spring. Our approach was intended to identify the source(s) of spring water, and to identify the source of the spring as either shallow alluvial water or deeper (bedrock) groundwater, such that flows to the pool and the channel downstream are not adversely affected. We found that:

- Construction of the bridge is unlikely to significantly affect water entering from the shallow, alluvial aquifer, but it could potentially affect springs originating and conveyed through fractures in the bedrock if these fractures were inadvertently sealed during foundation installation.
- Perennial flow in the bridge reach is likely due to thinning alluvium, with the canyon walls forcing water in the alluvium to the surface.
- No visual evidence of springflow was observed, but elevated baseflow conditions prevented observation of the streambed.
- We established that 'general mineral' and 'boron' analyses can be used to distinguish inflow from the bedrock forming the sides of the valley from the waters in Marsh Creek and the shallow alluvium to which it is connected. Because the post-storm flows of late-March 2016 were so much greater than bedrock-sourced springflow, we were not able to detect evidence of the springs in samples taken upstream and downstream of the existing and future bridges.
- Specific conductance analysis did not reveal a spring signature, but, given the elevated post-storm streamflow, results are not sufficiently precise to rule out a contribution of spring flow from bedrock sources which could prove to be significant factor in sustaining the pool in summer.
- We recommend a follow-up sampling visit during late-spring or summer baseflow to identify the location of possible springs and quantify the composition of spring water.

1. INTRODUCTION

1.1 Background

The Contra Costa County Public Works Department, in cooperation with the California Department of Transportation District 4, proposes replacing the existing Marsh Creek Road Bridge (Bridge No. 28C-0141). The purpose of the proposed project is to replace the existing single-span bridge with a new, wider single-span bridge to accommodate safe two-way traffic across Marsh Creek on Marsh Creek Road. The new bridge will meet current design standards of Contra Costa County Public Works, Caltrans, and the American Association of State Highway and Transportation Officials and include wider shoulders and wider lanes.

In response to public comments on the CEQA Mitigated Negative Declaration, the Contra Costa County Public Works Department requested that Balance Hydrologics investigate potential impacts to the pool downstream of the existing bridge. In particular, Balance was asked to investigate the possibility that the pool, reported by residents to be perennial and fed by springs, may be impacted by bridge construction including the temporary dewatering of the channel that will occur during bridge construction.

1.2 General Technical Approach and Work Conducted

The purpose of this study is to assess potential impacts of bridge construction on the reported springflow and on the perenniality of the pool(s) downstream of the spring. Our approach was to identify the source(s) of water being supplied to the pools through the spring, and to identify the source of the spring as either shallow alluvial (hyporheic) water or deeper (bedrock) ground water. Controls on the flow in this reach were also assessed through geologic observations.

The working hypothesis is that there are 2 major potential sources of water at this location. The first is hyporheic water flowing within the valley-floor deposits (alluvium) adjoining and beneath the stream, and to which it is interconnected. During summer, most of the flow through the hyporheic zone is a mixture of water from Marsh Creek, and shallow groundwater contributions from the valley-bottom flats along Marsh Creek. Another potential source is the water entering from the rocky sideslopes of the canyon through the faults and fractures characteristic of the Panoche formation, the dominant local bedrock type, on either side of the valley. Either source (hyporheic or bedrock)

can emerge to the surface under pressure as a flowing spring. The pressure depends on local or regional flow paths through the alluvium or bedrock.

We selected this approach because construction of the bridge is unlikely to significantly affect water entering from the shallow, alluvial aquifer, but it potentially could affect the Panoche bedrock waters if these are conveyed into the channel through fractures or faults and the fractures were sealed off due to foundation installation.

One way of assessing how much flow enters from the Panoche formation bedrock is a contrast in the composition of the groundwater within the Panoche and alluvial aquifers. Much of our analysis is based on identifying how these sources may differ. Based on past experience in this part of Contra Costa County, we selected three possible constituents which might be useful:

a) Overall salinity, measured as specific conductance, a widely used method of making such determinations in the field,

b) Boron concentrations, which tend to be elevated in some Contra Costa streams, and

c) Ionic fingerprinting, which looks at the ratios of the eight or nine most common ions, a method in wide use since the 1940s for distinguishing water sources.

The work was complicated by the season of inquiry. Responding to mid-March storms, Marsh Creek was flowing at above-normal winter flows during the window in which this work was completed. Hence, we used all three potential water-quality tracers to seek an understanding of the local conditions.

Finally, we considered local hydrogeologic conditions. Because the spring is reported to audibly gurgle during summer, it is implied that the water is under slight to moderate pressure. This is consistent with the location of the spring, reported to emerge in the midst of a hydraulic riffle (a topographic high point along the longitudinal profile of a stream). If the Panoche waters were simply seeping into the alluvium, they would be doing so within the pool (a topographic low along the stream profile) downstream of the bridge. The fact that the water reportedly enters the stream in a riffle, near midstream, and that it gurgles, suggests that the water is under several inches of pressure. If local Panoche waters are the source of the spring, they would logically get there in a defined fracture or joint.

Balance's scope of work on this project included a preliminary site assessment on March 17, 2016. During this visit, Balance staff made observations of channel conditions at the proposed bridge realignment location, local geology and vegetation, and asked local residents about hydrologic conditions in Marsh Creek and surrounding areas. Following this visit, Balance staff reviewed geologic and topographic maps and historical aerial photos, and older water-quality reports on Marsh Creek. On March 28, 2016, Balance staff collected water samples from Marsh Creek, a nearby groundwater seep, and a seasonal pond in order to quantify and compare geochemical signatures of Marsh Creek stream water and groundwater. This report outlines the findings of our site assessment, geologic interpretation, and water chemistry analysis.

Balance was also asked to assess if the temporary dewatering of the channel during bridge construction could reduce the rate or volume of shallow groundwater water flowing to the springs, or perenniality of flow and of the downstream pool. We can think of no reasonable mechanism through which the temporary dewatering of the channel will cause lasting hydrologic impacts, so that question is not included in the following sections.

1.3 Acknowledgements

We appreciate the assistance of Hillary Heard, Leigh Chavez, and Neil Leary from Contra Costa County Department of Public Works, and Sean Lohmann, Jennifer Roth, and George Molnar from LSA, with the development of the scope of this investigation and for providing us with background information and descriptions of the site. We are also grateful to the residents along Marsh Creek for taking the time to share their knowledge of the site, Its history, and their observations of hydrological conditions.

2. HYDROGEOLOGIC SETTING

2.1 Hydrography, Climate, Antecedent Conditions

The contributing drainage area of Marsh Creek to the project site consists of 23.1 square miles of steep, grassland, oak woodland, and chaparral draining the northeast portion of Mount Diablo and surrounding hills (Natural Heritage Institute, 2007). (see **Figure 1**). Mean annual rainfall in this portion of Contra Costa County is approximately 19 inches per year, as shown on precipitation and average annual rainfall distribution maps developed by the Contra Costa County Public Works Department and Flood Control and Water Conservation District. Our investigation occurred during March 2016. Rainfall during Water year 2016 (October 1, 2015 to September 30, 2016) has been approximately about average (year to date) following several dry years. A substantial rain event on March 13 generated the second largest flows of the year. Following that event, two weeks of warm and dry weather brought Marsh Creek flows down considerably, although flows maintained an elevated winter baseflow condition during our March 28 visit (**Figure 2**).

2.2 Geology

2.2.1 Lithology and Geochemical Properties

Geologic maps of the region (Figure 1) show that the project site is underlain by north-dipping sedimentary strata of the Cretaceous-age Panoche formation (Dibblee 2006). The Panoche is a sequence of cemented sandstones and mudstones or shales. It is similar in texture and in geochemical composition to the Markley sandstone member of the Kreyenhagen formation, which outcrops a few miles to the north in the vicinity of Kirker Pass (c.f., Hecht and others 2011, **Figure 3**). In the Kirker Pass area, much of the groundwater movement occurs through north-south trending faults and master fractures. The geologic map shows that these faults and fractures extend southward to the Marsh Creek canyon; further, Marsh Creek Springs, a resort and spa dating to the early 20th century, is built around springs which seemingly emanate from one of these faults or master fractures. The springs in the Marsh Creek canyon, though, have proven to be much less salty than the springs and seeps near Kirker Pass, so it has been more difficult to 'trace' springflow emanating from the deep bedrock fractures.

Rhyolitic volcanic rock intruded into the Panoche along the creek in the vicinity of the site (Figure 1). The channel itself flows within an alluvial valley that thins in the downstream direction. Cross sections A-A' and B-B', shown in planview in Figure 1, are discussed in more detail in section 2.2.3 and cross sections are shown in **Figure 4**.

The alluvium, or valley-fill deposits shown in Figure 4, extend to a depth of about 2-10 feet below the existing streambed, based on borings shown in the bridge plans (**Appendix B**). Beneath the alluvium is hard sandstone and shale bedrock. The lowest 5 feet of the alluvium are described as "coarse to fine gravels and coarse to fine sands", likely a highly-permeable zone through which much hyporheic flow can pass. Other permeable zones occur throughout the alluvium. A dug well about 25 feet deep and about 40 feet northwest of the existing bridge had been used for water supply for many years before being abandoned and filled some years ago. The neighbors stated that the well had a high yield, also supporting the data from the borings showing easy movement of groundwater through the alluvial deposits beneath the stream.

2.2.2 Faults and Springs

In our 2011 study (Hecht and others, 2011), samples analyzed for general mineral composition near Kirker Pass showed that the bedrock in this region has connate waters (the original waters in which these sandstones were deposited) flowing from springs emanating from north-south trending faults (Figure 3). This means that groundwater at this location near Kirker Pass has high specific conductance, an index of salinity) compared to creek water, and higher concentrations of total dissolved solids and minerals. Hecht and other's 2011 report concluded that the groundwater-fed creeks in the region had a specific conductance of 2900 to 3700 µS/cm, and TDS concentrations of 1900 to 2300 mg/L. Boron was also present in quantities of approximately 1 mg/L. The Marsh Creek Road bridge site is located along a similar north-south trending fault through similar bedrock geology to those features studied in the Kirker pass region, (Figure 1), so we deemed it likely that springs emanating from this fault might share comparable geochemical signatures. If present, these signatures would be distinguishable from the creek water even if discharge from the springs is low relative to discharge from the creek because the signatures are so distinct.

2.2.3 Geological Controls on Flow

Perennial and ephemeral reaches are interspersed along the middle section of Marsh Creek (Natural Heritage Institute and others, 2007). In Mediterranean climates with seasonal precipitation, springs, seeps, and groundwater flow from the hillsides are often the sources of dry season pools and streamflow. Perennial pools and perennial reaches are typically controlled by variations in the thickness of alluvium and the permeability of bed sediment and underlying bedrock (Costigan and others, 2016; Payn and others, 2009; Stanford and Ward, 1993).

