

Board of Forestry and Fire Protection

FINAL STATEMENT OF REASONS (FSOR), pursuant to GOV §11346.9(a)

**“Tethered Operation Amendments, 2020”
Title 14 of the California Code of Regulations (14 CCR),
Division 1.5, Chapter 4,
Subchapter 1, Article 1; &
Subchapter 4, 5, & 6, Article 4; &
Subchapters 7, Articles 6.5, 6.8, & 6.95**

UPDATE OF INFORMATION CONTAINED IN ISOR (pursuant to GOV §11346.9(a)(1))

No information contained in the Initial Statement of Reasons (ISOR) requires an update. All material relied upon was identified in the ISOR and made available for public review prior to the close of the public comment period.

SUMMARY OF BOARD’S MODIFICATIONS TO 45-DAY NOTICED RULE TEXT AND INFORMATION REQUIRED PURSUANT TO GOV §11346.2(b)(1)) (pursuant to GOV §11346.9(a)(1))

All revisions to the 45-Day noticed rule text are summarized below:

- Within 14 CCR §§ 934.2(f)(3)(B) and 954.2(f)(3)(B) the limitations on heavy equipment in the Northern and Southern Forest Districts are made consistent with the existing limitations in the Coast District on slopes between 50% and 65% where the Erosion Hazard Rating is moderate, where those slopes are identified via certain conditions
- Within 14 CCR §§ 914.2(f)(4), 934.2(f)(4), and 954.2(f)(4) a requirement made clear that all Tractor Roads, except for certain Tractor Roads used in Tethered Operations, be flagged at specific times.
- Within 14 CCR §§ 914.2(f)(5), 934.2(f)(5), and 954.2(f)(5), Tethered Operations have been allowed, excluding yarding, to occur in areas designated for Cable Yarding, with other limitations, while maintaining that non-Tethered Tractor Operations, excluding Yarding, may only occur in those areas designated for Cable Yarding on slopes up to 50%, with other limitations as well.
- Within 14 CCR §§ 914.3(e), 934.3(e), and 954.3(e), a requirement is added that Cable Yarding activities suspend those transported logs above watercourses in a manner which achieves compliance with those resource protection goals and requirements identified within 14 CCR §§ 914, 934, and 954, as appropriate.
- when Tethered Operations are proposed in a plan, amendments to 14 CCR §§ 914.6(d), 934.6(d), and 954.6(d) require an RPF must explain in the plan how the Tractor Roads used in those operations will be treated and include in that explanation, those mitigation measures and metrics which may be necessary to determine compliance with 14 CCR §§ 914, 934, and 954, as appropriate.
- Arabic numbers and values have been written in English and have been retained parenthetically next to those English values.

MANDATE ON LOCAL AGENCIES AND SCHOOL DISTRICTS (pursuant to GOV §11346.9(a)(2)):

The adopted regulation does not impose a mandate on local agencies or school districts.

COST TO ANY LOCAL AGENCY OR SCHOOL DISTRICT WHICH MUST BE REIMBURSED IN ACCORDANCE WITH THE APPLICABLE GOVERNMENT CODE SECTIONS COMMENCING WITH GOV §17500 (pursuant to GOV §11346.9(a)(2)):

The adopted regulation does not impose a reimbursable cost to any local agency or school district.

ALTERNATIVE 3, BOARD'S ADOPTED ALTERNATIVE (update, pursuant to GOV §11346.9(a)(1)), of information pursuant to GOV §11346.2(b)(4): Adopt Rulemaking Proposal as Modified Through Formal Public Review and Comment Process

The Board selected Alternative #3 as proposed and modified through the formal public review and comment process. The Board adopted the rule text published with the 45-Day Notice (on May 31, 2019).

The proposed action is the most cost-efficient, equally or more effective, and least burdensome alternative. Alternatives 1 and 2 would not be more effective or equally effective while being less burdensome or impact fewer small businesses than the proposed action. Specifically, alternatives 1 and 2 would not be less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation than the proposed action. Additionally, alternatives 1 and 2 would not be more effective in carrying out the purpose for which the action is proposed and would not be as effective and less burdensome to affected private persons than the proposed action, or would not be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law than the proposed action. Further, none of the alternatives would have any adverse impact on small business. Small business means independently owned and operated, not dominant in their field of operations and having less than 100 employees.

ALTERNATIVES DETERMINATION (pursuant to GOV §11346.9(a)(4) and (5))

No other alternatives have been proposed or otherwise brought to the Board's attention, except as set forth in the ISOR and provided herein in the summary and responses to comments. Based upon the findings below and a review of alternatives the Board has determined the following:

- No alternative considered would be more effective in carrying out the purpose for which the regulation was intended.
- No alternative would be as effective and less burdensome to affected private persons than the adopted regulation.
- No alternative would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law. (reference ECONOMIC IMPACT ANALYSIS in ISOR)
- No alternative considered would lessen any adverse economic impact on small business. (reference ECONOMIC IMPACT ANALYSIS in ISOR)

FINDINGS (BASED ON INFORMATION, FACTS, EVIDENCE AND EXPERT OPINION) TO SUPPORT THE ALTERNATIVES DETERMINATION

- The Board finds improvements in forest technology related to cable-winch systems assisting ground-based equipment with timber harvesting on steep

Board of Forestry and Fire Protection

slopes (tethered logging) are generally less costly, less labor-intensive, and less hazardous than traditional harvesting methods on steep slopes.

- The Board finds that mechanized timber operations, such as those utilized in tethered logging, have injury rates almost seven times lower compared to non-mechanized and traditional (hand-felled) harvesting methods.
- The Board finds that, though tethered logging operations have the potential to provide significant benefit to the forested landscapes of the state, the current Forest Practice Rules do not provide any certainty in the use of such operations or equipment.
- The Board additionally finds that many of the existing provisions of the Coast, Northern, and Southern Forest District tractor and cable operation regulations within 14 CCR §§ 914, 934, and 954 *et seq.* (respectively), are unclear, redundant, or outdated in light of other existing modern forest practice regulations relating to those operations.
- The Board finds that the adopted alternative is necessary to implement the aforementioned regulatory revisions in order to promote and describe the appropriate use of tethered logging operations throughout the forested landscapes of the state and to maintain a functional, modern, and comprehensive forest practice regulatory scheme.
- The Board finds the adopted alternative fulfills the obligations of the Board, specified in statute, and reflects consultation with, and careful evaluation of the recommendations of, CAL FIRE, concerned federal, state, and local agencies, educational institutions, civic and public interest organizations, and private organizations and individuals.

BRIEF SYNOPSIS OF ADDITIONAL ALTERNATIVES CONSIDERED AND REJECTED (update, pursuant to GOV §11346.9(a)(1)), of information pursuant to GOV §11346.2(b)(4))

Alternative 1: No Action

The Board considered taking no action, but the “No Action” alternative was rejected because it would not address the problems as described above within the Forest Practice Rules. Additionally, taking no action would not provide certainty in the application of existing forest practice rules to the use of tethered operations.

Alternative #2: Make Existing Regulation Less Prescriptive

This action would replace the existing prescriptive standards for Tractor and Cable Operations with performance-based regulations. This action would create issues related to the preservation of environmental quality with regards to the ministerial permitting of certain timber harvesting operations and could lead to issues of clarity surrounding implementation and enforcement of the regulations. This alternative may reduce clarity and consistency with other portions of the rules which rely upon the existence of the current operational limitations in order to ensure that forest resources are preserved.

SUMMARY AND RESPONSE TO COMMENTS (pursuant to GOV 11346.9(a)(3))

The comments below are identified in the following format: The letter S or W followed

Board of Forestry and Fire Protection

by a series of numbers separated by a hyphen, followed by the name and affiliation (if any) of the commenter (e.g. W1-8: John Doe, Healthy Forest Association).

S: Indicates the comment was received from a speaker during the Board hearing associated with the Notices of Proposed Action.

W: Indicates the comment was received in a written format.

1st number: Identifies the comments in the order in which it was received.

