State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE

Bay Delta Region 2825 Cordelia Road, Suite 100 Fairfield, CA 94534 (707) 428-2002 www.wildlife.ca.gov GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 13, 2022

Betsy Swenerton, Senior Project Manager Marin County Department of Public Works 3501 Civic Center Drive, Room 304 San Rafael, CA 94903 envplanning@marincounty.org



Subject: West Marin Drainage Rehabilitation, Mitigated Negative Declaration,

SCH No. 2022080435, Marin County

Dear Ms. Swenerton:

The California Department of Fish and Wildlife (CDFW) received a Notice of Intent to Adopt a Mitigated Negative Declaration (MND) from Marin County Department of Public Works (County) for the West Marin Drainage Rehabilitation (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.<sup>1</sup>

CDFW is submitting comments on the MND to inform the County, as the Lead Agency, of potentially significant impacts to biological resources associated with the Project.

#### **CDFW ROLE**

CDFW is a **Trustee Agency** with responsibility under CEQA pursuant to CEQA Guidelines section 15386 for commenting on projects that could impact fish, plant, and wildlife resources. CDFW is also considered a **Responsible Agency** if a project would require discretionary approval, such as permits issued under the California Endangered Species Act (CESA) or Native Plant Protection Act, the Lake and Streambed Alteration Program, or other provisions of the Fish and Game Code that afford protection to the state's fish and wildlife trust resources.

#### REGULATORY REQUIREMENTS\

## **California Endangered Species Act**

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if the Project has the potential to result in take<sup>2</sup> of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation

<sup>1</sup> CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000. <sup>2</sup> Take is defined in Fish and Game Code section 86 as hunt, pursue, catch, capture, or kill, or attempt any of those activities.

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measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA ITP. The Project has the potential to impact Coho salmon (Central California Coast Evolutionarily Significant Unit) (*Oncorhynchus kisutch* population 4), a CESA listed as endangered species, as further described below.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species. (Pub. Resources Code, §§ 21001, subd. (c), 21083; CEQA Guidelines, §§ 15380, 15064, & 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with CESA.

# Lake and Streambed Alteration (LSA) Agreement

CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et. seq., for project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. **The MND** indicates that the Project would submit an LSA Notification for impacts to Nicasio Creek, Lagunitas Creek, and other streams, as further described below. CDFW will consider the CEQA document for the Project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement (or ITP) until it has complied with CEQA as a Responsible Agency.

# **Migratory Birds and Raptors**

CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs, and nests include sections 3503, 3503.5, and 3513. Fully protected species may not be taken or possessed at any time (Fish & G. Code, § 3511). Migratory birds are also protected under the federal Migratory Bird Treaty Act.

### PROJECT DESCRIPTION SUMMARY

**Proponent:** Marin County Department of Public Works

**Objective:** Repair or replace thirty-two culverts and three eroded roadside embankments. Project activities may include dewatering the work areas.

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**Location:** Project construction will take place over approximately 14 miles of roadway in three distinct road segments: (1) Point Reyes – Petaluma Road between Highway 1 and Platform Bridge Road in Point Reyes Station; (2) Lucas Valley Road west from Milepost (MP) marker 5.29 at Big Rock to the intersection with Nicasio Valley Road in Nicasio; and (3) Nicasio Valley Road from the intersection with Sir Francis Drake Boulevard in San Geronimo Valley to the intersection with Lucas Valley Road. The Project is within Marin County. GPS coordinates of the approximate Project centroid are 38.059508, -122.719305.

**Timeframe:** Work is proposed to start and be completed between June 1 and October 31, 2023. Work may take place before or after this window if authorized by regulatory permits and conditions.

### **COMMENTS AND RECOMMENDATIONS**

CDFW offers the comments and recommendations below to assist the County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document. Based on the Project's avoidance of significant impacts on biological resources with implementation of mitigation measures, including those CDFW recommends, CDFW concludes that a Mitigated Negative Declaration is appropriate for the Project.

# I. Mitigation Measures and Related Impact Shortcoming

MANDATORY FINDING OF SIGNIFICANCE. Does the Project have potential to substantially reduce the number or restrict the range of an endangered, rare or threatened species?