The Marsh Creek channel flows through valley-floor deposits ("alluvium") upstream of the bridge. This wedge progressively narrows downstream from the County's Marsh Creek Detention Facility access road downstream to the project site. The valley immediately downstream of the project site is quite narrow. The stream flows through bedrock walls, and the alluvial sediments forming the bank and bed are much thinner. Cross sections A-A' and B-B', shown in planview in Figure 1, show the progressive downstream thinning of the alluvial deposits (and alluvial aquifer). These cross sections, while not quite to scale, illustrate the concept of the alluvial wedge thinning in the downstream direction. Bedrock outcrops constrict both sides of the channel in section B-B'. Shallow groundwater connected to the creek and flowing through the alluvial wedge is forced to the surface as the alluvium thins and the underlying bedrock lies closer to the surface. This process, shown schematically in **Figure 5**, is often a control on where perennial pools are found through the region.

3. METHODS

3.1 Sampling Locations and Methods

Following a hydrogeological reconnaissance on March 17, we chose sampling sites and collected four samples for general mineral and boron analysis (**Figure 6**):

1) at the existing Marsh Creek bridge, just upstream of where neighbors reported the presence of a spring,

2) Marsh Creek about 300 feet downstream of the reported springs (location of the reported spring assumed approximately 20 feet downstream of existing bridge, though not observed during our field visits),

3) a pond ~0.45 mile upstream adjacent to Marsh Creek Road, and

4) a groundwater seep draining into Marsh Creek ~0.75 mile downstream from the bridge.

In addition, we measured specific conductance from several sites upstream and downstream of the bridge (Figure 6) from the Marsh Creek Detention Facility (~0.75 mile upstream of the bridge) downstream to the next bridge on Marsh Creek Road (~1 mile downstream of the project bridge).

Samples for all analytes were collected directly from the stream, pond and seep using pre-cleaned laboratory bottles, with the exception of samples for metals (Fe, Mn), which were field –filtered through 0.45-micron glass fiber filters into acidified bottles according to standard procedures. All samples were stored on ice and were delivered by hand to McCampbell Analytical Inc. in Pittsburg, CA. All samples arrived in good condition and within hold times. General mineral testing includes the following analyses: Alkalinity (speciated), calcium, iron, potassium, magnesium, sodium, chloride, sulfate, plus lab specific conductance, pH, and total dissolved solids by evaporation.

A 1-day rush analysis was requested, and results were received the next day. Laboratory QA/QC procedures were checked over by Balance staff, and additional analyses were requested to confirm the accuracy of results. The laboratory reports are included as **Appendix A**.

3.2 Geologic Interpretation

Geologic and topographic maps of the region were studied and ground-truthed in the field. Reaches of the creek with bedrock constriction were mapped with GPS points. These reaches were identified in the field as narrow points in the valley with bedrock outcroppings along the channel bed or banks.

Historical aerial photographs were also studied to look for an increased presence of riparian vegetation in sections of the channel with bedrock constrictions, as another indication of where perennially wet, or shallow groundwater, sections of the creek are located. We were not able to reach any conclusions, given the degree of land-use effects.

3.3 Water Fingerprinting by Proportional Dilution

Rain falls as water that is nearly pure H_2O. Through contact with organic matter, soil, and bedrock, the water picks up a chemical signature that can be used to distinguish different flow paths. Our approach was based on the understanding that springs, seeps, and ponds would exhibit a signature distinctive of the bedrock contacted along those flow paths. In addition to the chemical signature specific to the flow path, there is a typical increase in specific conductance (a measure of electrical conductance that is an indicator of solute concentration) that increases as water takes longer flow paths with prolonged contact with bedrock and soil.

Water samples were collected on March 28, 2016 from the Marsh Creek bridge site and from Marsh Creek ~300 feet downstream of the bridge (below the reported location of the spring). Ideally we would have sampled the spring reported to be present at the Marsh Creek bridge site directly. However, since the spring was not apparent on our sampling visit, we sampled the nearby seep and pond sites as analogues expected to carry similar signatures as the reported spring. Major ions results were plotted in a Piper diagram (**Figure 7**), a commonly-used method to characterize (or 'fingerprint') water from different sources for comparison. We also plotted typical surface and groundwater samples from nearby Kirker Pass for comparison. Specific conductance was measured in the field at 6 sites along Marsh Creek upstream and downstream of the bridge and at the pond and seep sites using YSI Model 30 conductance meters calibrated prior to sampling at the Balance workshop.

4. RESULTS

4.1 Geologic Interpretation

The Marsh Creek bridge site is at the downstream end of a wide to narrow trending alluvial valley (Figure 1). The bed material of Marsh Creek is composed of cobbles and gravels which typically have high permeability, allowing ready and easy exchange between the creek and adjoining sands and gravels of the alluvial aquifer. Water draining from the adjoining hillsides can also move easily into either the alluvium or the channel. Since the Marsh Creek/alluvial waters and bedrock hillside waters come from different sources, each with their own mineral signatures, the ionic chemistry of waters emanating at the reported spring beneath the bridge (and other springs in the area) will be a blend of these sources. Through our review of the geologic maps (Figure 1) and boring logs (Appendix B) and then through field verification, we confirmed that Panoche formation bedrock is exposed along the channel ~1000 feet downstream of the existing bridge site showing that alluvium is indeed thinning (from approximately 2-10 feet thick below the streambed at the bridge site to zero feet at the observed bedrock 1000 feet downstream). Perennial stream reaches are common where bedrock forces subsurface flow to surface of a channel, and we expect that perennial flow at the bridge site is primarily the result of valley confinement and bedrock forcing alluvial water to the surface, as discussed in section 2.

4.2 Water Fingerprinting by Proportional Dilution

4.2.1 Specific Conductance

There was little variation in specific conductance along the length of Marsh Creek from the detention facility downstream to the bridge crossing located a mile downstream of the project bridge (Figure 6**, Table 1**). Conversely, pond water (Location 3) had a very low specific conductance (~110 µS/cm), suggesting that the seasonal pond was sourced by recent rainwater that had not had time to dissolve minerals from the ground, rather than deeper groundwater that had emerged. The seep water (Location 4; potentially similar to springs that may be present at the bridge site) had considerably higher specific conductance than water in Marsh Creek. ~1036 µS/cm vs. 728 µS/cm. This suggests that at the current (March 28, 2016) elevated baseflow discharge of Marsh Creek (measured at 7.11 cubic feet per second[1] (cfs)) local spring contribution to the project reach from bedrock sources is minor. Under the presumption that spring water

[1] Our measurement of 7.11 cubic feet per second is equal to 3190 gallons per minute. 0.08 cfs is equal to 36 gallons per minute.

at the bridge site was of a similar specific conductance as the seep, we expected to have been able to detect the specific conductance signature of a spring with a discharge as low as 0.08 cfs or approximately 1% of the flow of Marsh Creek. We used a YSI-30 handheld specific conductance meter for our field measurements. The YSI meter has a typical accuracy of 0.5%, but we conservatively assumed a 1% margin of error (i.e. we estimated that we would have reliably detected a specific conductance increase of approximately 7 µS/cm between the upstream and downstream Marsh Creek samples). No increase was detected.

During summer baseflow conditions, local springs may contribute a greater proportion of flow, and we may be better able to identify changes in specific conductance. However, if spring water is hyporheic water (shallow groundwater flowing just below the surface in the streambed) and not deep bedrock groundwater) then we would expect to find similar values of specific conductance between streamflow and springflow because the spring would be discharging hyporheic water which is likely to have a similar specific conductance.

4.2.2 Dissolved Minerals

The two Marsh Creek samples (one at the existing bridge, the other ~300 feet downstream of the bridge) had essentially identical water chemistry (ionic) signatures (Table 1, Figure 7). The pond water proved to be mostly rain, with a specific conductance of 110 µS/cm. The geochemical signature of the seep was distinct from both Marsh Creek samples. In particular, boron was 1.5 mg/L in both Marsh Creek samples and only 0.9 mg/L in the seep. Chloride was 46 mg/L in Marsh Creek samples, and 26 mg/L in seep. And the ratio (by weight) of calcium to magnesium was 2:1 in Marsh Creek samples and 1.5:1 in the seep sample.

Results of our water chemistry analyses were inconclusive regarding the presence and signature of the reported spring. While we did find distinct signatures between the nearby seep and Marsh Creek, the magnitude of difference relative to the sampling and analysis accuracy was not sufficient to identify the source of spring water under winter post-storm conditions. Repeated sampling during late spring or summer may be able to distinguish different sources and the relative contributions from those sources.

5. CONCLUSIONS

- **No visual evidence of springflow observed, but elevated baseflow conditions prevented observation of the streambed.** Residents living near the Marsh Creek bridge location have reported seeing left bank or midchannel springs in the approximate position of the proposed new bridge location. They report that the springs are important in sustaining summer ponding just downstream from the bridge. When we visited the site on March 28, 2016 we did not observe any sign of springs or seeps in the bank or bed of the channel; however, we did not really expect to "see" the spring, because during winter, the elevated baseflow conditions obscure evidence of seepage up through the channel bed or the base of the banks.

- **General mineral and boron analysis did not show effects of bedrock springs, but elevated post-storm streamflow conditions may have diluted the influence of a small spring or a spring source with similar solute composition as streamflow.** Our results at winter flows show that there is no change in the water chemistry of Marsh Creek as it flows through the project reach. We conclude that perennial flow in the bridge reach during winter base flows is likely due to thinning alluvium and bedrock control forcing water in the alluvium to the surface. The importance of these local and valley-scale landforms was summarized by Payn et al., 2009 "Exchanges between stream channel and subsurface flows are driven by variability in hydraulic gradients that are induced by structural variability in channels and valley floors."

- **Specific conductance analysis did not reveal a spring, but, given elevated baseflow discharge, results are not sufficiently precise to rule out minor spring flow at the bridge location.** The specific conductance measurements we made were sufficiently quantitative to determine that a spring source contributing more than about one percent of the flow (0.08 cfs, or about 36 gallons per minute) might have been apparent, but was not. However, based on our experience elsewhere in coastal California, a spring source would be able to sustain the pool at late-summer flows as low as about 0.01 to 0.02 cfs (about 4.5 to 9.0 gallons/minute), so the presence of a spring with minor flows feeding the summer pool has not been ruled out and would need to be field-verified during lower (spring or summer) flows.

- **Boron is likely to be a useful indicator of water source during summer baseflow.** The sampling established that boron concentrations differ enough that at summer flow conditions it is likely that the proportionate contribution of the local

canyon-side groundwater could be identified -- perhaps supplemented with specific conductance measurements extending from the spring to the base of the downstream pool. If the local (spring) contribution is large, it would mean that water is coming up through bedrock fracture zones. If there is not a significant change in boron concentrations or specific conductance as the creek flows through this reach, then the primary source of the pool water will be from the alluvial aquifer.

- **Bridge construction is unlikely to significantly impact springs if sourced from alluvial (hyporheic) water**. If springs reported by neighbors are actually shallow alluvial (hyporheic) groundwater emerging into the streambed from upstream on Marsh Creek, then it is possible that changing the hydraulics around the bridge may change the hyporheic flow paths, but would not ultimately deprive the system of inflow since that hyporheic water will likely emerge elsewhere nearby.