WRITTEN COMMENTS AND RESPONSES RESULTING FROM 45-DAY NOTICE OF PROPOSED RULEMAKING PUBLISHED JUNE 26, 2020

Comment W1-1: Cedric Twight, Manager Regulatory Affairs, Sierra Pacific Industries

“Sierra Pacific Industries is pleased that the California Board of Forestry and Fire Protection (Board) has taken up the work of revising the Operations rules (§ 914.2 [934.2, 954.2]) in order to accommodate the use of Tethered Logging systems. As the Initial Statement of Reasons correctly indicates this harvesting technology has improved the harvesting efficiency, personnel safety, and Silvicultural results where it has been utilized in many different regions of the world including the Pacific Northwest. The Board codifying rules that support the use of tethered harvesting provides important regulatory certainty for Licensed Timber Operators (LTO) that are considering the large capital investments necessary to acquire this machinery for use in California.

The Draft Tethered Operation Amendments are a good interim step to allowing the integration of these technologies into harvesting in California. This rule package does several good things: 1) It acknowledges Tethered logging as an acceptable operational standard on slopes >65% and >50% with high or extreme EHR. This will expand the economic feasibility of performing a variety of beneficial Forestry activities on steep slopes that would otherwise be precluded due to the ever-rising costs of conventional cable yarding operations. 2) Tractor operations in cable units will be allowed as a standard practice up to 50% slopes. This practical accommodation allows RPFs and LTOs to deploy the most efficient combination of machines in harvest units without requiring a justification for activities that otherwise would be considered a standard harvesting practice (i.e. ground based equipment on slopes up to 50%). 3) Waterbreaks will not be required where trails have adequate natural drainage, drainage structures, or Surface Cover or Woody Debris to dissipate water flow and trap sediment to prevent soil loss. This standard will allow the operational efficiencies of tethered machines to be expressed both in efficient log production and environmental protection, and avoids a standard that requires indiscriminate waterbreak construction, all while maintaining waterbreak construction as a backstop if there is not adequate drainage or surface cover to dissipate water flow and trap sediment to prevent soil loss.

Sierra Pacific Industries supports this rule package and encourages the Board of Forestry to approve these rules for harvesting operations.”

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Board of Forestry and Fire Protection

Board Response: The Board appreciates the support of Sierra Pacific Industries.

Rule Text Change: No.

Comment W2-1: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“The California Department of Forestry and Fire Protection (CAL FIRE) has reviewed the proposal to amend, repeal, or adopt regulations contained within 14 CCR §§ 895.1, 914 [934, 954], 914.2 [934.2, 954.2], 914.3 [934.3, 954.3], 914.6 [934.6, 954.6], 1034, 1038.2, 1038.4, 1052, 1090.5, 1090.7, 1092.09, 1094.6, and 1098.8 of the California Forest Practice Rules presented in the 45-day Notice of Rulemaking entitled, “Tethered Operation Amendments, 2020,” circulated June 26, 2020. This comment letter addresses the proposed changes presented in that public notice, which will be discussed at the Board’s public hearing scheduled for August 19, 2020.

The rule package proposes to amend existing rule language pertaining to harvesting practices and erosion control for tractor and cable operations, as well as add language for tethered logging operations. CAL FIRE supports the rule package, but finds that several changes are needed prior to adoption, as described below and specified in the Addendum. CAL FIRE believes that the recommended changes provide for clarity and needed improvements involving tractor, cable, and tethered logging operations.

Significantly, CAL FIRE is supportive of tethered logging operations and their use in California. The Department’s literature review suggests that the potential impacts from tethered falling and yarding are slightly greater than cable yarding, but less than that associated with steep tractor logging, which has been used extensively in California since after World War II and continues to be widely used on most private ownerships in this state. Promoting the use of tethered logging in California is expected to be beneficial, given the relatively infrequent application of cable yarding that is used in this state, but this type of harvesting has not been studied to date here, particularly under wet soil conditions and on erodible soil types (e.g., soils derived from decomposed granitics).

[Page 4; Line 6] CAL FIRE requests that 14 CCR § 914.2 [934.2, 954.2] (f)(3)(B) be changed so that the distinction between the Coast and Northern/Southern Districts is eliminated in terms of when pre-flagging for Tractor Road construction must occur. All new Tractor Roads on >50% slopes, regardless of Forest District, should be flagged prior to the Preharvest Inspection (PHI), or if there is no PHI, prior to use. The existing Forest Practice Rules (FPRs) include specific requirements for truck road construction on steeper slopes, such as removal of the organic layer for slopes >40% and building keyways on slopes >50%. An analogous standard for construction of skid trails on steep slopes in the interior Forest Districts is appropriate.”

Board Response: The Board agrees with the Department and has revised the regulatory text.

Rule Text Change: Yes. The requirements for proposed new Tractor Roads has been made consistent between 14 CCR §§ 914.2(f)(3)(B), 934.2(f)(3)(B), and 954.2(f)(3)(B).

Comment W2-2: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 4; Line 11] CAL FIRE does not support retention of an allowance for the Northern/Southern Districts to construct skid trails on slopes >50% without any agency oversight and review.”

Board Response: See response to W2-1 above.

Rule Text Change: Yes. The requirements for proposed new Tractor Roads has been made consistent between 14 CCR §§ 914.2(f)(3)(B), 934.2(f)(3)(B), and 954.2(f)(3)(B).

Comment W2-3: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 4; Line 18] The requirement for pre-flagging Tractor Roads to be used in exceptions or alternatives is changed and is only required under the noticed rule package if required by the Director. This is a substantial weakening of the FPRs. Pre-flagging skid trails has long been recognized as a significant measure to reduce the impacts of tractor operations, particularly on steeper slopes. Pre-flagging should remain a requirement prior to plan submittal, particularly since unit layout is currently relying more heavily on GIS and remote sensing data, and less on field evaluation. Making the pre-flagging requirement at the discretion of the Director’s representative, who has often not seen the units on the ground, will lead to uncertainty and disagreements. CAL FIRE requests the proposed rule text be amended to retain rather than strike the existing requirement for pre-flagging Tractor Roads to be used in exceptions or alternatives by heavy equipment other than tethered operations.”

Board Response: The Board agrees with the Department regarding Tractor Roads used in non-Tethered Operations, and for those Tractor Roads, the existing requirement is retained. However, the Board does not find that this requirement is appropriate for application in Tethered Operations as it would be overly-burdensome on the project proponent due to the nature of Tractor Roads used in such operations. Additionally, for Tractor Roads used in Tethered Operations, the project proponent must disclose and demonstrate, pursuant to 14 CCR §§ 914.9(d), 934.6(d), and 954.6(d), as appropriate, how those Roads will comply with the resource and environmental protection goals and requirements of 14 CCR §§ 914, 934, and 954, respectively..

Rule Text Change: Yes. 14 CCR §§ 914.2(f)(4), 934.2(f)(4), and 954.2(f)(4) have been revised.

Comment W2-4: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 5; Line 8] The rule package amends §§ 914.2(i), 934.2(i), and 954.2(i), repealing a provision which requires that, where Waterbreaks cannot effectively disperse surface runoff, other Erosion Controls shall be installed as needed. CAL FIRE finds that this is not a redundant requirement, and that this is a weakening of the existing FPRs. We request that it be retained rather than repealed in proposed rule text.”

Board of Forestry and Fire Protection

Board Response: The Board agrees with the Department and has retained the language.

Rule Text Change: Yes. 14 CCR §§ 914.2(i), 934.2(i), and 954.2(i) have been retained.

Comment W2-5: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 5; Line 25 – Page 6; Line 19] The provisions in the rule package specific to cable yarding are repealed in favor of rules that apply to any form of yarding. This deemphasizes cable yarding, which causes the least environmental damage. Poorly implemented cable logging can lead to substantial stand damage and the existing regulations provide enforceable language to prevent damage to residual stands. Additionally, other concerns could be addressed in a revised cable yarding section, such as the use of tractors for tailholds or guys, adequate suspension above watercourses, etc. The benefits of a standalone cable yarding rule section outweigh the reasons for removing it from the rulebook. CAL FIRE requests the Board include an updated sub-section under 14 CCR § 914 [934, 954] titled “Cable Yarding” in this rule package and will work with Board staff to facilitate these revisions should the Board request assistance.”

Board Response: The Board agrees with the Department and has retained the language.

Rule Text Change: Yes. 14 CCR §§ 914.3, 934.3, and 954.3 have been retained.

Comment W2-6: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 6; Lines 22-23] The proposed rule package includes revisions to the rules for Waterbreaks. In particular, 14 CCR § 914.6 [934.6, 954.6] specifies the conditions under which Waterbreaks are required to be constructed. The conditions listed are compacted areas that “do not have adequate natural drainage, drainage structures, or Surface Cover or Woody Debris to dissipate water flow and trap sediment to prevent soil loss.” CAL FIRE finds that this is appropriate, since the conditions listed eliminate the need for Waterbreak construction, and construction in areas without potential for significant erosion may produce more disturbance than with implementation.”

