

Restrict logging on steep slopes

PROBLEM

At least as early as 1950 scientists have connected logging on steep slopes with increased rates of landslides;¹ and by 1970 the construction of logging roads, clearcutting and high rates of logging on sloping terrain had been linked with accelerated soil erosion²— a factor known to increase the frequency of floods, landslides, debris avalanches and debris torrents on slopes.³ These events have been known to start on slopes as low as 15 degrees; accordingly, ‘steep slopes’ in this paper refers to hillsides 27 percent (15 degrees)⁴ and greater.⁵

The more an area is subject to timber harvesting and the steeper the slopes on which the timber is harvested, the greater the likelihood that the above-mentioned events will occur.⁶

¹ R.M. Rice & N.H. Pillsbury & K.W. Schmidt, “A Risk Analysis Approach for Using Discriminant Functions to Manage Logging-Related Landslides on Granitic Terrain”, *Forest Sci.*, Vol. 31, No. 3, 1985, pp. 772-784 (showing that landslides occurred with greater frequency in second-growth timber than old-growth timber).

² R.M. Rice & N.H. Pillsbury, “Predicting Landslides in Clearcut Patches”, *Recent Developments in the Explanation and Prediction of Erosion and Sediment Yield*, AHS Publ. no. 137.

³ David J. Furbish & Raymond M Rice, “Predicting Landslides Related to Clearcut Logging, Northwestern California, U.S.A.” *Mountain Research and Development*, Vol. 3, No. 3, 1983, pp. 253-259, available at <http://www.fs.fed.us/psw/publications/rice/Furbish.pdf> (stating that “[L]andslides of the debris-avalanche type frequently occur after clearcutting of steep hillslopes because soil-regolith is lost as a result of root decay.” This article cites “Fujiwara, 1970; Burroughs and Thomas, 1977; Ziemer, 1981); see also http://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/palco/item12_isrp_report.pdf (providing the following studies: Furbish and Rice, 1983; Sidle et al., 1985; Pyles et al., 1998; Montgomery et al., 2000; Sidle and Wu, 2001); see also <http://www.cnn.com/WORLD/asiapcf/9808/23/china.floods.01/index.html>.

⁴ See online conversion tables: <http://www.greenbeltconsulting.com/articles/relationships.html>;
<http://www.friendlyrobotics.com/cservice/faqs/?kb=4>;
<http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks2ae.htm>

⁵ See http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_33/Pages/index.aspx; see also Bobrowsky, Peter T., *Geoenvironmental Mapping: Methods, Theory and Practice*, Taylor & Francis 2002, p. 14 (stating that slopes greater than 15 degrees “can be expected to fail locally when adversely modified” and classifying slopes steeper than 15 degrees “Generally Susceptible.”).

⁶ R.M. Rice, “Identifying Unstable Sites on Logging Roads”, Pacific Southwest Forest and Range Experiment State Forest Service, U.S. Department of Agriculture, Arcata, California, available at <http://www.fs.fed.us/psw/rsl/projects/water/Rice86.pdf>; <http://whyfiles.org/107flood/3.html>; see also http://www.all-science-fair-projects.com/science_fair_projects/25/301/d0de88f78411a2cf3e75615858b4fa2d.html (study of Washington and Oregon slopes.); see also Jones, J. A., and G. E. Grant (1996), Peak Flow Responses to Clear-Cutting and Roads in Small and Large Basins, *Western Cascades, Oregon, Water Resource. Res.*, 32(4), 959–974 (a study done by Gordon Grant, a hydrologist with the US Forest Service's Pacific Research Station in Corvallis, OR

A 2003 report commissioned by the North Coast Regional Water Quality Control Board (NCRWQCB) confirmed this link.⁷ California's North Coast is particularly susceptible to floods and landslides from timber operations because of its moist and hilly environment. The NCRWQCB found that "the increase in landsliding is generally attributed to a combination of increased soil moisture and reduced root strength [from timber harvesting]" and that: 1) logging increases the likelihood of landslides on slopes already vulnerable from rain saturation, and 2) timber operations extend the period (winter rainy season) that moist hillsides are most susceptible to landslides.⁸ The NCRWQCB asserts that landslide risks from timber operations on slopes are not only created by clearcutting, but also through selective harvesting silvicultural methods.⁹

The FPRs and BOF's Treatment of Logging on Steep Slopes

The FPRs contain a section that outlines statutory goals— one of which is to minimize soil erosion.¹⁰ This goal is particularly relevant for timber operations on steep slopes because of

and Julie Jones of Oregon State University, published in the April 1996 issue of Water Resources Research, the Journal of the American Geophysical Union, available at <http://www.agu.org/pubs/crossref/1996/95WR03493.shtml>).