- **Bridge construction is unlikely to impact bedrock-sourced springs, unless fractures are filled by bridge footings.** If the spring source is from bedrock, emerging through fractures, then the emergence is controlled by discernible head differentials (which drive 'gurgling' reported by Marsh Creek residents) that will likely not be disrupted by placement of the bridge footings. The exact location of emergence may shift, but it is unlikely that the flow from the spring could be blocked by the localized compaction caused by the new bridge footings. However, it is possible that bridge footings placed directly on top of key fractures could compact and fill those fractures, preventing springflow from emerging in that location.

6. PROPOSED MITIGATION MEASURES

- **We recommend follow-up sampling during late-spring or summer baseflow to identify the location of possible springs and quantify the composition of spring water**. The quantification of spring source and discharge will be feasible at lower flows. For example, boron concentrations are known to increase in streams as discharge decreases. Bedrock-sourced springs can be expected to change very little as the season progresses. Hence, differences between the stream (currently 1.5 mg/L and likely to increase to 2 to 3 mg/L) and bedrock springs (likely to remain similar to the 0.9 mg/L recently observed) will be accentuated.

- **If bedrock-sourced springs are indeed present, project designers can mitigate impacts by minimizing disruptions to springflow.** The spring reportedly enters the stream in a riffle and "gurgles", suggesting that the water is under several inches of pressure. If alluvium-sourced waters are the source of the spring, no further measures are necessary. If Panoche bedrock waters are the source of the spring, they would logically get there within a defined fracture. If so, the design of the bridge should avoid sealing off this source by placing drainage pathways below and/or through abutment footings to maintain the spring flow to the creek.

- **Avoid channel compaction due to grading.** We can think of no reasonable mechanism through which the temporary dewatering of the channel will cause lasting hydrologic impacts. However, the reason for dewatering the channel is to facilitate work in the channel and that work may compact the channel bed through using heavy equipment or alter bed material sizes through grading. We recommend that project managers work with hydrologists, geomorphologists, and/or engineers to minimize these potential impacts through measures such as 1) minimizing use of heavy equipment within 20 feet of the spring, 2) minimizing grading and redistribution of bed sediment, and 3) minimizing compaction by retaining existing bed material under weight-dissipating mats.

7. REFERENCES CITED

Costigan, K. H., Jaeger, K. L., Goss, C. W., Fritz, K. M., and Goebel, P. C., 2016, Understanding controls on flow permanence in intermittent rivers to aid ecological research: integrating meteorology, geology and land cover: Ecohydrology, doi: 10.1002/eco.1712

Dibblee, T.W. and Minch, J.A., 2006, Dibblee Geological Foundation, Dibblee Foundation Map DF-193, scale 1:24,000.

H. Esmaili and Associates, 1978, Nonpoint sources of groundwater pollution in Santa Cruz and Monterey Counties, CA.

Hecht, B., Richmond, S., and Krause, J., 2011, Initial Interpretation of general-mineral water-quality analyses: Balance Hydrologics Memorandum to Team Kirker, March 4, 2016.

Hem, J.D., 1985, Study and interpretation of chemical characteristics of natural waters: U.S. Geological Survey Water-Supply Paper 2254, 264 p.

Natural Heritage Institute and Delta Science Center at Big Break, 2007, The Past and Present Conditions of the Marsh Creek Watershed: 4th edition, 71p.

Payn, R. A., M. N. Gooseff, B. L. McGlynn, K. E. Bencala, and S. M. Wondzell, 2009, Channel water balance and exchange with subsurface flow along a mountain headwater stream in Montana, United States: Water Resources Research., 45, W11427, doi:10.1029/2008WR007644

Piper, A.M., and Garrett, A. A., and others, 1953, Native and contaminated waters in the Long Beach–Santa Ana area, California: U.S. Geological Survey Water-Supply Paper 1136.

Stanford, J. A., and Ward, J. V., 1993, An Ecosystem Perspective of Alluvial Rivers: Connectivity and the Hyporheic Corridor: Journal of the North American Benthological Society, 12(1), 48–60. http://doi.org/10.2307/1467685

TABLES

Table 1. Summary of field parameters and water-quality analyses of water samples collected from Marsh Creek and nearby seep and pond. Contra Costa County, California.

PARAMETER	UNITS	Sampling Locations							
		Water Quality Sampling Locations				Field SCT Measurements Only			
Sample I.D.		1. Marsh Cr Bridge-Upstream	2. Marsh Cr Bridge-Downstream	3. Pond	4. Seep	Detention Center Bridge	Aspara Drive	Wp336	Wp 335
Lab used		McCampbell	McCampbell	McCampbell	McCampbell				
Sample collected by		ks, zr	ks, zr	ks, zr	ks, zr	ks, zr	ks, zr	ks, zr	ks, zr
Sample filtering		field filtered	field filtered	field filtered	field filtered				
FIELD MEASUREMENTS									
Date	MM/DD/YY	3/28/16	3/28/16	3/28/16	3/28/16	3/28/16	3/28/16	3/28/16	3/28/16
Time	HH:MM	13:45	14:30	15:22	16:00	15:30	15:00	14:45	14:40
Specific conductance (@ 25 C°)	umhos/cm	728	728	113	1036	718	724	739	733
Conductance (@ field temp)	umhos/cm	574	578	108	834	578	592	587	579
Temperature	deg C	14	14.3	22.7	14.8	14.9	15.5	14.3	13.9
WATER QUALITY INDICATORS									
Alkalinity (total)	mg/L CaCO3	232	228	52.4	400				
Hardness (total)	mg/L CaCO3	228	372	326	426				
Hydroxide	mg/L CaCO3	0	0	0	0				
pH	pH Units	8.3	8.3	7.5	8.05				
Specific conductance (@ 25 C°)	umhos/cm	679	677	115	950				
Total dissolved solids (TDS)	mg/L	408	405	68	592				
GENERAL MINERALS									
Bicarbonate (as CaCO3)	mg/L	232	228	52	400				
Bicarbonate (HCO3)	mg/L	*283*	*278*	*64*	*488*				
Calcium (Ca)	mg/L	62	60	11	83				
Carbonate (as CaCO3)	mg/L	0	0	0	0				
Carbonate (CO3)	mg/L	*0*	*0*	*0*	*0*				
Chloride (Cl)	mg/L	46	46	0.45	26				
Iron (Fe)	mg/L	0.028	0	1.7	0				
Magnesium (Mg)	mg/L	30	29	5.5	56				
Manganese (Mn)	mg/L	0	0	0	0				
Potassiuim (K)	mg/L	2.2	2.1	3.5	2.4				
Sodium (Na)	mg/L	55	53	5.7	3.5				
Sulfate (SO4)	mg/L	69	68	0	120				
OTHER CONSTITUENTS									
Boron (B)	mg/L	1.5	1.5	0.1	0.91				
LAB CHECK									
Major Cations (Ca+Mg+K+Na+Fe+Mn)	meq/L	8.01	7.74	1.40	8.96				
Major Anions (HCO3+CO3+Cl+SO4+F+NO3)	meq/L	7.37	7.27	1.06	11.22				
Ion Balance (Cations/Anions)	--	1.09	1.06	1.32	0.80				
TDS/SC	--	0.60	0.60	0.59	0.62				

NOTES

Observer key: ks = Krysia Skorko, zr= Zan Rubin

Lab results: 0 = not detected; blank value = not tested

FIGURES

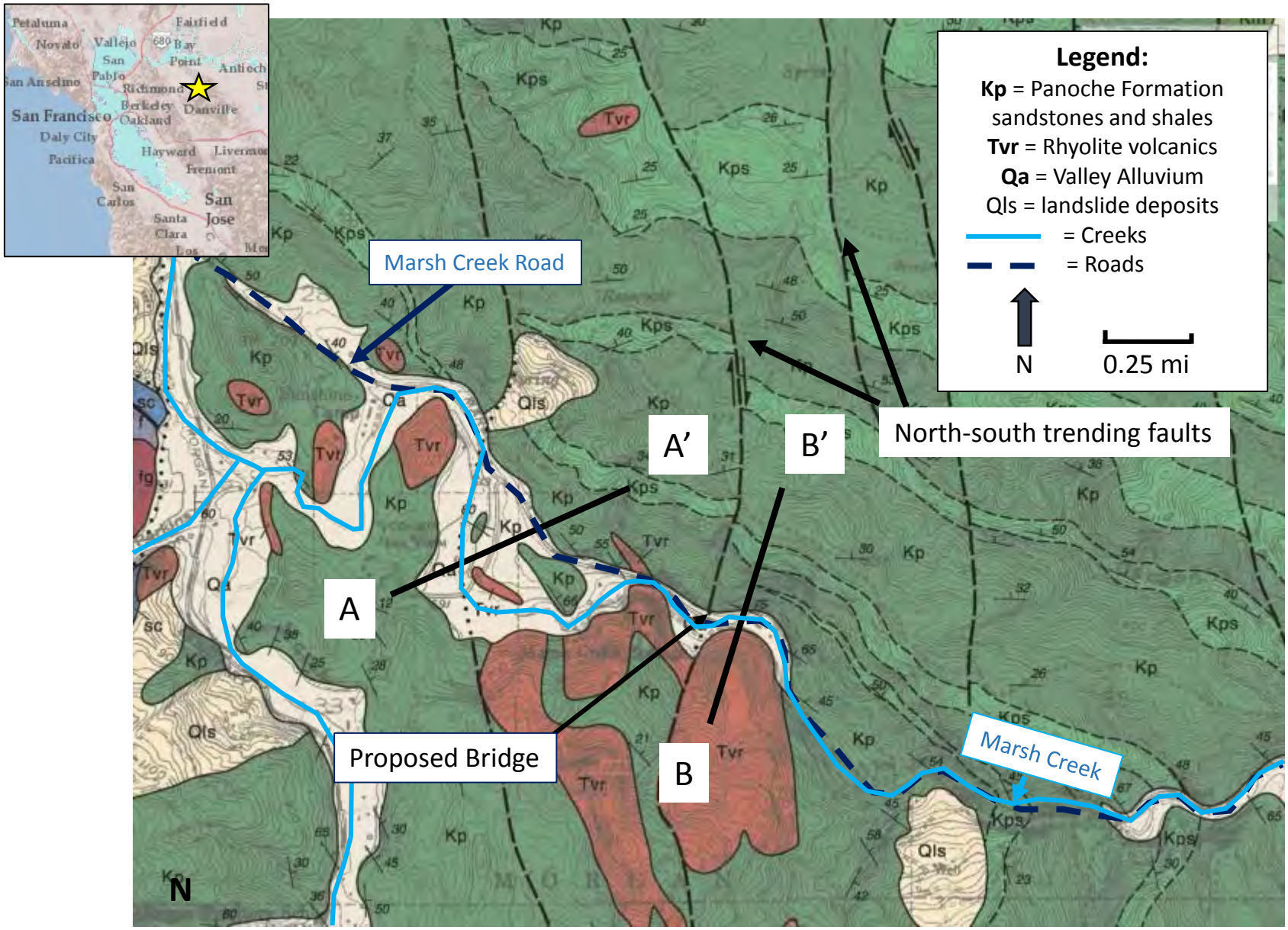

Figure 1. Geologic location map of Marsh Creek and surrounding area, Contra Costa County, CA. Cross sections A-A' and B-B' are shown in planview.