Board Response: The Board appreciates the support of the Department.

Rule Text Change: No.

Comment W2-7: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 7; Line 9] The noticed rule package also amends §§ 914.6(b), 934.6(b), and 954.6(b) to eliminate requirements that Waterbreaks be constructed immediately upon the conclusion of use of Tractor Roads, Roads, Layout, and Landings which do not have permanent and adequate drainage facilities or drainage structures. Relying on weather forecasts from October 15 to November 15 and from April 1 to May 1, or the

Board of Forestry and Fire Protection

beginning of the Winter Period to require Waterbreak installation is a substantial weakening of the existing FPRs and not supported by CAL FIRE. This change will result in a greater chance of significant surface erosion and potential degradation of water quality, since there will be a greater risk that Waterbreak installation will not occur when left to the end of operations (e.g., equipment breakdowns, equipment moved off site). Changing climatic patterns make predicting regulatory requirements for sediment reduction difficult due to increasing abnormal rain events, including intense storm events outside of the normal winter period. These unfamiliar and unpredictable occurrences make this even more imperative.”

Board Response: The Board agrees with the Department and has retained the language.

Rule Text Change: Yes. 14 CCR §§ 914.6(b), 934.6(b), and 954.6(b) have been retained as 14 CCR §§ 914.6(c), 934.6(c), and 954.6(c), respectively.

Comment W2-8: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“[Page 7; Line 13] 14 CCR § 914.6 [934.6, 954.6] (d) states “When Tethered Operations are proposed in a Plan, the RPF shall explain, in the Plan, how Tractor Roads used in those Tethered Operations will be treated in order to minimize disturbance which could lead to soil loss and comply with 14 CCR § 914 [934, 954].” “Minimize disturbance” is the appropriate term to use to fully comply with CEQA requirements and reduce environmental impacts associated with tethered logging operations. CAL FIRE supports the noticed language allowing RPFs to state how they will minimize disturbance resulting from tethered logging operations (rather than requiring Waterbreak installation or slash packing on Tractor Roads).”

Board Response: The Board appreciates the support of the Department.

Rule Text Change: No.

Comment W2-9: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“In addition to the concerns raised above, CAL FIRE Forest Practice Inspectors have found that Class III EEZ (Equipment Exclusion Zone) boundaries associated with cable logging operations are often not flagged, or only center-line flagged. Currently there is no requirement in the Forest Practice Rules to flag EEZs and ELZs (Equipment Limitation Zones) for Class III watercourses unless the Director determines that a WLPZ is necessary for Class III Protection, and the Director requires flagging of Class III watercourses that have a WLPZ designated. This is usually not a problem since logs are aerially suspended through the EEZ and there is relatively little potential for significant ground disturbance. However, with tethered logging operations, equipment operators could easily enter these zones without recognizing that a classified watercourse was present. We believe that it would be difficult for heavy equipment operators to recognize a Class III watercourse which is not fully flagged on the ground and avoid excessive disturbance. Therefore, CAL FIRE requests the proposed rule text be modified to include a requirement that Class III watercourse EEZ boundaries be

Board of Forestry and Fire Protection

flagged when tethered logging operations are proposed in a plan.”

Board Response: These regulations do not modify any operational requirement within a Class III EEZ or ELZ for either Tractor or Cable Operations. An assumption that Tethered Operations are less likely to recognize a Class II watercourse than any other Tractor Operation which is operating on steep slopes pursuant to the modified 14 CCR §§ .914.2(f)(4), 934.2(f)(4), or 954.2(f)(4) is largely speculative and provided without base. The Board does agree with the Department that, regarding Cable Operations, adequate suspension is necessary to ensure protection of resources, though no regulatory requirement for such suspension exists.

Rule Text Change: Yes. The Board has amended 14 CCR §§ 914.3(e), 934.3(e), and 954.3(e) to include a requirement regarding suspension above watercourses.

Comment W2-10: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“Additionally, CAL FIRE finds that potential conflicts for the tractor logging regulation changes included in this rule package with several other rule sections in the California Forest Practice Rules require further investigation prior to Board approval.”

Board Response: The Board is not aware of, nor does the commenter provide any information on, any potential regulatory conflicts related to this rulemaking.

Rule Text Change: No.

Comment W2-11: Matthew Reichman, Assistant Deputy Director, Resource Management, CAL FIRE

“Finally, as has been stated at several Forest Practice Committee and Joint Committee meetings, inspections by CAL FIRE and the other Review Team agencies will be very important to ensure that significant impacts do not occur from tethered logging operations, particularly on sensitive landscapes. The Review Team agencies will observe operations and impacts from tethered logging operations on the ground in both the Coast Ranges and the Sierra Nevada/Cascade Range. Inspections will provide a qualitative assessment of the effectiveness of this logging system for preventing excessive soil disturbance/compaction, and erosion and water quality impacts after overwintering. These inspections will help inform the agencies regarding whether additional rule revisions will be necessary in the future.

In summary, CAL FIRE is supportive of tethered logging operations in California and we look forward to their use in this state as a way to reduce the impacts from steep tractor logging. Before approval of this rule package, however, we request that CAL FIRE’s suggested revisions provided in the Addendum be publicly noticed for review and consideration in revised rule text.

Thank you for the opportunity to comment on this rulemaking proposal. A staff member will be available at the hearing should you have questions or concerns about this correspondence.”

Board of Forestry and Fire Protection

Board Response: The Board appreciates the support and participation of the Department.

Rule Text Change: No.

Comment W2-A1-1: Attachment to Comment W2

[Note: This comment was provided as an attachment to Comment W2 and it reiterates that comments made in Comment W2 and provides underlined and strike-through examples of proposed rule text to illustrate the comments made above. All comments in this attachment have received response in the responses to Comments W2-1 through W2-11 above]

Comment W3-1: Jeff Drongesen, Branch Chief, Habitat Conservation Planning Branch, California Department of Fish and Wildlife

“California Department of Fish and Wildlife (CDFW) staff has reviewed the Board of Forestry and Fire Protection’s (Board) Notice of Proposed Action, Tethered Operation Amendments, 2020, containing proposed changes to the California Forest Practice Rules relating to steep slope tethered operations in California’s timberlands. The following comments regarding this rule proposal reflect CDFW staff’s verbal comments at prior Joint Committee meetings.

While CDFW staff support the evaluation and use of new technologies for the conduct of timber operations, the discussion preceding this proposed rule change has not allowed for a data-driven consideration of the environmental impacts of steep slope tethered operations in California. The Board Staff Memorandums dated April 7, 2020, and May 5, 2020, regarding limitations on the use of ground-based equipment within 14 CCR §§ 914.2[934.2, 954.2] and 914.3[934.3, 954.3] summarize scientific literature findings, concluding that minimal impacts will occur for these types of operations. However, the basis for the assumption of minimal impacts are studies from other countries, and no literature references were found regarding the impacts of tethered operations in California’s diverse timberland ecosystems. The evidence of minimal impacts is incomplete for several resource areas, including erosion, sedimentation, and tree retention. A proposed operational demonstration on California’s North Coast, as discussed in Committee, could allow for first-person evaluation of impacts; however, this demonstration will occur after the August 19, 2020 public hearing, and likely after the Board has voted on the rule change.”

Board Response: While it is true that the current body of scientific literature on the topic of winch-assisted timber harvesting operations is based largely on studies which have been conducted outside of California, those studies which were relied upon by the Board provide an accurate picture and understanding of the capabilities, impacts, and benefits of this logging method. The impacts of any type of ground-based operations are largely the result of mechanical disturbance and gravity, which are fairly constant affects worldwide and can be reasonably extrapolated as applicable within California.

Board of Forestry and Fire Protection

Additionally, studies on forest erosion¹² indicate that poorly designed, constructed, and maintained roads and skid trails are the source of many water-quality issues, especially those related to sedimentation and erosion. Regarding this issue, the regulatory amendments are clear within 14 CCR §§ 914.6, 934.6, and 954.6 that those Tractor Roads which are proposed for use must comply with goals and requirements of 14 CCR §§ 914, 934, and 954 (respectively), which are intended to prevent degradation of water and riparian zones and minimize soil loss. Regarding tree retention, the silvicultural requirements for tree retention are not related to specific methods of harvesting or yarding, but are intended to achieve various other goals for forest health and productivity and are found elsewhere in the rules, including within 14 CCR §§ 913 *et seq.*, 933 *et seq.*, 954 *et seq.*, and other locations.