⁷ See <http://query.nytimes.com/gst/fullpage.html?res=9505E1DE1231F937A25752C0A9659C8B63>

⁸ See

http://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/palco/item12_isrp_report.pdf

⁹ See

http://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/palco/item12_isrp_report.pdf (referencing Pacific Watershed Associates, 1998 in support of its statement.)

¹⁰ 14 CCR § 914. "Timber operations shall be conducted to: meet the goal of maximum sustained production of high quality timber products; minimize breakage of merchantable timber; prevent unreasonable damage to residual trees, fish and wildlife habitat as identified in the THP, or contained in the rules, reproduction, and riparian vegetation; prevent degradation of the quality and beneficial uses of water; and maintain site productivity by minimizing soil loss."

higher rates of soil erosion occurring there. When CDF evaluates whether a THP meets the statutory goals listed in the FPR, minimizing soil erosion is one goal that is considered.¹¹ However, the elevated risk of soil erosion when logging occurs on steep slopes is not adequately accounted for; the FPRs do not require every timber operation to demonstrate that each of the stated goals is being furthered. Rather, the FPRs broadly require timber operations to “be conducted to” meet the listed goals. Failing to require that *each* goal for timber operations be met allows CDF to conduct a cursory review in determining whether the FPR goals are *generally* being advanced— regardless of whether elevated threats of soil erosion exist.

Construction of New Logging Roads

The FPRs require all logging roads and landings to be constructed: 1) in a way that is consistent with long-term enhancement and maintenance of the forest resource; 2) appropriately balances economic feasibility and the most suitable yarding systems; 3) minimizes damage to soil resources and fish and wildlife habitat; and 4) prevents the degradation of the quality and beneficial uses of water.”¹² New logging roads cannot be constructed “through slide areas” or areas with visible instability if there are alternatives available.¹³ Use of existing logging roads is encouraged in the FPRs,¹⁴ but CDF is required to grant an exception to any new road construction requirement when “site-specific measures to minimize slope instability due to construction are described and justified in the THP.”¹⁵ Given the significant landslide, erosion

¹¹ 14 CCR § 914.

¹² 14 CCR § 923.

¹³ 14 CCR § 921.5(b)(3).

¹⁴ 14 CCR § 923

¹⁵ 14 CA ADC § 923.1(c),(d); 14 CCR § 923.2 (generally); 4 CCR § 923.5 (stating that CDF is also required by the FPRs to make the same exceptions for construction of new landings).

and sedimentation risks posed by the construction of logging roads, the FPRs do not adequately regulate how and when logging roads are constructed on sloped terrain.

Threats to Property and Communities

By increasing the likelihood of landslides and floods, timber harvesting on steep slopes poses significant risks to property and human safety. Landslides and floods destroy homes and threaten communities. One of the worst landslides in modern California history occurred on January 1, 1997, near the town of Stafford in Humboldt County.¹⁶ The Stafford slide was the result of one storm that caused two separate landslides.¹⁷ The storm destroyed seven homes and damaged many others.¹⁸ The hillsides surrounding Stafford were severely clearcut four years previous to the slide, prompting local homeowners to sue MAXXAM Corp. (then the parent corporation of Pacific Lumber Co.) for damages caused by the landslide. Although Pacific Lumber settled this lawsuit, some of the original claims in the lawsuit were dismissed by the judge under the reasoning that Pacific Lumber could not be held accountable for the damages of the clearcutting as part of a state-approved THP.¹⁹ This legal reasoning— that a corporation cannot be held liable for damages arising out of conduct that state authorities issued a permit for — is one of the reasons why the rules governing logging activities on steep slopes need to be strengthened.

The reasoning employed by the Stafford court rests upon the legal notion that when an administrative process has been created by the legislature to address and evaluate the potential hazards of a project, once the proposed project goes through the rigor of the review process and

¹⁶ See ftp://ftp.consrv.ca.gov/pub/dmg/thp/documents/thp_review/20080530/1-08-047.pdf

¹⁷ See http://www.forester.net/ec_0107_biotech.html

¹⁸ See <http://houston.indymedia.org/news/2003/04/11161.php>

¹⁹ See <http://www.northcoastjournal.com/051100/news0511.html>

is approved— as long as the project is carried out according to the terms of the review process— the party carrying out the project cannot be liable for any damages resulting from the project because it is assumed that the potential for any damage was fully contemplated in the review process.