**COMMENT 1:** Coho Salmon (Central California Coast ESU) and Steelhead (Central California Coast DPS) (*Oncorhynchus mykiss* population 8) Section 3, Page 3-35

**Issue:** The MND indicates that a CESA ITP for Coho salmon will be obtained "if necessary" (page 2-26) and does not clearly evaluate if impacts to Coho salmon may occur or if an ITP is necessary.

Further, Avoidance and Minimization Measure (AMM) GEN-15 (Dewatering Measures) does not include a requirement that equipment, including heavy equipment, dewatering equipment, boots, waders, and hand tools, be cleaned between sites to prevent the spread of New Zealand mudsnail (*Potamopyrgus antipodarum*) and other invasive species harmful to salmonids.

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**Specific impacts, why they may occur and be potentially significant:** Project impacts to Coho salmon could occur as a result of Project activities described in the MND including dewatering and relocation, Project-related erosion or sedimentation, change in bed substrate, or accidental leaks or spills of hazardous materials (page 3-53).

Additionally, uncleaned equipment that is used in different streams may carry New Zealand mudsnails and other invasive species to the streams. High density New Zealand mudsnail populations may cause substantial adverse impacts to Coho salmon and steelhead by replacing preferred, nutritious foods. Vinson and Baker (2008) showed that wild salmonids with New Zealand mudsnail in their guts had significantly poorer body conditions than those without. In feeding trials, rainbow trout (*Oncorhynchus mykis*) fed an exclusive diet of unlimited New Zealand mudsnail passed 54% of mudsnails through the digestive tract alive, and subsequently lost up to 0.48% of their initial body weight each day, which is nearly equal to the impact of starvation.

Mortality of Coho salmon or steelhead associated with the above activities or the introduction of New Zealand mudsnails could substantially reduce the number and restrict the range of these species which are considered endangered, rare or threatened species, triggering a mandatory finding of significant impact (CEQA Guidelines, § 15065).

**Recommended Mitigation Measures:** To reduce potential impacts to Coho salmon and steelhead to less-than-significant, CDFW recommends clearly evaluating if impacts to Coho salmon may occur and including the below mitigation measure and modifying AMM GEN-15 (Dewatering Measures), as outlined below.

- The Project shall consult with CDFW to determine if impacts to Coho salmon may occur and obtain a CESA ITP for any take of the species that may occur during Project activities such as relocation efforts, dewatering, Project-related erosion or sedimentation, changes in bed substrate, or accidental leaks or spills of hazardous materials.
- All equipment that comes into contact with water or sediment in a stream, including the dewatering pump and other portions of the dewatering system, shall be properly sterilized to ensure it is free of aquatic pathogens or invasive species. Equipment sterilization shall follow prevention Best Management Practices such as those prepared by CDFW's Northern Region<sup>3</sup>, or other methodology accepted by CDFW in writing.

<sup>&</sup>lt;sup>3</sup> CDFW, 2016. <a href="https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821&inline">https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821&inline</a>

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Would the Project 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 CDFW or United States Fish and Wildlife Service (USFWS)?

**COMMENT 2:** California Red-Legged Frog (*Rana draytonii*), Foothill Yellow-Legged Frog (Northwest/North Coast Clade) (*Rana boylii*), and Western Pond Turtle (*Emys marmorata*), Section 2, Page 2-45

**Issue:** AMM BIO-2 (Protection of Special-Status Amphibian and Reptile Species) requires that surveys occur at least seven calendar days prior to the onset of Project construction; however, surveys should also occur closer to the start of Project construction.

Specific impacts, why they may occur and be potentially significant: California redlegged frog, foothill yellow-legged frog, and Western pond turtle may move to work sites between the survey and the start of work at a particular site. These animals may be crushed, entombed, or killed in other ways if it is not known that they are present. The survey requirements in BIO-2 could be interpreted as applying to the entire Project, i.e., a pre-construction survey covering all thirty-five work sites would be conducted at least seven calendar days prior to the start of construction at the first work site. With this survey schedule, the above special-status animals could have several months to move to the last sites where work occurs and may be present at these sites without the knowledge of the County or construction personnel.