Source: Dibblee, T.W., and Minch, J.A., 2006 : Dibblee Geological Foundation, Dibblee Foundation Map DF-193, scale 1:24,000.

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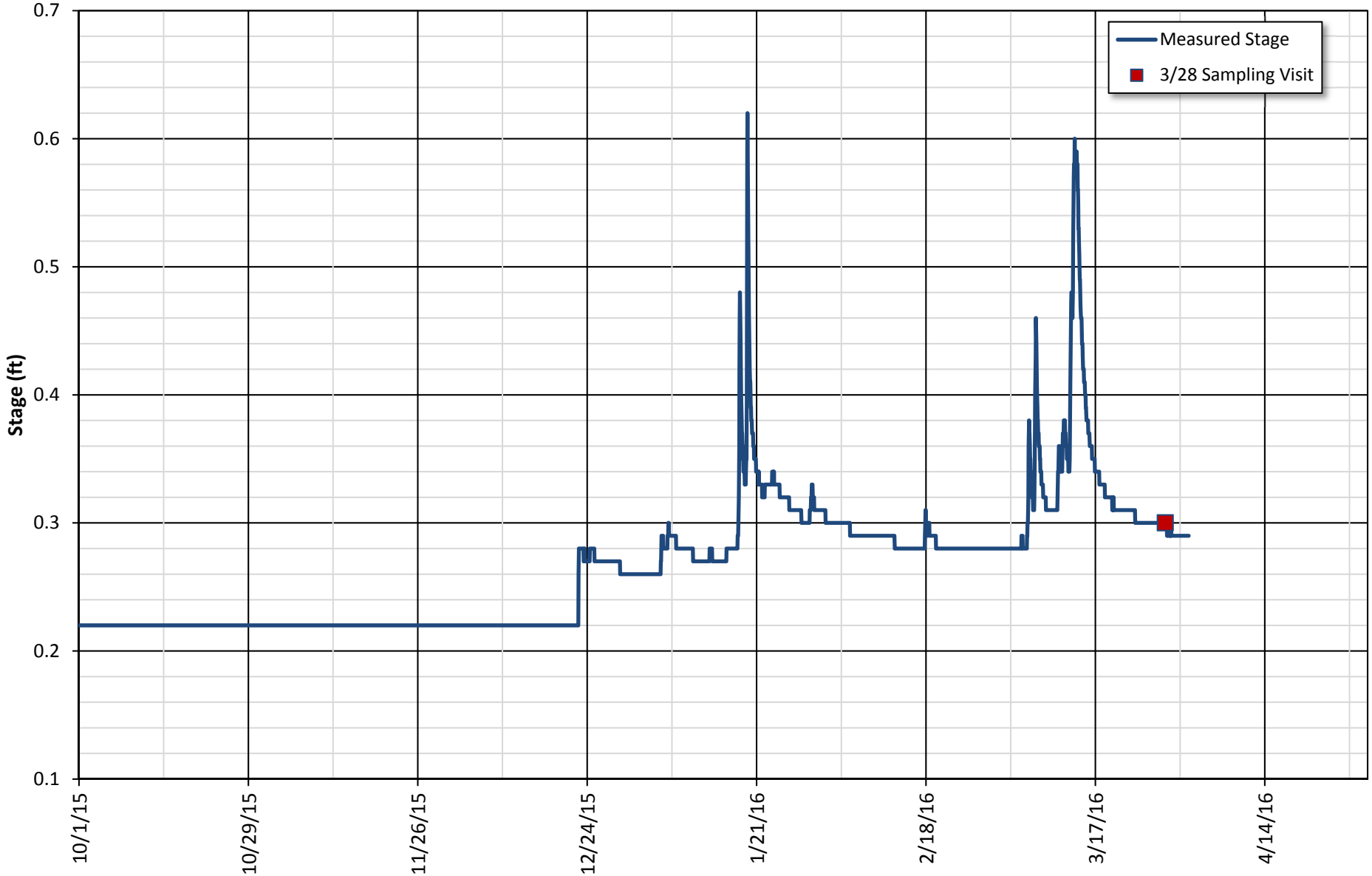

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Figure 2. Annual stage record for Marsh Creek Fire (MRH) gage operated by Contra Costa County. Record shows elevated spring baseflow conditions during sampling on March 28. Graph shows water year 2016, Contra Costa County, California.

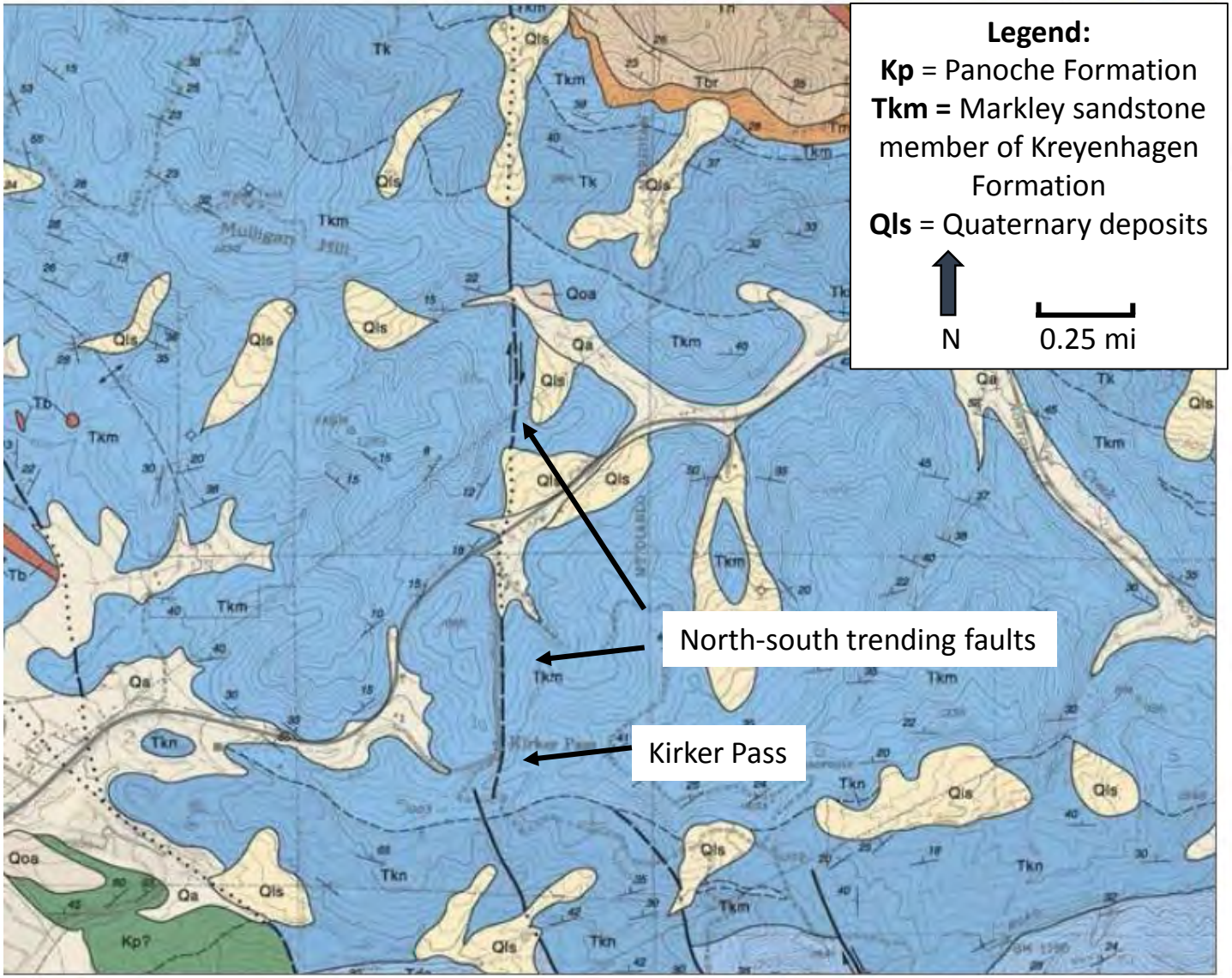

Figure 3 . Geologic map of Kirker Pass and surrounding area, Contra Costa County, CA..

Source: Dibblee, T.W., and Minch, J.A., 2006 : Dibblee Geological Foundation, Dibblee Foundation Map DF-193, scale 1:24,000.

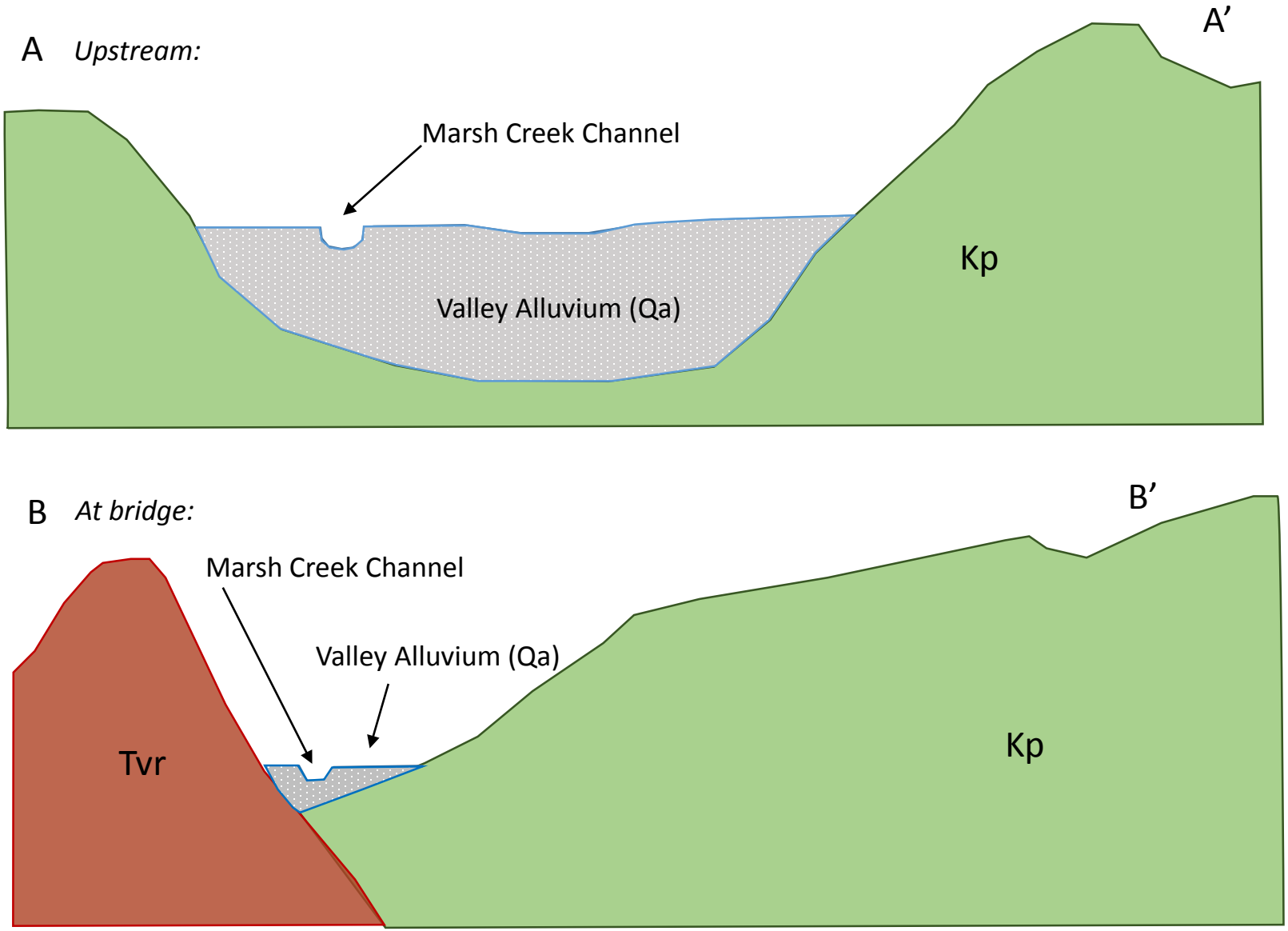

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Figure 4 . **Schematic cross sections A-A' and B-B', looking upstream.** Not to scale. These sections illustrate the thinning alluvium in the downvalley direction. Cross section locations are shown in Figure 1. A-A' is in the upstream portion of the valley. Further downstream near the bridge (B-B'), valley alluvium has thinned and bedrock constrictions are likely forcing hyporheic water close to the surface.