Rule Text Change: No.

Comment W3-2: Jeff Drongesen, Branch Chief, Habitat Conservation Planning Branch, California Department of Fish and Wildlife

“Given these concerns, CDFW recommends the following actions be implemented before the adoption of rule changes: Public demonstrations of tethered operations on both Coastal and Interior timberlands of the state.”

Board Response: The purpose of the rulemaking action is to provide clarity in the application and use of Tethered Operations within the Forest Practice Rules as well as to address other issues of clarity as they relate to many of the operational provisions within the existing rules. Providing public demonstrations of Tethered Operations is unrelated to the proposed rulemaking action. The information that the Board has contemplated surrounding the application of Tethered Operations sufficiently informs this rulemaking action. Any future demonstrations, studies, or other information which may be related to Tethered Operations may be considered by the Board when they are made available. The Board maintains the authority to revise or modify the Forest Practice Rules at their discretion in the future.

Rule Text Change: No.

Comment W3-3: Jeff Drongesen, Branch Chief, Habitat Conservation Planning Branch, California Department of Fish and Wildlife

“Given these concerns, CDFW recommends the following actions be implemented before the adoption of rule changes: Prohibiting steep slope tethered operations from Emergency and Exemption plans until the completion of a pilot study of the environmental effects of these operations.”

Board Response: Currently, all exemptions from the Forest Practice Rules within 14

¹ Worrell, W.C., Bolding, M.C., and Aust, W.M. 2011. Potential Soil Erosion following Skyline Yarding versus Tracked Skidding on Bladed Skid Trails in the Appalachian Region of Virginia. *Southern Journal of Applied Forestry*. 35(3): 131-135. Doi: 10.1093/sjaf/35.3.131

² AUST, W.M., AND C.R. BLINN. 2004. Forestry best management practices for timber harvesting and site preparation in the eastern United States: An overview of water quality and productivity research during the past 20 years (1982-2002). *Water Air Soil Pollut. Focus* 4(1):5-36.

Board of Forestry and Fire Protection

CCR § 1038 *et seq.* prohibit tractor operations on slopes greater than fifty percent. Given that Tethered Operations, as defined within this rulemaking, are a subset of Tractor Operations, the use of Tethered Operations will be subject to these same limitations within exemptions. Additionally, the same prohibition exists in the permitting mechanisms for conducting Timber Operations under an Emergency Notice pursuant to 14 CCR § 1052.4. Additionally, please see response to Comment W3-2.

Rule Text Change: No.

Comment W3-4: Jeff Drongesen, Branch Chief, Habitat Conservation Planning Branch, California Department of Fish and Wildlife

“Given these concerns, CDFW recommends the following actions be implemented before the adoption of rule changes: Inclusion of a multi-agency monitoring effort.”

Board Response: The purpose of the rulemaking action is to provide clarity in the application and use of Tethered Operations within the Forest Practice Rules as well as to address other issues of clarity as they relate to many of the operational provisions within the existing rules. The monitoring of those amendments is outside of the scope of the proposed action. Furthermore, the legislative amendments of AB 1492 (Chaptered 2012), among other items, established the need for evaluation of and reporting on the “ecological performance” of the state Forest Practice Rules, and in 2013 the Board established the Effectiveness Monitoring Committee with the intent of providing “...the Board of Forestry and Fire Protection and the Natural Resource Agencies with a science based committee whose charter is to better understand if specific requirements of the California Forest Practice Rules and other laws and regulations related to forest resources are effective in achieving resource objectives.” The mechanisms and agency to monitor the efficacy of the proposed action are extant; however, their operation is not further interpretation, implementation, or a general rule of application of existing statute and are not suitable for regulation.

Rule Text Change: No.

Comment W3-5: Jeff Drongesen, Branch Chief, Habitat Conservation Planning Branch, California Department of Fish and Wildlife

“Given these concerns, CDFW recommends the following actions be implemented before the adoption of rule changes: Creating a sunset date for the rule change to allow for incorporation of findings from the pilot study and monitoring effort.”

Board Response: As discussed within response to Comment W3-4, a regulatory monitoring effort is outside the scope of the proposed rulemaking. Furthermore, the Board maintains the authority, through Public Resources Code § 4553, to continuously review and revise the Forest Practice Rules. A regulatory sunset date is unnecessary to allow for incorporation of any future findings or information which may necessitate regulatory revision.

Rule Text Change: No.

Comment W4-1: Angela Wilson, Supervising Engineering Geologist, Forest

Activities Program Manager, Central Valley Regional Water Quality Control Board

“The Central Valley Regional Water Quality Control Board (Central Valley Water Board) appreciates the opportunity to review and provide comments on the Draft Tethered Operation Amendments (draft amendments) 2020 rulemaking as well as the Initial Statement of Reasons (ISOR). We are supportive of the effort to evaluate use of specific tethered logging systems and to improve the clarity and consistency of the existing regulations related to harvesting practices for that equipment.

Central Valley Water Board staff recognize the considerable potential benefits of winch-assisted (tethered) timber harvesting equipment, including improved worker safety, economic benefits over hand-falling and cable yarding on steep ground, and potentially the minimization of soil disturbance as compared to other harvesting methods. Central Valley Water Board staff have had limited opportunity to observe operations using the different types of equipment and methods proposed to be addressed under the draft amendments, making informed comment on the potential for impacts to water quality difficult to provide. There is minimal documented research available to inform on potential impacts to water quality applicable to the operations proposed by the draft amendments.”

Board Response: While it is true that winch-assisted timber harvesting methods are relatively new to California and the opportunities to experience these operations first-hand are limited, their application has been studied in other areas, and the general impacts on water quality associated with mechanical timber harvesting operations have been studied extensively. As discussed above and generally understood in the body of literature, the majority of impacts to water quality which are associated with timber harvesting are the result of road construction, use, or maintenance. Amendments to 14 CCR §§ 914.6, 934.6, and 954.6 require any skid trail proposed for use in Tethered Operations to comply with the requirements of 14 CCR §§ 914, 934, and 954 (respectively), which include requirements for the protection of water quality in general. Additionally, please see response to comment W3-1.

Rule Text Change: No.

Comment W4-2: Angela Wilson, Supervising Engineering Geologist, Forest Activities Program Manager, Central Valley Regional Water Quality Control Board

“Staff recently had the opportunity to observe tethered logging operations where eight-wheeled harvester/processors and eight-wheeled forwarders (each with four pairs of wheels) were used. This equipment generally used wheel bands on each pair of wheels that in effect created four sets of tracks; these tracks articulate separately through independent drive and suspension movements which distribute ground pressure to improve traction and minimize compaction. Operations using this eight-wheeled equipment on steep slopes was assessed by staff and found to have acceptable post-harvest soil disturbance conditions and virtually no sediment delivery to watercourses. The minimal impacts observed from use of the eight-wheeled equipment were achieved through: • Avoiding existing or new construction of typical skid trails, • Limiting soil disturbance by slash-packing equipment corridors as they advance down slope, resulting in reduced shear-stresses applied to forest soils by the wheels/tracks as the cable supports a portion of the tractive forces from the wheels/tracks to the soil and

Board of Forestry and Fire Protection

eliminates wheel/track spinning, • Increased post-harvest ground cover within the unit resulting from in-unit processing, • Automatic synchronization of winch speed to the machine driving speed, and • Reduced soil compaction as a portion of the equipment's weight is supported by cable tension.

It is our understanding that the eight-wheeled tethered equipment uses a type of synchronization between the winch and drivetrain that eliminates wheel/track slippage on the ground. The system detects loss of traction in any wheel/track and immediately engages the winch to maintain uphill movement and preventing spinning wheels/tracks which would otherwise contribute to soil loss. Central Valley Water Board staff considers this synchronization a key component of using tethered logging systems for ground-based equipment on steep terrain.

The language in the draft amendments allows for the use of different types of tethered logging systems which have not been assessed by Central Valley Water Board staff. The benefits described above related to the eight-wheeled equipment are not necessarily inherent to other systems. Page 2 of the ISOR suggests that the proposed tether system would increase a machine's traction to "prevent slippage". The draft amendments (page 1, lines 14-16) defines synchronization as "a mode in which a traction aid winch is operated automatically with pre-set pulling and braking forces to maintain cable tension with the forward or reverse speed of the machine". This definition of synchronization is inadequate because; 1) it does not address prevention of slippage, and 2) it is limited in scope and lacks enforceability.