California red-legged frog, Western pond turtle, and the Northwest/North Coast Clade of foothill yellow-legged frog are California Species of Special Concern (SSC). California red-legged frog is also listed as threatened under the federal Endangered Species Act. The SSC designation is given to species native to California satisfying one or more of the following criteria: 1) is extirpated from the State or, in the case of birds, is extirpated in its primary season or breeding role; 2) is listed as Federally-, but not State threatened or endangered; 3) meets the State definition of threatened or endangered but has not formally been listed; 4) is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or 5) has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status. Based on the above statuses, if California red-legged frog, Western pond turtle, or foothill yellow-legged frog are present at the Project locations, impacts to them such as crushing or entombment would be potentially significant.

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**Recommended Mitigation Measures:** To reduce potential impacts to California redlegged frog, foothill yellow-legged frog, and Western pond turtle to less-than-significant, CDFW recommends including the mitigation measures below.

California Red-ILegged Frog Habitat Assessment and Surveys. At least two weeks prior to the commencement of ground-disturbing activities, the Project area and nearby vicinity, including a minimum 500-foot radius surrounding the Project activity area, shall be assessed by a Qualified Biologist for the presence of California red-legged frog individuals and habitat features. Habitat features include both aquatic habitat such as plunge pools and ponds and terrestrial habitat such as burrows or other refugia. If habitat occurs, then no more than 48 hours prior to ground-disturbing activities the area shall be surveyed by a Qualified Biologist. The results of the habitat feature assessment and survey shall be submitted to CDFW for written acceptance prior to starting Project activities. Burrows and refugia sites shall be flagged or otherwise marked for avoidance; Project activities shall avoid habitat features to the extent feasible. If California redlegged frogs are encountered during the assessment or Project activities, the Project shall not proceed or all work shall cease, and CDFW shall immediately be notified. Work shall not proceed until the frog, through its own volition, moves out of harm's way and CDFW has provided permission in writing to proceed with the Project. If California redlegged frog is encountered or the Qualified Biologist determines that impacts to the species are likely to occur, the Project shall consult with USFWS pursuant to the federal Endangered Species Act and receive written approval from CDFW prior to the impact. In this case, CDFW may require additional protection measures which shall be implemented by the Project.

Foothill Yellow-Legged Frog Survey Methodology. A Qualified Biologist shall provide a foothill yellow-legged frog survey methodology to CDFW for review and written approval no less than 30 days prior to beginning Project activities, unless CDFW approves otherwise in writing. No Project activities shall begin until foothill yellow-legged frog surveys have been completed using a method approved by CDFW. Survey methodology shall target all life stages and shall have an adaptive management approach based on the stream conditions at the time of surveys (i.e., whether ponded or flowing water is present, or whether the stream has been completely dry for less than 30 days). Surveys within and adjacent to the Project activity area shall include searching suitable habitat including but not limited to cavities under rocks, within vegetation such as sedges and other clumped vegetation, and under undercut banks, no less than 50 feet from the streambed and 500 feet upstream and downstream of the Project activity area. Surveys should be conducted at different times of day and under variable weather conditions if possible.

Foothill Yellow-Legged Frog Surveys. Prior to starting Project activities, a Qualified Biologist shall conduct surveys for foothill yellow-legged frog using a CDFW-approved methodology (see above Mitigation Measure). If foothill yellow-legged frogs, their eggs,

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or any other special-status species, are found, CDFW shall be notified immediately and construction shall not occur without written approval from CDFW allowing the Project activities to proceed. If foothill yellow-legged frog egg masses are observed in a stream that is scheduled for dewatering, dewatering shall not occur until an egg mass relocation plan is approved in writing by CDFW and implemented. In the event adult foothill yellow-legged frogs are observed, a temporary wildlife exclusion fence shall be installed, if requested by CDFW, to prevent frogs and/or other special-status species from entering the work site. The results of the survey shall be submitted to CDFW for written acceptance prior to starting Project activities. If the Project has collected data that the stream has been completely dry for greater than 30 days prior to starting Project activities, and no water or moist areas within the streambed exist within 500 feet upstream and downstream of the Project, then the Project may request CDFW written approval that surveys for foothill yellow-legged frogs are not necessary.

Western Pond Turtle Surveys. No more than two weeks prior to the commencement of ground-disturbing activities, a Qualified Biologist shall perform surveys for Western pond turtles within aquatic and upland habitat at the Project. Surveys will encompass individual turtles and nest sites. An additional survey shall occur no more than 48 hours prior to Project activities. If a pond turtle or nest site is detected at any time, CDFW shall be notified immediately. Survey results shall be submitted to CDFW prior to construction activities. All Western pond turtles observed on-site shall be avoided and allowed to leave the Project activity area of their own volition or may be relocated with prior written approval from CDFW. Any turtle nest sites shall be avoided with an appropriate buffer identified by a Qualified Biologist and accepted in writing by CDFW.

