Regulation of Private Logging in California

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Regulation of Private Logging in California*

To anyone who believes that government is best which governs least or who finds governmental bureaucracy distasteful, legislating methods of private timberland management needs justification. Unfortunately, justification is not difficult to find. Deforestation and poor watershed management are credited with transforming the landscape of great portions of many countries, and even today, examples of wholesale destruction abound. The effects of logging are not confined to the area harvested. Wild animals and fish do not respect property lines, and outdoor recreation brings people into contact with unsightly practices. The disturbance of vegetation and soils can result in erosion and floods which can do tremendous, irreversible damage to private and public soil and water. Private timberland management has been notoriously shortsighted, due some say, to private business’s time-discounting—the phenomenon that having something today is more valuable than the certainty of acquiring an identical thing in the future. Whatever the reason, private business has failed to safeguard long-range interests in

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* This Comment is dedicated to the memory of the late Assemblyman Edwin L. Z’berg, the primary force behind the Z’berg-Nejedly Forest Practice Act of 1973.


2. E.g., W. O. DOUGLAS, A WILDERNESS BILL OF RIGHTS 129 (1965): But dams cannot control the real causes of floods in northern California. Reckless logging has stripped that area of its native ability to retard, absorb, and contain rainfall.

3. See notes 187-91 infra and accompanying text.


5. The existence of a positive interest rate evidences time-discounting. At seven percent compound interest, a tree worth $100 today would have to be worth $200 in 10 years' time (all other costs remaining constant) to make it profitable to defer cutting.
our renewable forest resources. The national forests exemplify one solution to providing for the public's interest: public ownership. The only other effective alternative appears to be federal, state, or local regulation.  

I

INTRODUCTION

A. Historical Background

The first California Board of Forestry, created in 1885, was charged "to do any and all things within their power to encourage the preservation and planting of forests, and the consequent maintenance of the water resources of the State."  

Its initial two-year operating budget was $5,000, but the allocation was increased to $29,500 for the following two-year period, and the members of the board and their assistants were made peace officers.  

The only laws available for enforcement—those against fire-setters and timber trespassers (pilferers)—were poorly enforced. The fourth biennial report of the board of forestry blamed the failure on a lack of farsighted public support:

Forest management by the State, whether wise or unwise, is to bear its fruits, bitter or sweet, of good or ill, of prosperity or adversity, too far in the future of this commonwealth to attract, of itself and now, the attention and the thought of the busy people of the State and induce to action.

The board was criticized for its inaction and was abolished in 1893.  

In 1943, after the failures of two more boards of forestry, legislation was enacted which forbade the cutting of live conifers measuring...
greater than 18 inches in diameter in the northern part of the state without first obtaining a permit from the state forester.\textsuperscript{14} The legislation inaugurated a study committee to investigate the "possibility and feasibility of restoring old cutover lands to productivity." This committee found appallingly poor replenishment of logged lands, promising future timber shortages, and recommended immediate state action.\textsuperscript{15}

The result was the California Forest Practice Act of 1945,\textsuperscript{16} legislation primarily the product of the timber industry lobby.\textsuperscript{17} The 1945 Act declared:

The public interest is affected by the management of forests, timberlands, watershed and soil resources of the State, and it is declared to be the policy of the State of California to encourage and promote and require such development, use and management of forests and forest lands as will maintain the continuous production of forest products, to the end that adequate supplies of forest products are assured for the needs of the people for their farms, homes and industries. It is declared to be the policy of the State of California to encourage and assist private ownership in the management and economic development of privately owned forest lands.\textsuperscript{18}

No attempt was made to provide for any public interest beyond that in the continuous production of timber. The rules promulgated under the 1945 Act were weak, and there was virtually no enforcement.\textsuperscript{19} The rules did not regulate converting timberlands to other uses.\textsuperscript{20} Conversion could be done readily and was widely resorted to when no other plans for the site existed as a way of escaping compliance with the rules.\textsuperscript{21} An assembly subcommittee held hearings in 1966 at which the 1945 Act was decried for failing to consider a broader public interest in watershed resources\textsuperscript{22} and for entrusting administration of the state's program to

\textsuperscript{14} Ch. 172, § 1, [1943] Cal. Stat. 1067 (repealed 1965). The permit could issue on a finding that either the removal of such trees would improve forest growth or that the land was intended to be converted to some use other than production of timber.