Central Valley Water Board staff have recently reviewed a proposed amendment to a timber harvesting plan to use larger-scale ground-based equipment on steep slopes with a tethering system allowable under the current version of the draft amendments. The tethering system observed included a separate machine that houses the cable and supplies the tension on steep slopes to traditional ground-based equipment such as feller bunchers and skidders. Discussions with project proponents made it clear that slippage could not be eliminated from this equipment, only reduced. The type and degree of synchronization of the eight-wheeled variety described above, that resulted in minimal observed impacts, is not described in the draft amendment language."

Board Response: The term slippage, as used within the ISOR, is intended to describe an act, state, or function of slipping, which is the action of sliding unintentionally for a short distance. As described within the ISOR and regulations, the synchronization which is described is intended to promote traction to prevent such unintended movement, which is likely to cause disturbance to the soil. Any operations in which spinning wheels/tracks contribute to soil loss, as described by the commenter, would not be conformant with 14 CCR §§ 914, 934, or 954, as appropriate, and would therefore not be compliant with 14 CCR §§ 914.2(a), 934.2(a), or 954.2(a), as appropriate, and would not be permitted, regardless of the tethered status of the operation. Additionally, the definition of synchronization developed by the Board is based closely upon the definition of synchronized mode as developed by the International Organization for Standardization and is, and is intended to be, broad enough to address a variety of winch-assisted systems that are able to provide for the benefits described within the ISOR without excluding any specific business or

Board of Forestry and Fire Protection

manufacturer, such as a piece of equipment which may have 6 rather than 8 wheels, as those design elements may be auxiliary to the winch-assistance which is sought here.

Rule Text Change: No.

Comment W4-3: Angela Wilson, Supervising Engineering Geologist, Forest Activities Program Manager, Central Valley Regional Water Quality Control Board

“Additionally, an important contributor to the benefits observed in tethered operations using eight-wheeled tethered equipment was the use of an in-woods processing head that led to a more even distribution of slash within the unit along with slash packing in the tethered corridors. Corridors that run downslope are inherently very difficult to hydrologically disconnect, therefore Central Valley Water Board staff understand that requiring in-woods processing may be infeasible and not appropriate for all tethering systems. However, the limited projects assessed to date by staff processed logs in-unit and used the slash to stabilize soils including the corridors, which contributed to the overall results of reduced potential erosion and soil transport. There is no requirement in the draft amendments for application of slash on the corridors used/created by the tethered logging equipment and uniform maximum waterbreak spacing of 100 feet is applied in the draft amendments regardless of slope and soil sensitivity. As such, Central Valley Water Board staff are unable to anticipate the potential water quality impacts of projects that do not distribute slash within the unit and slash-pack the tethered corridors.”

Board Response: Amendments to 14 CCR §§ 914.6(d), 934.6(d), and 954.6(d) require that, when tethered operations are proposed in a Plan, an RPF is required to explain how the Tractor Roads used in those operations will be treated in order to minimize disturbance which could lead to soil loss. Slash packing may be an appropriate treatment for preserving water quality in certain applications, and it may be inappropriate in others. The adopted regulation requires professional evaluation of the on-site conditions and the development of a prescription to address those on-site conditions. Furthermore, there is no requirement that waterbreaks for tethered logging equipment be a uniform 100-feet apart, regardless of slope and soil sensitivity. Waterbreaks are required on all Tractor Roads, including those used in Tethered Operations, which do not have adequate natural drainage, drainage structures, or surface cover or woody debris to dissipate water flow and trap sediment to prevent soil loss per 14 CCR §§ 914.6(a), 934.6(a), and 954.6(a). When required, the maximum distances between waterbreaks varies from 50 feet to 300 feet based on slope and soil conditions (erosion hazard rating) per 14 CCR §§ 914.6(c), 934.6(c), and 954.6(c).

Rule Text Change: No.

Comment W4-4: Angela Wilson, Supervising Engineering Geologist, Forest Activities Program Manager, Central Valley Regional Water Quality Control Board

“Central Valley Water Board staff has been researching tethered logging operations and located studies of both the eight-wheeled-type as well as the type proposed in the draft amendments. Excluding the eight-wheeled studies significantly reduces the body of available research with which staff can evaluate the draft amendments for potential water quality effects.”

Board of Forestry and Fire Protection

Board Response: The regulatory action does not exclude or preclude the use of the eight-wheeled piece of equipment as described by the commenter and, as long as the equipment complied with the definition of “Tethered Operations” per 14 CCR § 895.1.

Rule Text Change: No.

Comment W4-5: Angela Wilson, Supervising Engineering Geologist, Forest Activities Program Manager, Central Valley Regional Water Quality Control Board

“It is the opinion of the Central Valley Water Board that monitoring studies should be conducted that fully investigate all types of tethered operations that would be allowable under the draft amendments prior to finalization of rule changes. Staff suggests pilot operations consistent with any proposed tethered harvesting equipment be conducted through the in-lieu practices already allowed under existing forest practice rules. Such pilot projects would serve to better inform rule makers of any potential negative effects that may arise from such equipment as well as ensure that unnecessary restrictions are not put in place.

Central Valley Water Board staff understand the importance of timely rule revisions to ensure state of the art logging methods are accessible in California. However, in the case of the synchronized and tethered logging operations described in the draft amendments, Central Valley Water Board staff have limited direct observations of the operations or their effects to rely on. When developing specifications for new rule language, we believe all parties would benefit from exposure to all equipment encompassed by the proposed rule language to assess their effects and evaluate necessary and appropriate restrictions.”

Board Response: Please see responses to W3-2 and W3-4 above.

Rule Text Change: No.

Comment W5-1: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“It is understood that the Board of Forestry Management Committee held a workshop on May 29, 2020 regarding the rule language in the Draft Tethered Operational Amendments rule making. The California Geological survey (CGS) participated with the recent workshop. It is further understood that the proposed rule language was discussed and reviewed in the May and June 2020 Joint Committee workshops. In the June 2020 full Board of Forestry meeting the rule language was recommended to be posted for a 45-day comment period.

CGS Comments:

- Public comment conducted during the joint committee workshops and during the full board meetings contained suggested proposed changes to the rule language. This memo is commenting on the rule language version that is posted on the Board of Forestry website in June 2020.
- CGS agrees that the tethered logging method, while new in California, appears to be an innovative method that could potentially allow a safer and more economically feasible method to conduct harvesting operations on steep slopes.
- CGS has participated in consultations of the tethered logging method in Sierra and

Board of Forestry and Fire Protection

Calaveras County during the spring and summer months of 2019 and 2020, and areas of proposed tethered logging in Humboldt County in 2020. During these consultations we observed that the method generally appears to have a “light touch” on slope ground surfaces and drainage. We did observe, in certain circumstances, some potential for disturbance that could possibly lead to the potential for surface erosion and fill failure.

a. Those circumstances are where an existing skid trail network must be crossed or traversed in order to access slopes. In those instances, it was observed that the outside edge of the skid trails were disturbed by the tethered equipment tracks.

b. We also observed that the method is sometimes conducted differently in different areas. For example, in one area the tethered equipment tracked on top of fallen trees (leading to less ground disturbance) and in other areas the equipment tracked on ground slope surfaces.

c. In some instances, we observed logs being skidded up the slopes behind the tethered forwarder due to an inability to effectively manipulate the logs onto the trailer, due to both size and inaccessible felling locations. This activity appeared to result in fairly defined linear furrows which would need to be effectively mitigated to prevent excessive erosion.

d. There appears to be a potential for downslope equipment paths to establish new hydrologic discharge points. This may occur where the linear downslope equipment path is dissecting a legacy skid/road surface that is hydrologically connected to a relatively large drainage area. These new discharge points may increase rates of erosion and potential sediment delivery if they are located in unfavorable geomorphic or geologic settings.

e. There were various discussions during our consultation about the steepness of slope where safe operations could occur, where soils saturation could affect the potential for conditions that could possibly cause future erosion, and where post-fire conditions should be considered in suitability for tethered logging operations.

f. Scientific literature findings would be a benefit if provided in the rule justification. For example, during our consultations we observed that Tethered Logging produces much slash to be left on the ground or within the unit. Has the effects of fuel loading and a possible increase in greenhouse gases (methane produced by degrading organics) been considered in the rule making? Has the Air Resources Control Board been included in this discussion?”