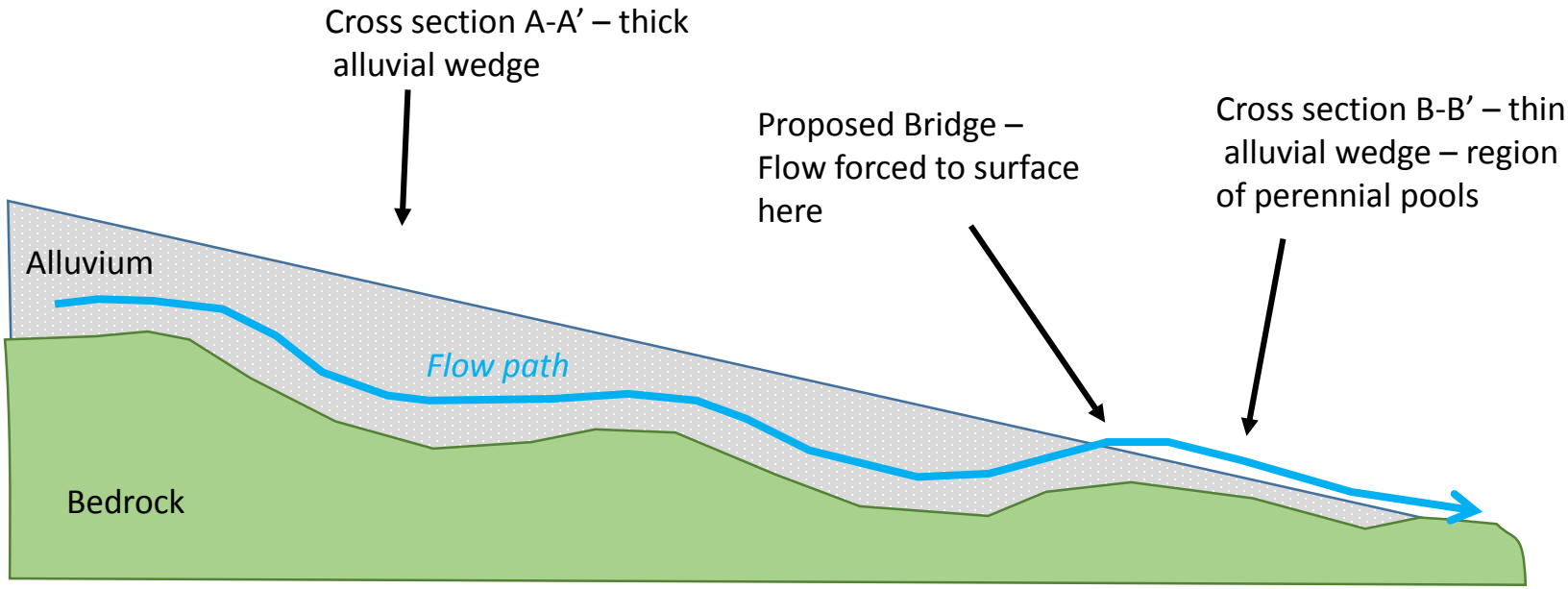

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Figure 5 . **Schematic longitudinal profile illustrating thinning alluvium.** Not to scale. This profile illustrate the thinning alluvium in the downvalley direction, which is likely forcing hyporheic water close to the surface.

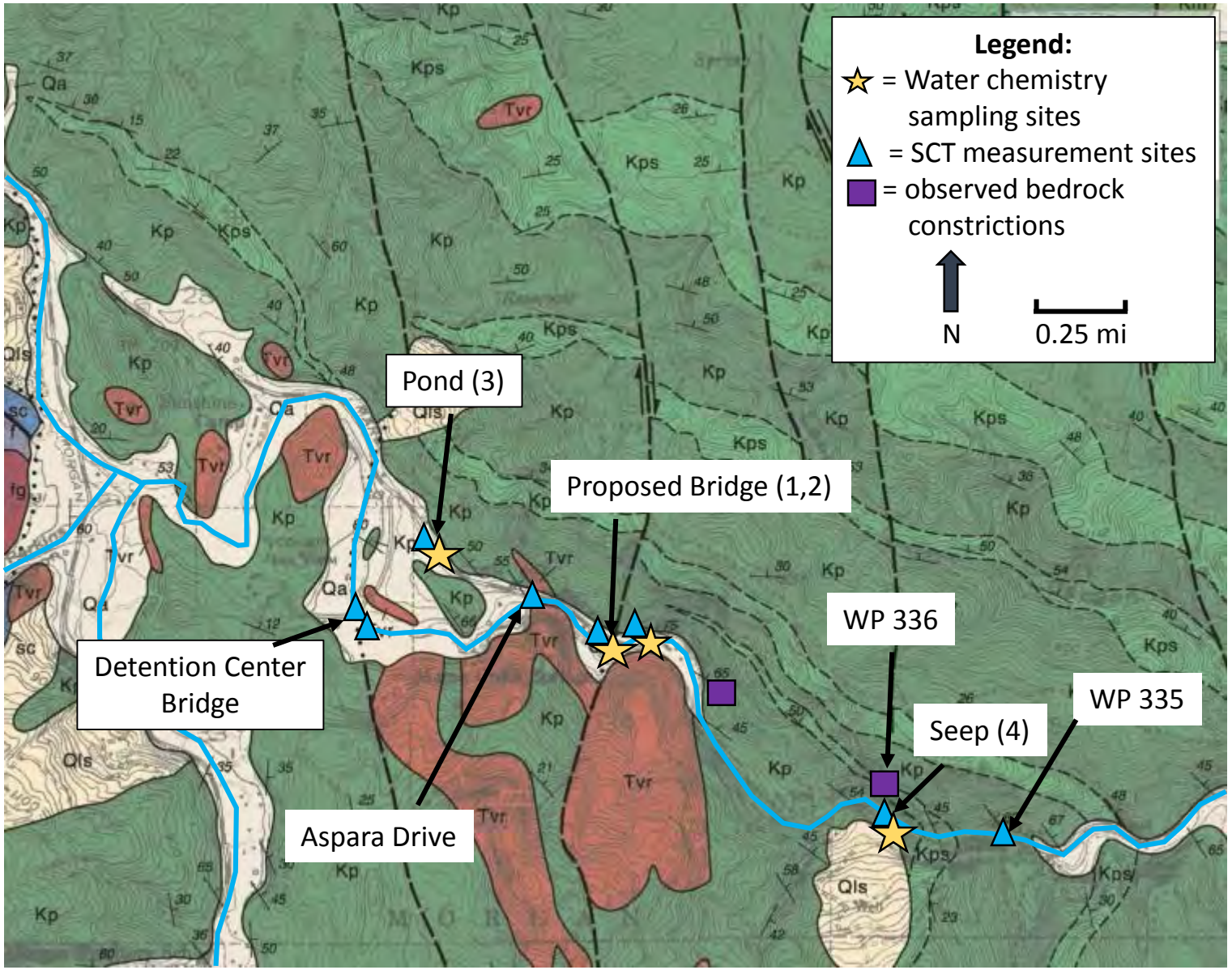

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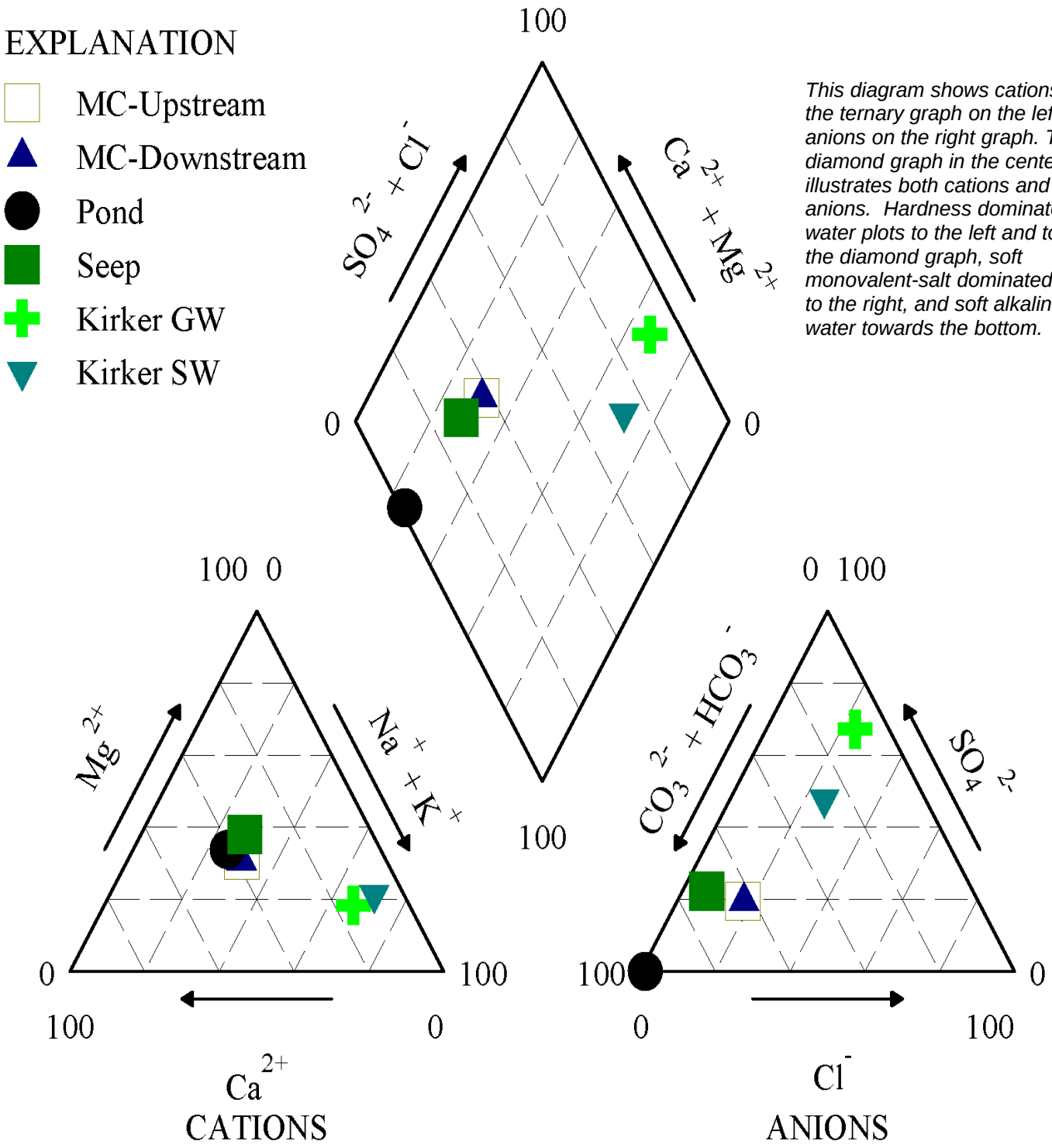
Figure 6 . Water quality sampling sites and bedrock observations, Marsh Creek and surrounding area, Contra Costa County, CA.