Essentially, an RPF is exonerated from liability for damages resulting from his or her approved timber harvesting projects because the likelihood and magnitude of those damages are assumed to have been addressed in the foregoing THP review process. This reasoning relies on the strength and capacity of the FPRs governing timber practices on steep slopes to weed out THPs with potentially destructive impacts on the environment and surrounding communities. Excessive judicial deference with regard to the capacity of the THP review process to protect the public from dangerous logging projects illustrates the need for the FPRs to be strengthened.

Threats to the Environment and Water Quality

When water boards review THPs, the sloped topography of the proposed harvest area and potential contributions of silt and sediment to nearby waterways are often discussed.²⁰ Polluted runoff from logging operations thwarts water quality control efforts and sedimentation muddies drinking water. When logging occurs on steep slopes, these impacts are exacerbated due to greater volumes of pollutants, including but not limited to sediment and herbicides flowing off logged slopes. Because logging on slopes elevates sedimentation risks to nearby watercourses, the FPRs require RPFs to designate “equipment limitation zones” to create a buffer between

²⁰ See <http://www.care2.com/c2c/groups/disc.html?gpp=723&pst=52524>; see also http://lomaprieta.sierraclub.org/lp0203_ClearCutting.html

streams and logging equipment use.²¹ The FPRs also require steep slopes and impacts on watersheds to be considered in determining whether a watershed is classified as a “sensitive watershed,” thereby requiring the development of mitigation strategies.²² This shows that FPA, BOF and the FPRs recognize the heightened risks of mass wasting, but fail to require sufficient scrutiny in addressing these heightened risks.

SOLUTION

The FPA and FPRs need to account for the elevated risks of erosion, sedimentation and landslides and floods associated with steep-slope logging operations. Forest Forever’s proposal for stricter rules governing logging on steep slopes is grounded in the fact that the FPRs already recognize heightened environmental risks from timber harvesting on steep slopes but do not go far enough in protecting against those risks.²³

Requiring All Statutory Goals to be Met Before a THP is Approved

Forests Forever’s proposed legislation would amend 14 CCR § 914 – the section that lists the FPR’s goals– to require that a timber operation meet *each* goal set out in 14 CCR § 914, including the minimization of soil erosion.²⁴ Because section 914 treats the totality of the goals as the standard to be applied, the individual goals listed are not considered separately. If the goal

²¹ 14 CCR § 916.4(c)(1) (this rule requires RPF to “designate in the THP an equipment limitation zone (ELZ) of at least 25 feet where sideslope steepness is less than 30% and at least 50 feet where sideslope steepness is 30% or greater unless explained and justified otherwise in the THP and approved by the director.”).

²² 14 CCR § 916.8

²³ 14 CCR § 915.2(b) (such as this section that prohibits the broadcast burning of organic debris that retains soil on slopes); 14 CCR § 914.2 (d) (such as this section that describes special rules to account for the increased risk of logging on slopes with heavy equipment) the use of heavy equipment for logging on unstable slopes; but if unavoidable, RPFs are permitted to do so only after “develop[ing] specific measures to minimize the effect of operations on slope instability.”); Cal. Admin. Code tit. 14, Appendix (such as Technical Rule Addendum # 2: cumulative impact assessments conducted by RPFs must, when considering sediment production potential, take into account “[S]ites which are tractor logged on steep slopes.”).

²⁴ 14 CCR § 914

of minimizing of soil erosion were evaluated individually, then the heightened risks of soil erosion when logging occurs on steep slopes would have to be addressed individually.

Additionally, the manner in which section 914 is evaluated affects other important sections in the FPRs. The FPRs require “waterbreaks” to be installed on slopes (to prevent soil erosion and slope instability) according to the standard set forth in section 914.²⁵ Giving due consideration to the goal of minimizing soil erosion would also impact the way these “waterbreaks” are constructed and maintained.

Greater Oversight on the Construction of New Logging Roads on Steep Slopes

Forests Forever’s legislative proposal should include stronger restrictions on the construction of logging roads on potentially unstable slopes. By using the word “shall”, section 923.1(c) of the FPRs requires CDF to permit RPFs to construct logging roads on “unstable areas” when an RPF demonstrates that site-specific measures have minimized slopes instability.²⁶ Forest Forever’s proposed bill would replace the word “shall” with “may” to provide CDF with more discretion to evaluate whether the construction of a logging road would destabilize a slope.