Board Response: The Board has noted CGS statements a though e. Regarding item f., existing regulations regarding that evaluation and analysis of greenhouse gas impacts, and wildfire risk and hazard impacts within 14 CCR §§ 912.9, 932.9m and 952.9 Appendix are applicable to proposed Tethered Operations as well as to traditional harvesting methods, as are other requirements for fuel treatments, such as those within 14 CCR §§ 917 *et seq.*, 937 *et seq.*, 957 *et seq.* The Board indeed notified several parties at the Air Resources Control Board about this rulemaking action as appropriate and required by the Administrative Procedure Act.

Rule Text Change: No.

Comment W5-2: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:

Board of Forestry and Fire Protection

914 (line 14) by minimizing disturbance that could lead to erosion and soil loss.”

Board Response: The term “soil loss”, as used within the Forest Practice Rules, can include many forms of the displacement of soil, including erosion, and is inclusive of erosion. Where specific erosion control measures are required, such as those identified within 14 CCR §§ 914.6, 934.6, and 954.6, the term erosion is used specifically.

Rule Text Change: No.

Comment W5-3: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:
914.2 (c) Existing tractor roads on slopes greater than 50 percent gradients that are proposed for re-use shall be identified.”

Board Response: A requirement that all Tractor Roads which are proposed for re-use on slopes greater than 50% would be overly burdensome to project proponents. Currently, those Tractor Roads which are proposed for use in exception to the limitations of 14 CCR §§ 914.2(f)(1)-(3), 934.2(f)(1)-(3), and 954.2(f)(1)-(3) are required to be flagged prior to a pre-harvest inspection or, when a pre-harvest inspection is not required, prior to the start of Timber Operations. These requirements are suitable and appropriate to provide for adequate resource protection and conformance with the Forest Practice Act.

Rule Text Change: No.

Comment W5-4: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:
914.2 (f) The following limitations apply:(1) Except for Tethered Operations, heavy equipment shall be prohibited where any of the following conditions are present:
*** (2) Ground-based Tethered Operations shall be prohibited on slopes steeper than 85%.”

Board Response: The requirements to ensure resource protection within this rulemaking action, as well as those within the balance of the Forest Practice Rules, are suitable and appropriate to provide adequate resource protection and conformance with the Forest Practice Act with regard to Tethered Operations.

Rule Text Change: No.

Comment W5-5: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:
914.2 (i) Where waterbreaks would not be effective at minimizing the potential for erosion and soil disturbance, other erosion controls shall be installed as needed.”

Board Response: The Board finds that retention of the existing language is suitable and appropriate here.

Board of Forestry and Fire Protection

Rule Text Change: Yes, existing rule language has been retained within 14 CCR §§ 912.6(i), 934.2(i), and 954.2(i).

Comment W5-6: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:
914.6 c Waterbreaks shall be constructed concurrently with the construction of firebreaks.

Skid trails, slopes and paths upon which Tethered Operations are conducted that are furrowed or disturbed in such a way that the potential for soil disturbance can lead to erosion, fill failure and sediment delivery, shall contain erosion control measures. Because tethered equipment does not necessarily contain the ability to mechanically construct waterbreaks and because use of non-tethered heavy equipment that can mechanically construct waterbreaks could lead to additional and unnecessary disturbance, waterbreaks or other erosion control measures shall be constructed via hand labor, or be packed with Slash or other vegetative material concurrently with Timber Operations in a manner which minimizes the potential for soil disturbance and erosion from those Tethered Operations and achieves the goals of 14 CCR § 914[934, 954].”

Board Response: Please see response to Comment W4-3.

Rule Text Change: No

Comment W5-7: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“Specifically, we recommend the following rule language changes or additions:
914.7 (c) In lieu of a winter period operating plan, the RPF can specify the following measures in the THP:

(1) All Tractor Yarding Operations (including Non-tethered and Tethered Operations) or the use of tractors for constructing Logging Roads, Landings, Watercourse crossings, layouts, firebreaks or other tractor roads shall be done only during dry, rainless periods and shall not be conducted on saturated soil conditions that may produce significant sediment discharge.”

Board Response: Tethered Operations are defined per 14 CCR § 895.1 as a subset of Tractor Operations. The use of the term “Tractor Operations” within 14 CCR § 914.7(c)(1) is inclusive of Tethered Operations and to introduce a distinction with that regard in this section would not add to the clarity of the regulations.

Rule Text Change: No

Comment W5-8: David Longstreth, Senior Engineering Geologist, Department of Conservation

“We recommend consideration of the following concerns:

1). Mapping Requirements

Mapping of both, the planned tethered equipment access routes (or areas that are not favorable) and existing linear features to be impacted could aid in the identification and

Board of Forestry and Fire Protection

assessment of the level of risk associated with the potential hydrologic and slope impacts.

Potentially impacted linear features to be mapped within proposed Tethered Logging units may include:

- g. Confined legacy skids, landings, and roads to be intercepted by Tethered Logging pathways. Particularly alignments that have not been disconnected via modern Forest Practice Rules waterbreak standards.
- h. Class IV alignments
- i. Swales
- j. Planned Tethered Logging access routes, both downslope and lateral.
- k. Unstable areas and landslides.”

Board Response: Please see response to Comment W4-2 above. Additionally, Cumulative Impact Analysis pursuant to 14 CCR §§ 912.9, 932.9, and 952.9, as appropriate, requires an evaluation of potential environmental impacts, and is suitable and appropriate to assess impacts associated with Timber Operations. Furthermore, various mapping requirements which exist relative to specific permitting mechanisms for Timber Operations have suitable mapping requirements. Where necessary, the Board requires disclosure of harvesting/yarding systems and those sections have been updated where necessary to reflect the inclusion of Tethered Operations.

Rule Text Change: No

Comment W5-9: David Longstreth, Senior Engineering Geologist, Department of Conservation

“We recommend consideration of the following concerns:

2). Post-Fire Conditions.

The application of tethered logging in post-fire settings should be addressed specifically. We suggest that there needs to be some consideration for burn severity. We discussed during one of our pre-consultations that depending on the severity of the burn, there may not be enough slash present to sufficiently mulch the tether pathways.”

Board Response: Please see response to Comments W3-2 above, W4-3, and W5-8 above.

Rule Text Change: No

Comment W5-9: David Longstreth, Senior Engineering Geologist, Department of Conservation

“We recommend consideration of the following concerns:

3). Need for monitoring, science review and a sunset date.

We recommend that a monitoring program in conjunction with a science review be conducted before adoption of the rule package.

Are there scientific concerns or data that could and should be included in the rule justification? For example, because the Tethered Logging method utilizes a changed silvicultural method, should the way greenhouse gases are calculated be updated to accommodate for these changes? We think answering questions such as these would be a benefit to the rule justification.

Board of Forestry and Fire Protection

We note that our observations have only occurred during the dry spring and summer months of 2019 and 2020 and we therefore do not have the observational knowledge of what effects the tethered logging method may hold following several years of wet winters. CGS would like to be involved in some sort of interagency monitoring and scientific review of the tethered logging method that is conducted over several seasons in order to document the effects of winter rains.

It is understood that it is unlikely a monitoring program would be incorporated into the rule making language. As such we recommend that a sunset date be included in the rule making language (if adopted without monitoring or science review) such that any observations or research gained from a monitoring and scientific review effort could be introduced and incorporated into a revised rule plead after the sunset date.”

Board Response: Tethered Operations do not affect silviculture methods but are instead a means by which to conduct Timber Operations in order to achieve a desired silvicultural outcome. These regulations, and the Tethered Operations they describe, do not seek to modify existing silvicultural methods within the Forest Practice Rules. Additionally, please see response to Comments W3-4 and W3-5 above.

Rule Text Change: No

<p style="text-align: center;">VERBAL COMMENTS RECEIVED DURING THE PUBLIC HEARING CONDUCTED AUGUST 19, 2020</p>

Comment S1-1: Elliot Chasin, California Department of Fish and Wildlife:

Expressed that CDFW is concerned that the changes do not allow for a data-driven examination of the environmental impacts on steep slopes, particularly as some of the supportive science is from international locations such as New Zealand, and that some caution is warranted as we proceed. They recommend that 1) there be public demonstrations of tethered logging operations on the coast and in the interior, 2) that steep slope tethered logging operations be prohibited in exemption and emergency plans until a pilot study is completed, 3) that a multi-agency monitoring effort be included in the rule package following the pilot study, and 4) that a sunset date for the rule package be included to allow for incorporation of the findings from the pilot study and the subsequent monitoring effort.