Source: Dibblee, T.W., and Minch, J.A., 2006 : Dibblee Geological Foundation, Dibblee Foundation Map DF-193, scale 1:24,000.

Marsh Creek Bridge Piper Plot



This diagram shows cations in the ternary graph on the left and anions on the right graph. The diamond graph in the center illustrates both cations and anions. Hardness dominated water plots to the left and top of the diamond graph, soft monovalent-salt dominated water to the right, and soft alkaline water towards the bottom.

Figure 7. Piper diagram illustrating ionic signatures of water samples collected from Marsh Creek, pond, seep, and nearby groundwater (GW) and surface water (SW) sites from Kirker Pass, Contra Costa County, California.

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APPENDICES

APPENDIX A

Water Chemistry Lab Results

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1603D91

Report Created for: Balance Hydrologics

800 Bancroft Way, Suite 101
Berkeley, CA 94710-2227

Project Contact: Zan Rubin
Project P.O.:
Project Name: 216027

Project Received: 03/28/2016

Analytical Report reviewed & approved for release on 03/29/2016 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Balance Hydrologics
Project: 216027
WorkOrder: 1603D91

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

H	samples were analyzed out of holding time
S	Surrogate spike recovery outside accepted recovery limits
c1	surrogate recovery outside of the control limits due to the dilution of the sample.

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Glossary of Terms & Qualifier Definitions

Client: Balance Hydrologics
Project: 216027
WorkOrder: 1603D91

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validated the prep batch.

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	E300.1
Date Prepared:	3/29/16	**Analytical Method:**	E300.1
Project:	216027	**Unit:**	mg/L

Inorganic Anions by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	**1603D91-001A**	**Water**	**03/28/2016 13:45**	**IC3**	**118697**

Analytes	Result	RL	DF	Date Analyzed
Chloride	**46**	5.0	50	03/29/2016 02:56
Sulfate	**69**	5.0	50	03/29/2016 02:56

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	03/29/2016 02:56

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	**1603D91-002A**	**Water**	**03/28/2016 14:30**	**IC3**	**118697**

Analytes	Result	RL	DF	Date Analyzed
Chloride	**46**	5.0	50	03/29/2016 03:37
Sulfate	**68**	5.0	50	03/29/2016 03:37

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	03/29/2016 03:37

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	**1603D91-003A**	**Water**	**03/28/2016 15:22**	**IC3**	**118697**

Analytes	Result	RL	DF	Date Analyzed
Chloride	**0.45**	0.10	1	03/29/2016 13:56
Sulfate	ND	0.10	1	03/29/2016 13:56

Surrogates	REC (%)	Limits	
Formate	98	85-115	03/29/2016 13:56

Analyst(s): AO

(Cont.)

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	E300.1
Date Prepared:	3/29/16	**Analytical Method:**	E300.1
Project:	216027	**Unit:**	mg/L

Inorganic Anions by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	**1603D91-004A**	**Water**	**03/28/2016 16:00**	**IC3**	**118697**

Analytes	Result	RL	DF	Date Analyzed
Chloride	**26**	5.0	50	03/29/2016 04:57
Sulfate	**120**	5.0	50	03/29/2016 04:57

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	03/29/2016 04:57

Analyst(s): AO Analytical Comments: c1

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	SM2320 B-1997
Date Prepared:	3/29/16	**Analytical Method:**	SM2320 B-1997
Project:	216027	**Unit:**	mg $CaCO_3$/L

Total & Speciated Alkalinity as Calcium Carbonate

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	Titrino	118733

Analytes	Result	RL	DF	Date Analyzed
Total Alkalinity	**232**	1.00	1	03/29/2016 09:55
Carbonate	ND	1.00	1	03/29/2016 09:55
Bicarbonate	**232**	1.00	1	03/29/2016 09:55
Hydroxide	ND	1.00	1	03/29/2016 09:55

Analyst(s): HN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	Titrino	118733

Analytes	Result	RL	DF	Date Analyzed
Total Alkalinity	**228**	1.00	1	03/29/2016 10:01
Carbonate	ND	1.00	1	03/29/2016 10:01
Bicarbonate	**228**	1.00	1	03/29/2016 10:01
Hydroxide	ND	1.00	1	03/29/2016 10:01

Analyst(s): HN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	1603D91-003A	Water	03/28/2016 15:22	Titrino	118733

Analytes	Result	RL	DF	Date Analyzed
Total Alkalinity	**52.4**	1.00	1	03/29/2016 10:04
Carbonate	ND	1.00	1	03/29/2016 10:04
Bicarbonate	**52.4**	1.00	1	03/29/2016 10:04
Hydroxide	ND	1.00	1	03/29/2016 10:04

Analyst(s): HN

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	SM2320 B-1997
Date Prepared:	3/29/16	**Analytical Method:**	SM2320 B-1997
Project:	216027	**Unit:**	mg $CaCO_3$/L

Total & Speciated Alkalinity as Calcium Carbonate

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	**1603D91-004A**	**Water**	**03/28/2016 16:00**	**Titrino**	**118733**

Analytes	Result	RL	DF	Date Analyzed
Total Alkalinity	**400**	1.00	1	03/29/2016 10:14
Carbonate	ND	1.00	1	03/29/2016 10:14
Bicarbonate	**400**	1.00	1	03/29/2016 10:14
Hydroxide	ND	1.00	1	03/29/2016 10:14

Analyst(s): HN

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	E200.8
Date Prepared:	3/28/16	**Analytical Method:**	E200.8
Project:	216027	**Unit:**	µg/L

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	ICP-MS2	118687

Analytes	Result	RL	DF	Date Analyzed
Calcium	**62,000**	500	5	03/29/2016 12:19
Iron	**28**	20	1	03/29/2016 09:27
Magnesium	**30,000**	20	1	03/29/2016 09:27
Manganese	ND	20	1	03/29/2016 09:27
Potassium	**2200**	50	1	03/29/2016 09:27
Sodium	**55,000**	500	5	03/29/2016 12:19

Surrogates	REC (%)	Limits	
Terbium	101	70-130	03/29/2016 12:19

Analyst(s): BBO, DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	ICP-MS2	118687

Analytes	Result	RL	DF	Date Analyzed
Calcium	**60,000**	500	5	03/29/2016 12:26
Iron	ND	20	1	03/29/2016 09:34
Magnesium	**29,000**	20	1	03/29/2016 09:34
Manganese	ND	20	1	03/29/2016 09:34
Potassium	**2100**	50	1	03/29/2016 09:34
Sodium	**53,000**	500	5	03/29/2016 12:26

Surrogates	REC (%)	Limits	
Terbium	103	70-130	03/29/2016 12:26

Analyst(s): BBO, DVH

(Cont.)

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	E200.8
Date Prepared:	3/28/16	**Analytical Method:**	E200.8
Project:	216027	**Unit:**	µg/L

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	**1603D91-003A**	**Water**	**03/28/2016 15:22**	**ICP-MS2**	**118687**

Analytes	Result	RL	DF	Date Analyzed
Calcium	**11,000**	100	1	03/29/2016 12:38
Iron	**1700**	20	1	03/29/2016 12:38
Magnesium	**5500**	20	1	03/29/2016 12:38
Manganese	ND	20	1	03/29/2016 12:38
Potassium	**3500**	50	1	03/29/2016 12:38
Sodium	**5700**	100	1	03/29/2016 12:38

Surrogates	REC (%)	Limits	
Terbium	103	70-130	03/29/2016 12:38

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	**1603D91-004A**	**Water**	**03/28/2016 16:00**	**ICP-MS2**	**118687**

Analytes	Result	RL	DF	Date Analyzed
Calcium	**83,000**	500	5	03/29/2016 12:32
Iron	ND	20	1	03/29/2016 09:40
Magnesium	**56,000**	100	5	03/29/2016 12:32
Manganese	ND	20	1	03/29/2016 09:40
Potassium	**2400**	50	1	03/29/2016 09:40
Sodium	**76,000**	500	5	03/29/2016 12:32

Surrogates	REC (%)	Limits	
Terbium	103	70-130	03/29/2016 12:32

Analyst(s): BBO, DVH

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Analytical Report

Client: Balance Hydrologics
Date Received: 3/28/16 17:20
Date Prepared: 3/28/16
Project: 216027

WorkOrder: 1603D91
Extraction Method: SM4500H+B-2000
Analytical Method: SM4500H+B-2000
Unit: pH units @ 25°C

pH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	WetChem	118704

Analytes	Result	Qualifiers	Accuracy	DF	Date Analyzed
pH	**8.26**	H	±0.05	1	03/28/2016 18:12

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	WetChem	118704

Analytes	Result	Qualifiers	Accuracy	DF	Date Analyzed
pH	**8.31**	H	±0.05	1	03/28/2016 18:15

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	1603D91-003A	Water	03/28/2016 15:22	WetChem	118704

Analytes	Result	Qualifiers	Accuracy	DF	Date Analyzed
pH	**7.53**	H	±0.05	1	03/28/2016 18:18

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	1603D91-004A	Water	03/28/2016 16:00	WetChem	118704

Analytes	Result	Qualifiers	Accuracy	DF	Date Analyzed
pH	**8.05**	H	±0.05	1	03/28/2016 18:21

Analyst(s): RB

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Analytical Report

Client: Balance Hydrologics
Date Received: 3/28/16 17:20
Date Prepared: 3/28/16
Project: 216027

WorkOrder: 1603D91
Extraction Method: SM2510 B-1997
Analytical Method: SM2510 B-1997
Unit: µmhos/cm @ 25°C

Specific Conductivity at 25°C

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	WetChem	118719

Analytes	Result	RL	DF	Date Analyzed
Specific Conductivity	**679**	10.0	1	03/28/2016 18:50

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	WetChem	118719

Analytes	Result	RL	DF	Date Analyzed
Specific Conductivity	**677**	10.0	1	03/28/2016 19:00

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	1603D91-003A	Water	03/28/2016 15:22	WetChem	118719