Clearcutting on Steep Slopes

In general, clearcutting is restricted to ten acres in size, which would include steeply sloped areas.²⁷ However, under certain circumstances, RPFs are permitted to clearcut up to forty acres.²⁸ Forest Forever’s bill proposal would restrict CDF’s ability to permit clearcutting on steep slopes to a maximum of ten acres.

²⁵ 14 CCR § 914.6(h)

²⁶ 14 CCR § 923.1

²⁷ 14 CCR § 913.8(d)(1); 14 CA ADC § 921.3 (limiting clearcuts to 10 acres).

²⁸ 14 CCR §§ 913.1, 933.1, 953.1

Stronger Guidelines for CDF when Proposing Mitigated Negative Declarations

When CDF receives input from other agencies or from public comments addressing a THP's potentially dangerous environmental impacts, instead of rejecting the THP, CDF often addresses these threats by issuing a mitigated negative declaration (MND).²⁹ Limiting logging on steep slopes is a strategy that CDF often includes in its MNDs when it determines that the proposed timber operations threaten to cause floods or landslides.³⁰ Forests Forever's legislative proposal would require CDF to *prohibit* timber operations on steep slopes through CDF's MNDs when the multi-agency review team or public comments raise mass wasting concerns in response to THPs for steeply sloped areas.

Stronger Restrictions on Logging on Slopes Would Not Necessarily Increase Pressure on Flat Land Timber Resources

The concern has been expressed that greater restrictions on logging on steep slopes could bring more timber-production pressure to flatlands. Flatlands frequently encompass the most productive timberlands, as well as adjoining environmentally sensitive waterbodies and other areas. This potential problem can be addressed by coupling new restrictions on logging on steep slopes with a reiteration of other existing rules protecting sensitive waterbodies, habitats and other environmental (as well as archaeological, cultural and historical) areas that already enjoy a degree of protection under various sections in the FPA and FPRs. Timber companies may search for substitute lands to log when steeply sloped areas become unavailable or come under greater restrictions, but this need not necessarily equate to a relaxing of the regulatory process in other

²⁹ See Sierra Club v. California Dept. of Forestry and Fire Protection, 150 Cal.App.4th 370, 376 (2007).

³⁰ See Sierra Club v. California Dept. of Forestry and Fire Protection, 150 Cal.App.4th 370, 376 (2007); see also Libeu v. Johnson, 240 Cal.Rptr. 776, 778 (1987).

areas. Our proposed language should include such a reaffirmation or reiteration of existing rules and intent (e.g. protecting the beneficial uses of water).

As they exist now, the FPRs do not adequately address the heightened risk of floods, landslides, excess sedimentation and soil erosion and water quality impacts that logging on steep slopes presents.³¹ Silvicultural methods known to cause root decay (that removes underlying soil support), soil erosion and slope destabilization must be isolated and addressed in the FPRs. Forest Forever’s proposed revision to the FPA is precautionary– it is not limited to slopes that already show signs of instability, but rather should apply to all slopes 27 percent (15 degrees) or steeper.

SUMMARY of LEGISLATIVE PROPOSAL

Forest Forever’s bill proposal should restrict logging on steep slopes so as to address the heightened risk of floods, landslides, higher rates of soil erosion and water quality impacts from excess sedimentation. Forest Forever’s proposed bill would therefore include:

- Language that amends 14 CCR § 914 to require that the FPR goals listed for timber operations be met individually– not in totality– before a THP can be approved;
- Replacing the word “shall” with “may” in 14 CCR § 923.1(c) to give CDF more discretion to evaluate whether the construction of a logging road would destabilize a slope before approving new road construction;

A restriction on CDF’s ability to permit clearcutting an area of greater than ten acres on steep slopes regardless of the mitigation strategies proposed by an RPF;

³¹ See <http://www.wildcalifornia.org/pages/page-95> (reproducing the view by Dr. Leslie Reid, a respected U.S. Forest Service scientist best known for her expertise on the cumulative watershed impacts of harvesting operations).

- A requirement that CDF prohibit timber operations on steep slopes through CDF's MNDs when the multi-agency review team or public comments raise mass wasting concerns when THPs are reviewed;
- A precautionary approach so that the bill proposal contains language that applies to all slopes steeper than 27 percent (15 degrees) and not merely slopes that appear to be at risk.