



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Northern Region – Timberland Conservation Program
619 Second Street
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



November 18, 2020

Jeremy Wright
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Korbel, Ca 95550

Subject: Evaluation of a newly constructed Class I (Elk Creek) bridge (RP 1) in Elk Creek, associated with the California Department of Fish and Wildlife (CDFW) and Green Diamond Resource Company (GDRCo) Master Timber Harvesting Operation (MATO) Lake and Streambed Alteration Agreement # 1600-2010-0114-R1 2020 New Site Revision #6.

Dear Mr. Wright:

On November 10th I met with you Matt House (GDRCo), Sara Gallagher (California Geological Survey) and Bianca Hayashi (CDFW) to evaluate the recently constructed RP1 bridge site over a Class I watercourse Elk Creek, in the Illinois River watershed. The RP1 bridge facilitated a 14 California Code of Regulations 1052 emergency fire related harvest under 1-20EM-00126-DEL. Upon inspection, the bridge met the specifications stated in the New Site Revision #6 and most measures required in the MATO. However, CDFW had concerns with the armoring size and the height of armoring extent along the right bank under the bridge (See Figure 1).

MATO measure A.3.11 states, “*Permanent drainage structures shall be armored as needed to protect fill, abutments and the stream channel and banks from erosion. Armoring shall be comprised of rock riprap or other non-erodible materials.*”

During the inspection, a 5-square-foot section of right bank armoring was estimated to have a median particle size of 1-foot, extending 3 feet in high up the bank (See Figure 2). Based on CDFW calculations for bank armoring using Maynard et al (1989) and an online calculator (<http://www.hawsedc.com/engcalcs/Manning-Trap.php>), the median particle size to withstand the modeled 100-year flow should be approximately 1.5 feet to withstand scour. In addition, using the Manning’s equation, CDFW modeled the 100-year flow to be approximately 4 feet deep under the bridge. CDFW considers the 5-square-foot right bank section under the bridge vulnerable to scour during high flows.

CDFW has determined the site is at risk of violation with MATO measure A.3.11 given the likelihood for bank failure, and recommends the site be closely monitored this winter and spring in case temporary erosion control measures are needed to reinforce the bank. CDFW recommends the site be reassessed this spring to determine if additional

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armoring is needed. In addition, CDFW recommends rip-rap size and extent be specified in future MATO new site revisions for bridges.

Please direct any questions or comments about this consultation to me, or Nicholas Simpson at nicholas.simpson@wildlife.ca.gov or (707) 445-6512.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Klug". The signature is written in a cursive style with a large initial "R".

Richard Klug, Senior Environmental Scientist (Supervisor)
California Department of Fish and Wildlife

References:

Maynard, Stephen & Ruff, James & Abt, Steven. (1989). Riprap Design. Journal of Hydraulic Engineering-asce -115. 10.1061/(ASCE)0733-9429(1989)115:7(937).



Figure 1. View of RP1 bridge from upstream facing downstream right bank.



Figure 2. View of RP1 from under bridge facing right bank. Note 1 square foot green binder for scale.

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