Board Response: Please see responses to Comments W3-1 through W3-5 above.

Rule Text Change: No.

Comment S2-1: George Gentry, California Forestry Association:

Requested that as the Board moves forward with these regulations that the Board not forget about potentially using this technology in the future for the Emergency Fuel Hazard Reduction rule or the Forest Fire Prevention Pilot Project. Slope limitations contained in these rules currently prohibit the use of steep slope tethered logging operations and this should potentially be reconsidered in the future as the rule and the technology mature. He also commented that he has some confusion over the regulation itself regarding the section at the bottom of page three, line 18 where there

Board of Forestry and Fire Protection

is a clear exception for tethered operations on steep slopes (the interpreted intent being that tethered operations could be used on steep slopes). However, on page four, line 21, there is potentially a perceived limitation of tethered operations over 50% and he asked for clarification on these rule sections.

Board Response: 14 CCR §§ 914.2(f)(5), 934.2(f)(5), and 954.2(f)(5) have been revised to address the lack of clarity within this provision. As amended, Tethered Operations, excluding yarding (as defined by 14 CCR § 895.1), are permitted on all slopes in areas designated for Cable Yarding, but non-Tethered Operations are limited to slopes of less than fifty percent.

Rule Text Change: Yes. See revised 14 CCR §§ 914.2(f)(5), 934.2(f)(5), and 954.2(f)(5).

Comment S3-1: Dave Fowler, North Coast Regional Water Quality Control Board

The regional waterboard supports the exploration and evaluation of new technologies but are concerned by the lack of data presented regarding the impacts of tethered logging. Limited studies have been conducted elsewhere, but none in the California timberland ecosystem. They are concerned that the evidence of minimal impacts is incomplete and that the rule text gives little direction to govern tethered operations. Slash packing of tethered corridors is critical for tethered operations and they recommend that this be included as a requirement in the rule text. They also have concerns that tethered operations could be allowed on emergencies or exemptions. The regional board recommends that the Board reconsider approval at this time to allow for monitoring studies within California on tethered logging operations. They also recommend that the rule text contain required erosion control measures such as slash packing. Finally, they recommend that the rule text contain a sunset date to allow for future revisions following additional science.

Board Response: Please see response to comments W3-1, W3-3, W3-5, W4-1, AND W4-3.

Rule Text Change: No.

Comment S4-1: Jonathan Meurer, Central Valley Regional Waterboard

The Central Valley board feels that there are potential benefits to be gained from the use of this technology. They appreciate the opportunities to observe tethered operations and have found that the post-harvest soil disturbance levels were favorable. They have found that controlled driving speed and winch speed were responsible for much of the favorable results and are concerned that these are not required features in tethered logging operations in the rule text. They are also concerned that slash packing is not required in the rule text. Additionally, lack of science in California and on the particular machines they have seen operating in California make it impossible for the waterboards to predict water quality impacts from tethered operations. The Central Valley board feels that studies should be conducted and results made available on all of the proposed equipment that could be used under the proposed rule text prior to approval.

Board of Forestry and Fire Protection

Board Response: Please see response to comments W4-3, W4-3, W3-1, W4-1, W4-2.

Rule Text Change: No.

Comment S5-1: Jacob Lee, California Geological Survey.

CGS agrees that this is a viable logging method and has participated in many consultations in Humboldt county. Observations of operations indicate minimal impacts on the ground, but there is a risk of slope failure in areas where legacy skid trails already exist. They have also noticed that there is variety in the types of equipment that fall under “tethered equipment”. They recommend that existing tractor roads over 50% that are proposed for reuse be identified and that limitations be added on the slope steepness possible for tethered operations (85%). They also recommend that the redacted statement on water bar applications be reinstated and that language be added regarding erosion control measures wherever disturbance is noted. They additionally commented that they would like to add language clarifying that tethered operations should be treated the same as tractor operations during winter weather. CGS also recommends mapping planned logging routes, legacy skid trails, swales, and ditches that may be traversed during operations. Finally, CGS recommends reevaluating the use of this technology in a post-fire environment and concurred with CDFW and the Regional Waterboards regarding a sunset date for the regulations.

Board Response: Please see response to Comments W3-2, W3-5, W4-2, W4-3, W5-3, W5-4, W5-5, W5-6, W5-7, and W5-8.

Rule Text Change: No.

Comment S6-1: Cedric Twight, Sierra Pacific Industries.

Sierra Pacific Industries is in favor of this rule package. He recommends restoring section 914.2(i) regarding an open-ended call for erosion control where needed. He also commented that there are other built-in protections for water quality in the rule text and that trees will be limbed onsite providing additional protection. Finally, he agreed that additional research could be useful, but that it is important that this technology could provide additional capacity to respond to catastrophic wildfire.

Board Response: The Board appreciates the support of Sierra Pacific Industries and has retained language within 14 CCR §§ 914.2(i), 934.2(i), and 954.2(i).

Rule Text Change: Yes, see retained language within 14 CCR §§ 914.2(i), 934.2(i), and 954.2(i).

Comment S7-1: Gary Rynearson, Green Diamond Resource Company.

Looks forward to hearing a response to George Gentry’s question as well regarding page four, line 21 of the rule text. He commented that item (5) may need to be modified to allow tethered feller-bunchers within cable areas because they are defined as a tractor operation within a cable area. He commented that tractor operations are defined as including shovel yarding, tethered cut-to-length operations, and all feller-buncher operations including tethered and non-tethered (typically tree-length

Board of Forestry and Fire Protection

operations as opposed to cut-to-length)

Board Response: See response to comment S2-1 above.

Rule Text Change: Yes. See revised 14 CCR §§ 914.2(f)(5), 934.2(f)(5), and 954.2(f)(5).

Comment S7-2: Gary Rynearson, Green Diamond Resource Company.

He also wanted to emphasize that the slash packing during shovel operations works well, but it would not work with cable operations and that these operations already have requirements for erosion control. He is also concerned about the comment regarding prevention of operations during the winter months. Green Diamond has provided a study to the Board supporting the use of this technology and showing minimal impacts.

Board Response: See response to comment W4-3 above.

Rule Text Change: No.

Comment S7-2: Gary Rynearson, Green Diamond Resource Company.

CAL FIRE is in support of the package if their provided edits are made. CAL FIRE has outlined their concerns at every meeting to date. He notes that he agrees with Cedric's suggestion of reincorporating section 914.2(i). CAL FIRE does not support the idea of sunset date because the Board always has the opportunity to revisit rules including during the annual regulatory review period.

Board Response: See response to comments W2-1 through W2-11, and S6-1.

Rule Text Change: Yes, see retained language within 14 CCR §§ 914.2(i), 934.2(i), and 954.2(i).

<p>WRITTEN COMMENTS RECEIVED DURING THE 15-DAY NOTIFICATION PERIOD FROM AUGUST 27, 2020 THROUGH SEPTEMBER 11, 2020</p>

Comment S7-1: Helge Eng, Deputy Director, Resource Management, CAL FIRE.

The California Department of Forestry and Fire Protection (CAL FIRE) has reviewed the proposal in the 15-day Notice for modifications of the 45-day Noticed text for Tethered Operation Amendments, 2020, circulated on August 27, 2020. This comment letter addresses the proposed changes presented in the 15-day Notice, which will be discussed at the Board's public hearing scheduled for September 23, 2020.

The rule package proposes to amend existing rule language pertaining to harvesting practices and erosion control for tractor and cable operations, as well as add language for tethered logging operations. CAL FIRE supports the passage of the Tethered Operation Amendments, 2020 rule package as amended by the 15-day Notice. The Department appreciates the Board's consideration and incorporation of nearly all

Board of Forestry and Fire Protection

suggested rule text amendments contained in our letter dated August 14, 2020. As stated in that previous letter, CAL FIRE is supportive of tethered logging operations and their use in California because the Department's literature review suggests that while the potential impacts from tethered falling and yarding are slightly greater than cable yarding, they are less than that associated with steep tractor logging. CAL FIRE encourages tethered logging operations in this state as a way to reduce the potential impacts associated with steep tractor logging.