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

**Comment 3:** Stream alteration, Page 3-62

**Issue:** The MND identifies that the Project would result in temporary impacts to riparian habitat which would "regenerate naturally", and tree replacement is proposed. However, 1) the temporal loss of riparian habitat and maintenance and monitoring of restored sites, such as invasive species removal to ensure successful restoration, is not addressed, and 2) the replacement ratios of removed trees is unclear. Therefore, impacts to riparian habitat may not be reduced to less-than-significant. It is also unclear if permanent impacts to riparian habitat would occur. Additionally, the MND indicates that an LSA Notification would be required to comply with Fish and Game Code section 1600 et. seq.; however, there is no mitigation measure requiring this action.

**Specific impacts, why they may occur and be potentially significant:** The MND states that temporary impacts to sensitive riparian habitat are likely to occur through tree

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removal, vegetation clearing around culvert inlets/outlets, and slip-out repair (page 3-62). An estimated 2 to 7 percent of California's riparian habitat remains intact and has not been converted to other land uses (Katibah 1984, Dawdy 1989). Riparian buffers help keep pollutants from entering adjacent waters through a combination of processes including dilution, sequestration by plants and microbes, biodegradation, chemical degradation, volatilization, and entrapment within soil particles. Narrow riparian buffers are considerably less effective in minimizing the effects of adjacent development than wider buffers (Castelle et al. 1992, Brosofske et al. 1997, Dong et al. 1998, Kiffney et al. 2003, Moore et al. 2005). Riparian trees and vegetation, and associated floodplains, provide many essential benefits to stream and aquatic species habitat (Moyle 2002, CDFW 2007), including thermal protection, cover, and large woody debris. Development adjacent to the riparian zone can result in fragmentation of riparian habitat and decreases in native species abundance and biodiversity (Davies et al. 2001, Hansen et al. 2005, CDFW 2007). Riparian habitat including connected wetland tributaries is of critical importance to protecting and conserving the biotic and abiotic integrity of an entire watershed. When riparian habitat is substantially altered, riparian functions become impaired, thereby likely substantially adversely impacting aquatic and terrestrial species. Removing connected wetland habitat may result in the degradation of riparian habitat. Therefore, if the above impacts to riparian habitat occur and adequate restoration is not provided, project impacts to riparian habitat would be potentially significant.

**Recommended Mitigation Measure:** To reduce impacts to riparian habitat to less-than-significant, CDFW recommends including the following mitigation measure:

The Project shall submit to CDFW an LSA Notification for the impacts to lakes or streams prior to commencement of Project activities and comply with the LSA Agreement, if issued. The Notification shall include habitat restoration or preservation at a minimum ratio of 3:1 based on area and linear distance of permanent impacts and on-site restoration of temporary impacts. Habitat restoration shall occur in the same calendar year as the impact on-site or as close to the site as possible within the same stream or watershed, unless otherwise approved in writing by CDFW. If mitigation is not possible within the same stream or watershed, mitigation ratios may increase at the discretion of CDFW.

To mitigate for the removal of trees, replacement trees shall be planted at the below minimum replacement to removal ratios, unless otherwise approved in writing by CDFW:

- 1:1 for removal of non-native trees;
- 1:1 for removal of native trees up to 3 inches at diameter breast height (dbh)
- 3:1 for removal of native trees 4 to 6 inches dbh (excluding oak (Quercus sp.) trees);

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- 6:1 for removal of native trees greater than 6 inches dbh (excluding oak (*Quercus* sp.) trees);
- 4:1 for removal of oak trees up to 6 inches dbh;
- 5:1 for removal of oak trees between 7 and 15 inches dbh; and
- 10:1 for removal of oak trees greater than 15 inches dbh.

The Project shall monitor and maintain, as necessary, all plants for five years to ensure successful revegetation. Planted trees, oak trees, and other vegetation shall each have a minimum of 85 percent survival at the end of five years. If revegetation survival and/or cover requirements do not meet established goals as determined by CDFW, the Project is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements for five years after planting.