Analytes	Result	RL	DF	Date Analyzed
Specific Conductivity	**115**	10.0	1	03/28/2016 19:05

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	1603D91-004A	Water	03/28/2016 16:00	WetChem	118719

Analytes	Result	RL	DF	Date Analyzed
Specific Conductivity	**950**	10.0	1	03/28/2016 19:10

Analyst(s): RB

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	SM2540 C-1997
Date Prepared:	3/28/16	**Analytical Method:**	SM2540 C-1997
Project:	216027	**Unit:**	mg/L

Total Dissolved Solids

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	WetChem	118727

Analytes	Result	RL	DF	Date Analyzed
Total Dissolved Solids	**408**	10.0	1	03/28/2016 21:05

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	WetChem	118727

Analytes	Result	RL	DF	Date Analyzed
Total Dissolved Solids	**405**	10.0	1	03/28/2016 21:10

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	1603D91-003A	Water	03/28/2016 15:22	WetChem	118727

Analytes	Result	RL	DF	Date Analyzed
Total Dissolved Solids	**68.0**	10.0	1	03/28/2016 21:15

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	1603D91-004A	Water	03/28/2016 16:00	WetChem	118727

Analytes	Result	RL	DF	Date Analyzed
Total Dissolved Solids	**592**	10.0	1	03/28/2016 21:20

Analyst(s): RB

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Quality Control Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Prepared:	3/28/16	**BatchID:**	118697
Date Analyzed:	3/28/16	**Extraction Method:**	E300.1
Instrument:	IC3	**Analytical Method:**	E300.1
Matrix:	Water	**Unit:**	mg/L
Project:	216027	**Sample ID:**	MB/LCS-118697 1603D83-007DMS/MSD

QC Summary Report for E300.1

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chloride	ND	0.919	0.10	1	-	92	85-115
Sulfate	ND	0.965	0.10	1	-	96	85-115
Surrogate Recovery							
Formate	0.0921	0.0929		0.10	92	93	85-115

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chloride	287	287	1	290	51,F1	61,F1	85-115	0.0333	15
Sulfate	NR	NR	1	22	NR	NR	85-115	NR	15
Surrogate Recovery									
Formate	0.0998	0.0983	0.10		100	98	85-115	1.55	10

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Quality Control Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Prepared:	3/29/16	**BatchID:**	118733
Date Analyzed:	3/29/16	**Extraction Method:**	SM2320 B-1997
Instrument:	Titrino	**Analytical Method:**	SM2320 B-1997
Matrix:	Water	**Unit:**	mg $CaCO_3$/L
Project:	216027		

QC Summary Report for Alkalinity

SampID	Sample Result	Sample DF	Dup / Serial Dilution Result	Dup / Serial Dilution DF	RPD	Acceptance Criteria (%)
1603C38-001G	198	1	221	1	11.1	<20

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Quality Control Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Prepared:	3/28/16	**BatchID:**	118687
Date Analyzed:	3/28/16	**Extraction Method:**	E200.8
Instrument:	ICP-MS2	**Analytical Method:**	E200.8
Matrix:	Water	**Unit:**	µg/L
Project:	216027	**Sample ID:**	MB/LCS-118687 1603D59-001DMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Calcium	ND	5260	100	5000	-	105	85-115
Iron	ND	5110	20	5000	-	102	85-115
Magnesium	ND	5210	20	5000	-	104	85-115
Manganese	ND	5290	20	5000	-	106	85-115
Potassium	ND	5310	50	5000	-	106	85-115
Sodium	ND	5260	100	5000	-	105	85-115
Surrogate Recovery							
Terbium	746	736		750	99	98	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Calcium	45,100	45,200	5000	40,000	103	103	70-130	0	20
Iron	5410	5510	5000	130	106	108	70-130	1.80	20
Magnesium	30,200	30,400	5000	25,000	108	112	70-130	0.661	20
Manganese	5190	5170	5000	64	103	102	70-130	0.328	20
Potassium	11,100	11,200	5000	5900	104	107	70-130	1.44	20
Sodium	61,900	61,600	5000	57,000	103	99	70-130	0.340	20
Surrogate Recovery									
Terbium	770	796	750		103	106	70-130	3.30	20

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Quality Control Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Prepared:	3/28/16	**BatchID:**	118704
Date Analyzed:	3/28/16	**Extraction Method:**	SM4500H+B-2000
Instrument:	WetChem	**Analytical Method:**	SM4500H+B-2000
Matrix:	Water	**Unit:**	pH units @ 25°C
Project:	216027		

QC Summary Report for pH

SampID	Sample Result	Sample DF	Dup / Serial Dilution Result	Dup / Serial Dilution DF	Precision	Acceptance Criteria
1603D54-001A	7.98	1	7.98	1	0	0.1

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Quality Control Report

Client: Balance Hydrologics
Date Prepared: 3/28/16
Date Analyzed: 3/28/16
Instrument: WetChem
Matrix: Water
Project: 216027

WorkOrder: 1603D91
BatchID: 118719
Extraction Method: SM2510 B-1997
Analytical Method: SM2510 B-1997
Unit: µmhos/cm @ 25°C

QC Summary Report for Specific Conductivity

SampID	Sample Result	Sample DF	Dup / Serial Dilution Result	Dup / Serial Dilution DF	RPD	Acceptance Criteria (%)
1603D91-001A	679	1	680	1	0.10	<2

Client: Balance Hydrologics
Date Prepared: 3/28/16
Date Analyzed: 3/28/16
Instrument: WetChem
Matrix: Water
Project: 216027

WorkOrder: 1603D91
BatchID: 118727
Extraction Method: SM2540 C-1997
Analytical Method: SM2540 C-1997
Unit: mg/L

QC Summary Report for Total Dissolved Solids

SampID	Sample Result	Sample DF	Dup / Serial Dilution Result	Dup / Serial Dilution DF	RPD	Acceptance Criteria (%)
1603D59-001F	338	1	346	2	2.34	<20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1603D91 **ClientCode: BH**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Zan Rubin
Balance Hydrologics
800 Bancroft Way, Suite 101
Berkeley, CA 94710-2227
(510) 704-1000 FAX: (510) 704-1001
Email: zrubin@balancehydro.com
cc/3rd Party:
PO:
ProjectNo: 216027

Bill to:
Gustavo Porras
Balance Hydrologics
800 Bancroft Way, Suite 101
Berkeley, CA 94710

Requested TAT: 1 day;
Date Received: 03/28/2016
Date Logged: 03/28/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1603D91-001	MCUS-1	Water	3/28/2016 13:45	☐	A	A	A	A	A	A	A					
1603D91-002	MCDS-1	Water	3/28/2016 14:30	☐	A	A	A	A	A	A	A					
1603D91-003	POND-1	Water	3/28/2016 15:22	☐	A	A	A	A	A	A	A					
1603D91-004	OUTFALL-1	Water	3/28/2016 16:00	☐	A	A	A	A	A	A	A					

Test Legend:

1	300_1_W	2	Alk_W	3	FEMNMS_TTLC_W	4	METALSMS_W
5	PH_W	6	SC_W	7	TDS_W	8	
9		10		11		12	

Prepared by: Briana Cutino

The following SampIDs: 001A, 002A, 003A, 004A contain testgroup.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: BALANCE HYDROLOGICS
Project: 216027
Comments:

QC Level: LEVEL 2
Client Contact: Zan Rubin
Contact's Email: zrubin@balancehydro.com

Work Order: 1603D91
Date Logged: 3/28/2016

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1603D91-001A	MCUS-1	Water	E200.8 (Fe & Mn)	1	Various	☐	3/28/2016 13:45	1 day	Trace	☐	
			General Mineral †			☐		1 day	Trace	☐	
1603D91-002A	MCDS-1	Water	E200.8 (Fe & Mn)	1	Various	☐	3/28/2016 14:30	1 day	Trace	☐	
			General Mineral †			☐		1 day	Trace	☐	
1603D91-003A	POND-1	Water	E200.8 (Fe & Mn)	1	Various	☐	3/28/2016 15:22	1 day	Trace	☐	
			General Mineral †			☐		1 day	Trace	☐	
1603D91-004A	OUTFALL-1	Water	E200.8 (Fe & Mn)	1	Various	☐	3/28/2016 16:00	1 day	Trace	☐	
			General Mineral †			☐		1 day	Trace	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

Legend:

† General Mineral testing includes the following analyses: Alkalinity (speciated), Ca, Fe, K, Mg, Mn, Na, Chloride, Sulfate, EC, pH, TDS.

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RUSH
16037911

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☑ 1 DAY ☑ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐
GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐
Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Balance Hydrologics, Inc. **Bill To:** Balance Hydrologics
Company: Zan Rubin + Krysta Skorko

Tele: (510) 704 **E-Mail:** Zrubin@balancehydro.com
Project #: 216027 **Project Name:** 216027
Project Location: Marsh Creek **Purchase Order#**
Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other (Surface Water)	METHOD PRESERVED: HCL	HNO_3	Other
MCUS-1		3/28/16	13:45	4								✓			
MCDS-1		3/28/16	14:30	4								✓			
POND-1		3/28/16	15:22	4								✓			
OUTFALL-1		3/28/16	16:00	4								✓			

Analysis Request

BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis	General Minerals
															✓
															✓
															✓
															✓

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
	3/28/16	16:52	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 7.7
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Preserved bottles have been held filtered.

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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Sample Receipt Checklist

Client Name:	**Balance Hydrologics**	Date and Time Received:	**3/28/2016 16:52**
Project Name:	**216027**	Date Logged:	**3/28/2016**
WorkOrder №:	**1603D91** Matrix: Water	Received by:	Alexandra Iniguez
Carrier:	Client Drop-In	Logged by:	Briana Cutino

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 7.7°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☑	No ☐	NA ☐
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments: Method SM4500H+B (pH) was received passed its 0.01-day holding time.

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1603D91 A

Report Created for: Balance Hydrologics

800 Bancroft Way, Suite 101
Berkeley, CA 94710-2227

Project Contact: Zan Rubin
Project P.O.:
Project Name: 216027

Project Received: 03/28/2016

Analytical Report reviewed & approved for release on 03/30/2016 by:

Angela Rydelius,
Laboratory Manager

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Balance Hydrologics
Project: 216027
WorkOrder: 1603D91

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

H	samples were analyzed out of holding time
S	Surrogate spike recovery outside accepted recovery limits
c1	surrogate recovery outside of the control limits due to the dilution of the sample.

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Glossary of Terms & Qualifier Definitions

Client: Balance Hydrologics
Project: 216027
WorkOrder: 1603D91

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validated the prep batch.