Board Response: The Board appreciates the support of the Department.

Rule Text Change: No.

Comment S8-1: Eric Carleson, Executive Director, Associated California Loggers.

Associated California Loggers ("ACL") represents the logging companies, log trucking companies, and log road building companies in California. Our members are on the front lines of the current emergency in California that encompasses wildfires, dead and dying trees, and the need to protect human lives, animals, homes, and habitat.

It is unfortunately against this backdrop that ACL offers to the Board of Forestry its support of the proposed "Tethered Operation Amendments" during the 15-day comment period. You are here looking at regulations - both existing (re-codified) and new - which, if passed as recently amended, will offer both the timber industry and California government more tools to reverse the tide of catastrophic wildfire. In addition, tethered operations as currently formulated will provide up-to-date improvements to timber harvesting and thinning that should be welcome for environmental reasons, as well.

ACL has followed the development of these regulations over the past year and through the earlier comment period. We are in support of the regulations as currently developed. Our membership and other Licensed Timber Operators are eager for these regulations for at least two reasons:

ONE: Our contractors will perform these tethered operations and will be the "first level" of guaranteeing performance in the woods.

TWO: Our contractors are the ones who must take the financial risk of purchasing tethered operations equipment and thus want to have a solid code of regulatory direction and permission, before proceeding with such expensive purchases.

There is also this relevant aspect of the situation: firefighters can find steep slopes to be treacherous terrain upon which to fight wildfires; if we are able to make those slopes less prone to fire, we will be helping those responders stay safe.

The timber industry- worldwide in such countries as New Zealand, and in the American Northwest - consider tethered operations to have developed so as to use technology and innovation to mechanize steep slope operations as rarely, if ever, possible before. Tethered logging systems utilize cable winch systems on harvesters, feller bunchers, forwarders, loaders, and skidders to stabilize and assist equipment operations on steep slopes. The cable system allows the equipment to operate on

Board of Forestry and Fire Protection

steep slopes that would normally be considered unsafe for equipment, or damaging to soils.

We believe that now is the time for California to join this worldwide trend and to provide the regulatory foundation for this advance in harvesting and fire prevention.

Please approve these amendments and place these regulations into code.

Board Response: The Board appreciates the support of Associated California Loggers.

Rule Text Change: No.

Comment S8-1: Eric Carleson, Executive Director, Associated California Loggers.

Associated California Loggers ("ACL") represents the logging companies, log trucking companies, and log road building companies in California. Our members are on the front lines of the current emergency in California that encompasses wildfires, dead and dying trees, and the need to protect human lives, animals, homes, and habitat.

It is unfortunately against this backdrop that ACL offers to the Board of Forestry its support of the proposed "Tethered Operation Amendments" during the 15-day comment period. You are here looking at regulations - both existing (re-codified) and new - which, if passed as recently amended, will offer both the timber industry and California government more tools to reverse the tide of catastrophic wildfire. In addition, tethered operations as currently formulated will provide up-to-date improvements to timber harvesting and thinning that should be welcome for environmental reasons, as well.

ACL has followed the development of these regulations over the past year and through the earlier comment period. We are in support of the regulations as currently developed. Our membership and other Licensed Timber Operators are eager for these regulations for at least two reasons:

ONE: Our contractors will perform these tethered operations and will be the "first level" of guaranteeing performance in the woods.

TWO: Our contractors are the ones who must take the financial risk of purchasing tethered operations equipment and thus want to have a solid code of regulatory direction and permission, before proceeding with such expensive purchases.

There is also this relevant aspect of the situation: firefighters can find steep slopes to be treacherous terrain upon which to fight wildfires; if we are able to make those slopes less prone to fire, we will be helping those responders stay safe.

The timber industry- worldwide in such countries as New Zealand, and in the American Northwest - consider tethered operations to have developed so as to use technology and innovation to mechanize steep slope operations as rarely, if ever, possible before. Tethered logging systems utilize cable winch systems on harvesters, feller bunchers, forwarders, loaders, and skidders to stabilize and assist equipment

Board of Forestry and Fire Protection

operations on steep slopes. The cable system allows the equipment to operate on steep slopes that would normally be considered unsafe for equipment, or damaging to soils.

We believe that now is the time for California to join this worldwide trend and to provide the regulatory foundation for this advance in harvesting and fire prevention.

Please approve these amendments and place these regulations into code.

Board Response: The Board appreciates the support of Associated California Loggers.

Rule Text Change: No.

Comment S9: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

[Note about Comment S9: This comment represents a modified version of the comment submitted in regards to the 45-Day Noticed Rule Text and the majority of the comments within this comment are not related to the 15-Day Noticed changes. Previous comments have been responded to and can be found in response to Comments W5-1 through W5-9 and will not receive response here.]

Comment S9-1: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“1. We recommend the tethered logging rule language be applied to all timber harvest activities - THPs, NTMPs, PTHPs, Emergencies, and Exemptions”

Board Response: This comment is not substantively related to the changes to the rule text which were noticed for 15-Days, beginning August 27, 2020.

Rule Text Change: No.

Comment S9-1: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“2. Additionally, we recommend the following rule language changes or additions:

914 (line 14) by minimizing disturbance that could lead to erosion and soil loss.

914.2 (c) Existing tractor roads on slopes greater than 50 percent gradients that are proposed for re-use shall be identified.

914.2 (f) The following limitations apply:

(1) Except for Tethered Operations, heavy equipment shall be prohibited where any of the following conditions are present:

(A) Slopes steeper than 65%

(B) Slopes steeper than 50% where the Erosion Hazard Rating is high or extreme

(2) Ground-based Tethered Operations shall be prohibited on slopes steeper than 85%.

914.7 (c) In lieu of a winter period operating plan, the RPF can specify the following measures in the THP:

(1) All Tractor Yarding Operations (including Non-tethered and Tethered Operations) or the use of tractors for constructing Logging Roads, Landings, Watercourse

Board of Forestry and Fire Protection

crossings, layouts, firebreaks or other tractor roads shall be done only during dry, rainless periods and shall not be conducted on saturated soil conditions that may produce significant sediment discharge.

1034, 1038, 1090, 1092 Mapping Requirements

Mapping of both, the planned tethered equipment access routes (or areas that are not favorable) and existing linear features to be impacted would aid in the identification and assessment of the level of risk associated with the potential hydrologic and slope impacts.

Potentially impacted linear features shall be mapped within proposed Tethered

Logging units may include:

g. Confined legacy skids, landings, and roads to be intercepted by Tethered Logging pathways. Particularly alignments that have not been disconnected via modern Forest Practice Rules waterbreak standards.

h. Class IV alignments

i. Swales

j. Planned Tethered Logging access routes, both downslope and lateral.

k. Unstable areas and landslides.”

Board Response: This comment is not substantively related to the changes to the rule text which were noticed for 15-Days, beginning August 27, 2020.

Rule Text Change: No.

Comment S9-1: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“3. Post-Fire Conditions.

The application of tethered logging in post-fire settings should be addressed specifically. We suggest that there needs to be some consideration for burn severity. We discussed during one of our pre-consultations that depending on the severity of the burn, there may not be enough slash present to sufficiently mulch the tether pathways. Therefore, Tethered Operations should not be conducted where adequate slash or erosion control materials are not present.”

Board Response: This comment is not substantively related to the changes to the rule text which were noticed for 15-Days, beginning August 27, 2020.

Rule Text Change: No.

Comment S9-1: David Longstreth, Senior Engineering Geologist, Department of Conservation, California Geological Survey

“4. Need for systematic study of over wintering effects of tethered logging operations on steep slopes.

We understand that there have been several tethered logging operations that have already occurred. We assume these were performed under an exemption from cable logging. There has been no post-winter study of the effects that these operations. Since it appears that tethered logging on steep slopes is ongoing and can proceed without a rule package, we see no reason why acceptance of the rule package must be fast tracked without an opportunity to study the effects that rain and winter storms may have on the operation areas. Therefore, it is our opinion that the rule package

Board of Forestry and Fire Protection

should not be finalized until the long-term performance of such operations are more fully evaluated.

Any observations or research gained from future observations and/or scientific review effort should be introduced and incorporated into a revised rule plead based on those findings.”

Board Response: This comment is not substantively related to the changes to the rule text which were noticed for 15-Days, beginning August 27, 2020.

Rule Text Change: No.