Please be advised that an LSA Agreement obtained for this Project would likely require the above recommended mitigation measures, as applicable.

## II. Editorial Comments and/or Suggestions

Comment 4: Avoidance and Minimization Measures, Section 2, Page 2-24

It is not clear if the AMMs incorporated into the design of the Project are enforceable mitigation measures. CDFW recommends that the MND list AMMs as mitigation measures if they are necessary to reduce Project impacts to less-than-significant.

### **ENVIRONMENTAL DATA**

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be filled out and submitted online at the following link: <a href="https://wildlife.ca.gov/Data/CNDDB/Submitting-Data">https://wildlife.ca.gov/Data/CNDDB/Submitting-Data</a>. The types of information reported to CNDDB can be found at the following link: <a href="https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals">https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals</a>.

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### **ENVIRONMENTAL DOCUMENT FILING FEES**

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the environmental document filing fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

### **CONCLUSION**

CDFW appreciates the opportunity to comment on the MND to assist the County in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Alex Single, Environmental Scientist, at (707) 799-4210 or <a href="mailto:Alex.Single@wildlife.ca.gov">Alex.Single@wildlife.ca.gov</a>; or Melanie Day, Senior Environmental Scientist (Supervisory), at <a href="Melanie.Day@wildlife.ca.gov">Melanie.Day@wildlife.ca.gov</a> or (707) 210-4415.

Sincerely,

DocuSigned by:

Erin Chappell

Erih Chappell Regional Manager Bay Delta Region

ec: Office of Planning and Research, State Clearinghouse (SCH No. 2022080435)

### **REFERENCES**

- Brosofske, K.D., J. Chen, R.J. Naiman, and J.F. Franklin. 1997. Harvesting effects on microclimatic gradients from small streams to uplands in western Washington. Ecological Applications 7:1188-1200.
- Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, T. Erickson, and S.S. Cooke. 1992. Wetlands buffers use and effectiveness. Adolfson Associates, Inc., Shorelands and Coastal Zone Management Program, Washington Department of Ecology, Olympia, WA. Pub. No. 92-10.
- CDFW 2007. California wildlife: conservation challenges. California Department of Fish and Game, Sacramento, CA.

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- CDFW 2016. California Department of Fish and Wildlife, Aquatic Invasive Species Disinfection/Decontamination Protocols (Northern Region), Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821&inline
- Davies, K.F., C. Gascon, and C.R. Margules. 2001. Habitat fragmentation: consequences, management, and future research priorities. Pages 81-97 in: M.E. Soule and G. H. Orians, (eds.) Conservation Biology: Research Priorities for the Next Decade. Island Press, Washington, DC.
- Dawdy, D.R. 1989. Feasibility of mapping riparian forests under natural conditions in California. pages 63-68 in: Proceedings of the California Riparian Systems Conference. GTR PSW-110. Davis, CA.
- Dong, J., J. Chen, Brosofske, K.D., and R.J. Naiman, 1998. Modeling air temperature gradients across managed small streams in western Washington. Journal of Environmental Management 53:309-321.
- Hansen, A. J., R. L. Knight, J. M. Marzluff, S. Powell, K. Brown, P. A. Gude, and K. Jones. 2005. Effects of exurban development on biodiversity patterns, mechanisms, and research needs. Ecological Applications 15:1893-1905.
- Katibah, E.F. 1984. A brief history of riparian forests in the Central Valley of California. Pages 23-29 in: R.E. Warner and K.M. Hendrix (eds) California riparian systems: ecology, conservation and productive management. University of California Press, Berkeley, CA.
- Kiffney, P. M., J. S. Richardson, and J. P. Bull. 2003. Responses of periphyton and insects to experimental manipulation of riparian buffer width along forest streams. Journal of Applied Ecology 40:1060-1076.
- Moore, R. D., D. L. Spittlehouse, and A. Story. 2005. Riparian microclimate and stream temperature response to forest harvesting: a review. Journal of the American Water Resources Association 41:813-834.
- Moyle P.B. (2002). Inland fishes of California. University of California Press. Berkeley, CA.
- Vinson, M, and Baker, M. (2008). Poor Growth of Rainbow Trout Fed New Zealand Mud Snails (*Potamopyrgus antipodarum*). North American Journal of Fisheries Management. 28. 701-709.