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Analytical Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Received:	3/28/16 17:20	**Extraction Method:**	E200.7
Date Prepared:	3/28/16	**Analytical Method:**	E200.7
Project:	216027	**Unit:**	µg/L

Boron

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCUS-1	1603D91-001A	Water	03/28/2016 13:45	ICP-JY	118799

Analytes	Result	RL	DF	Date Analyzed
Boron	**1500**	250	50	03/30/2016 13:34

Surrogates	REC (%)	Qualifiers	Limits	
Terbium	16	S	70-130	03/30/2016 13:34

Analyst(s): BBO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MCDS-1	1603D91-002A	Water	03/28/2016 14:30	ICP-JY	118799

Analytes	Result	RL	DF	Date Analyzed
Boron	**1500**	250	50	03/30/2016 13:37

Surrogates	REC (%)	Qualifiers	Limits	
Terbium	151	S	70-130	03/30/2016 13:37

Analyst(s): BBO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
POND-1	1603D91-003A	Water	03/28/2016 15:22	ICP-JY	118799

Analytes	Result	RL	DF	Date Analyzed
Boron	**100**	25	5	03/30/2016 13:40

Surrogates	REC (%)	Qualifiers	Limits	
Terbium	147	S	70-130	03/30/2016 13:40

Analyst(s): BBO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OUTFALL-1	1603D91-004A	Water	03/28/2016 16:00	ICP-JY	118799

Analytes	Result	RL	DF	Date Analyzed
Boron	**910**	250	50	03/30/2016 13:31

Surrogates	REC (%)	Qualifiers	Limits	
Terbium	47	S	70-130	03/30/2016 13:31

Analyst(s): BBO Analytical Comments: c1

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Quality Control Report

Client:	Balance Hydrologics	**WorkOrder:**	1603D91
Date Prepared:	3/28/16	**BatchID:**	118799
Date Analyzed:	3/30/16	**Extraction Method:**	E200.7
Instrument:	ICP-JY	**Analytical Method:**	E200.7
Matrix:	Water	**Unit:**	µg/L
Project:	216027	**Sample ID:**	MB/LCS-118799 1603D59-001DMS/MSD

QC Summary Report for Boron

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Boron	ND	47.7	5.0	50	-	95	80-120
Surrogate Recovery							
Terbium	719	682		750	96	91	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Boron	63.8	60.7	50	12.39	103	97	80-120	4.95	20
Surrogate Recovery									
Terbium	967	885	750		129	118	70-130	8.89	20

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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1603D91 A **ClientCode: BH**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Zan Rubin
Balance Hydrologics
800 Bancroft Way, Suite 101
Berkeley, CA 94710-2227
(510) 704-1000 FAX: (510) 704-1001

Email: zrubin@balancehydro.com
cc/3rd Party:
PO:
ProjectNo: 216027

Bill to:
Gustavo Porras
Balance Hydrologics
800 Bancroft Way, Suite 101
Berkeley, CA 94710

Requested TAT: 1 day;

Date Received: **03/28/2016**
Date Logged: **03/28/2016**
Date Add-On: **03/30/2016**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1603D91-001	MCUS-1	Water	3/28/2016 13:45	☐	A											
1603D91-002	MCDS-1	Water	3/28/2016 14:30	☐	A											
1603D91-003	POND-1	Water	3/28/2016 15:22	☐	A											
1603D91-004	OUTFALL-1	Water	3/28/2016 16:00	☐	A											

Test Legend:

1	BORON_TTLC_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Briana Cutino

Add-On Prepared By: Maria Venegas

Comments: Boron added 3/30/16 1day TAT.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: BALANCE HYDROLOGICS
Project: 216027
Comments: Boron added 3/30/16 1day TAT.

QC Level: LEVEL 2
Client Contact: Zan Rubin
Contact's Email: zrubin@balancehydro.com

Work Order: 1603D91
Date Logged: 3/28/2016
Date Add-On: 3/30/2016

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1603D91-001A	MCUS-1	Water	E200.7 (Boron)	1	Various	3/28/2016 13:45	1 day	Trace	☐	
1603D91-002A	MCDS-1	Water	E200.7 (Boron)	1	Various	3/28/2016 14:30	1 day	Trace	☐	
1603D91-003A	POND-1	Water	E200.7 (Boron)	1	Various	3/28/2016 15:22	1 day	Trace	☐	
1603D91-004A	OUTFALL-1	Water	E200.7 (Boron)	1	Various	3/28/2016 16:00	1 day	Trace	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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RUSH
1603D11

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☐ 1 DAY ☑ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐

GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Balance Hydrologics, Zon Rubin + Krysta Skorko **Bill To:** Balance Hydrologics

Company:

Tele: (510) 704 **E-Mail:** Zrubin@balancehydro.com

Project #: 216027 **Project Name:** 216027

Project Location: Marsh Creek **Purchase Order#**

Sampler Signature: Krysta Skorko

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other (Surface Water)	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis	General Minerals	Boron 3/30/16 1 day			
MCUS-1		3/28/16	13:45	4								✓																			✓	X			
MCDS-1		3/28/16	14:30	4								✓																			✓	X			
POND-1		3/28/16	15:22	4								✓																			✓	X			
OUTFALL-1		3/28/16	16:00	4								✓																			✓	X			

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
Krysta Skorko	3/28/16	16:52	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 7.7
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Preserved bottles have been field filtered.

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

APPENDIX B

Borings from Marsh Creek Bridge Planset

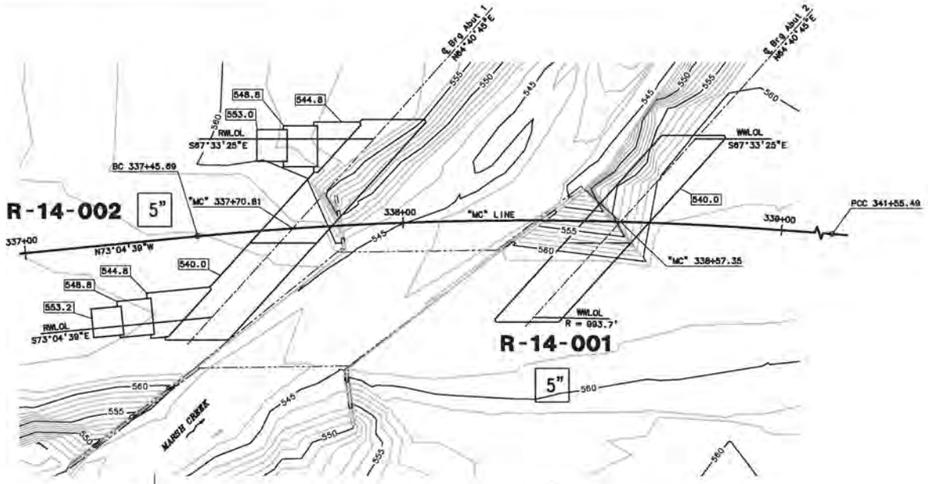
Notes:
Standard Penetration Test Sampler: I.D. = 1.4"; O.D. = 2"
Modified California Sampler: I.D. = 2.5"; O.D. = 3"
Hammer Assembly: A 140 lb hammer with a 30" drop (Automatic Hammer)

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock, Logging, Classification, and Presentation Manual (2010)

See Caltrans 2010 Standard Plans A10F, A10G and A10H for Soil and Rock Legends.

All dimensions are in feet unless otherwise shown.

Base map is provided by Mark Thomas & Company, Inc 2015.

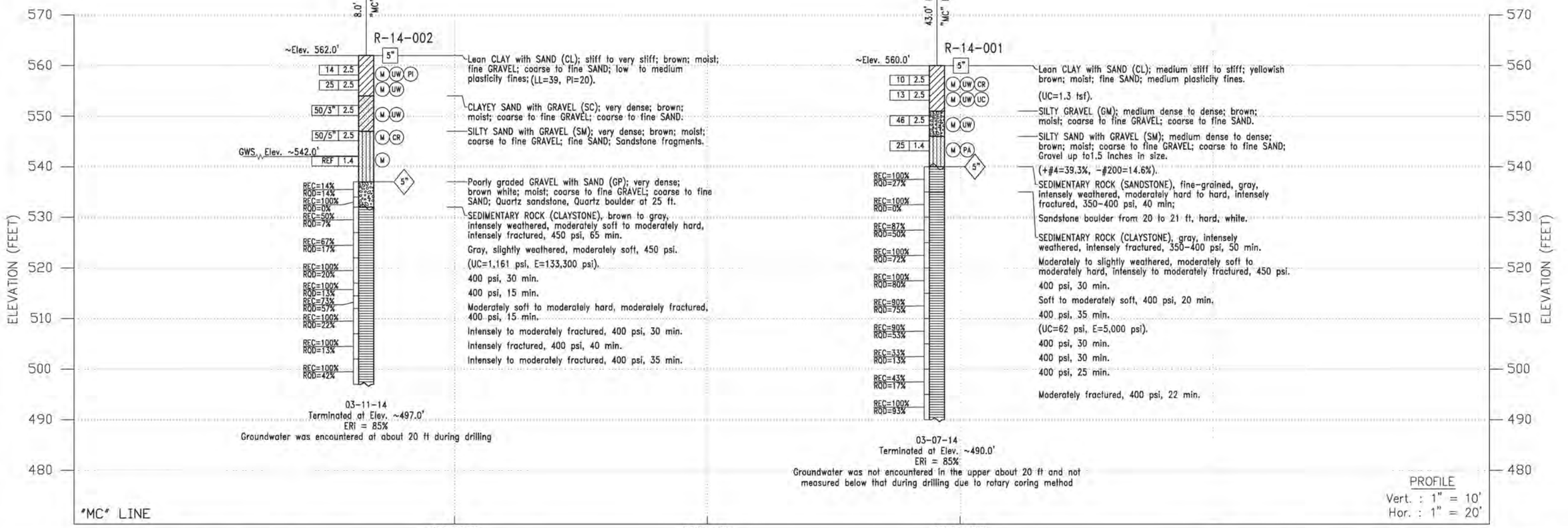


PLAN
1" = 20'

N

BENCHMARK

ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29), CONTRA COSTA COUNTY BENCHMARK #3596, USC&GS DISC STAMPED "Z-1202 1969" ON THE NORTHEASTERLY END OF THE 2 FOOT WIDE SIDEWALK ON THE BRIDGE OVER MARCH CREEK APPROXIMATELY 500 FEET EASTERLY OF MARCH CREEK SPRINGS RESORT.
ELEVATION = 562.042 FT (NGVD29).



REVISIONS				DES.: V. SHERBY	PROJECT ENGINEER	MARK THOMAS & COMPANY, INC. 3000 OAK ROAD, SUITE 650 WALNUT CREEK, CA 94597	CONTRA COSTA COUNTY PUBLIC WORKS DEPARTMENT 255 GLACIER DRIVE MARTINEZ, CA 94553	65% SUBMITTAL DRAWING DATED 3-24-15	FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3	MARSH CREEK ROAD BRIDGE REPLACEMENT
NO.	DESCRIPTION	BY	DATE	DRAWN: G. BOYKO					STATE PLANE NAD83 CALIFORNIA ZONE 3 / EAST COORD. / NORTH COORD.	LOG OF TEST BORINGS
				CHKD.:						FILE NO. / SHEET 17 OF 177
				DATE: 3-20-2015	PLANS APPROVAL DATE					FILE NAME: / PEN TBL:
				SCALE:						
				FLD. BK.						

REGISTERED PROFESSIONAL ENGINEER JULIA ANN PASSALACQUA No. C68407 Exp. 9/30/15 CIVIL STATE OF CALIFORNIA

DATE PLOTTED => Mar 24, 2015
TIME PLOTTED => 11:14:32am