



Memorandum

To: Matt Fowler
California Department of Transportation Central Region Env.
50 Higuera Street
San Luis Obispo, CA 93401

Governor's Office of Planning & Research

From: David Longstreth
Department of Conservation
California Geological Survey
135 Ridgway Avenue
Santa Rosa, CA 95401

Jan 13 2021

STATE CLEARINGHOUSE

DATE: January 12, 2021

SUBJECT: San Lorenzo River Bridge and Kings Creek Bridge Replacement (05-1H470),
MND - Mitigated Negative Declaration

References:

Caltrans, 2020, San Lorenzo River Bridge and Kings Creek Bridge Replacement State Route 9 in Boulder Creek, Santa Cruz County, CA 05-SCR-9-PM 13.6/15.5 EA: 05-1H470 Project ID: 0516000078 Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment, December 2020.

CAL FIRE/CGS, 2020, WERT (Watershed Emergency Response Team) report for CZU Lightning Complex Fire (CA-CZU-005205). Accessed at:
<https://www.smcgov.org/sites/smcgov.org/files/CZU%20Lightning%20Complex%20WERT%20Final%2010-6-20.pdf>

USGS, 2020, Post-Fire Debris Flow Hazard Assessment, CZU Fire. Accessed at:
https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=299

Dear Mr. Fowler,

It is understood the California Department of Transportation (Caltrans) proposes to replace the San Lorenzo River Bridge (Bridge Number 36-0052) at post mile 13.6 and Kings Creek Bridge (Bridge Number 36-0054) at post mile 15.5 on State Route 9 in Santa Cruz County, north of the unincorporated community of Boulder Creek. Each bridge would be replaced with larger structures to accommodate 12-foot-wide travel lanes and 8-foot-wide shoulders in both directions.

Work in the streambeds is proposed and would require the use of a temporary diversion system to dewater work areas for demolition and removal of existing bridge abutments and piers. Existing bridge piers and their foundations would be removed. It is understood the existing Kings Creek bridge was constructed in 1927 and foundations have been undermined via scour. It is understood the San Lorenzo bridge was constructed prior to 1937 and structural cracks are observed in the concrete abutments. No scour concerns

are reported for the San Lorenzo bridge. It is understood both bridges are in close proximity to the Zayante-Vergeles Upper Fault which is an un-zoned fault. It is understood the bridge replacements are designed according to the California Department of Transportation Seismic Design Criteria.

The Santa Cruz mountains west of the proposed project area experienced a wildfire in 2020 named the CZU fire. CGS participated in assessments of possible landsliding and flooding following the fire (CalFire/CGS, 2020). The Kings Bridge replacement is not in an area that drains from the CZU burn area. The San Lorenzo Bridge replacement is in an area where USGS debris flow modeling (USGS, 2020) indicates a possibility of bulked debris laden flooding (a blue stream). A “blue stream” indicates streams where peak flows associated with debris flows can be much higher than pre-fire flooding. These streams are associated with post-fire elevated flood flows and debris bulking that may exacerbate local flooding, especially in tributaries with a high combined hazard for debris flows. Our post-fire assessment indicates that flooding along the San Lorenzo River may occur if tributary drainages initiate floods or debris flows. Direct impacts from debris flows is not modeled at the San Lorenzo bridge replacement location but low to moderate debris flows are modeled in tributaries to the San Lorenzo river upstream of the replacement.

No details regarding the proposed bridge replacement foundation systems are provided in the mitigative negative declaration assessment (Caltrans, 2020). Since the existing Kings Creek bridge footings are experiencing scour and the San Lorenzo bridge replacement is located in an area that may experience increased post-fire debris bulking and flooding, it appears both replacements should incorporate scour analysis and appropriate design.

Comments:

- Both replacement foundations systems should be designed for scour and consist of deepened foundations.
- It appears the foundations and bridge structures are designed to include the potential for seismic hazards. In addition to the Zayante-Vergeles Upper Fault the seismic design should consider accelerations from the San Andreas Fault, proper, if they are higher values.
- The potential for post-fire increased and bulked flood flows at the San Lorenzo bridge replacement resulting from the 2020 CZU fire should be disclosed and included in design considerations.

We hope this information is helpful. Please call us with any questions.

original signed by

David Longstreth, CEG # 2068
Senior Engineering Geologist