\textsuperscript{15} CALIFORNIA FORESTRY STUDY COMM., THE FOREST SITUATION IN CALIFORNIA 9 (1945).

\textsuperscript{16} Ch. 85, § 1 et seq., [1945] Cal. Stat. 394.

\textsuperscript{17} STANFORD ENVIRONMENTAL LAW SOCIETY, CALIFORNIA'S PRIVATE TIMBERLANDS: REGULATION, TAXATION, PRESERVATION 6 n.10 (1973).

\textsuperscript{18} Ch. 85, § 1, [1945] Cal. Stat. 394.

\textsuperscript{19} Statement by Phillip Berry, attorney representing the Sierra Club and Trout Unlimited, 1966 Berkeley Hearing in MAN'S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 15; see also statement by David Pesonen, graduate forester, U.C. Berkeley, id. at 49-50.

\textsuperscript{20} Removal of timber in order to convert land to another use did not have to comply with the forest practice rules until 1971. Ch. 971, § 2, [1971] Cal. Stat. 1882.

\textsuperscript{21} SENATE INTERIM COMM. ON PUBLIC LANDS, REPORT TO THE CALIFORNIA STATE SENATE 38-39 (1953).

\textsuperscript{22} MAN'S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 25-41.
interested members of the timber industry.\textsuperscript{23} The subcommittee's own observations confirmed reports of the inadequacy of the rules.\textsuperscript{24} The subcommittee recommended that the purposes of the 1945 Act be broadened and that membership on the board and district committees be made more representative of the public interest. Posting of a substantial performance bond would be required prior to logging, and the conversion procedure modified.\textsuperscript{25} Despite such criticisms and recommendations, the 1945 Forest Practice Act remained essentially unchanged until, in 1971, it was held unconstitutional by a California appellate court in \textit{Bayside Timber Co. v. Board of Supervisors of San Mateo County}.\textsuperscript{26}

\section*{B. The Bayside Case}

A brief analysis of the case\textsuperscript{27} is useful to an understanding of the climate in which the successor act was adopted. This Comment will also juxtapose the two acts in examining whether the second rectifies the constitutional faults of the first.

\subsection*{1. The Controversy}

In 1969, Bayside Timber Company complied with the Forest Practice Act\textsuperscript{28} by obtaining a permit to log its land. To connect its logging roads to the state highway, Bayside Timber obtained a permit from the California Division of Highways. Thereafter, Bayside Timber applied for county logging and road permits, but after it received generally favorable rulings from the county planning commission, local residents appealed to the county board of supervisors which denied the applications. The timber company instituted a mandamus action against the board of supervisors and won a decision, consistent with an opinion of the California attorney general,\textsuperscript{29} that the 1945 Forest Prac-

\begin{thebibliography}{99}
\bibitem{23} \textit{Id.} at 27, 64.
\bibitem{24} \textit{Id.} at 41:
\begin{quote}
In the current logging operation . . . the subcommittee found a shocking disregard for fish habitat and the prevention of excessive soil erosion. Although apparently legal under the rules . . ., Salmon Creek, which had a history as a fine salmon-steelhead spawning stream, was filled with "green slash" (fresh branches from felled trees, which in addition to blocking the passage of fish and the flow of water, putrefies and releases toxics harmful to fish), and was blocked by a "Humboldt Bridge" (logs felled across the stream and covered with dirt to permit the passage of trucks, a practice which interrupts the streamflow, stagnating the water and stopping the fish passage).
\end{quote}
\bibitem{25} \textit{Id.} at 52.
\bibitem{26} 20 Cal. App. 3d 1, 97 Cal. Rptr. 431, 3 ERC 1078 (1st Dist. 1971).
\bibitem{28} Ch. 1144, § 9.6, [1965] Cal. Stat. 2858.
\end{thebibliography}
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tice Act preempted the county's logging permit system. On appeal from the judgment directing the issuance of a writ of mandate, the First District Court of Appeal was persuaded by newly-raised constitutional arguments to reverse the judgment of the trial court. The appellate court reasoned that the 1945 Act unconstitutionally delegated, without standards of guidance to prevent abuse, legislative resolution of the "'truly fundamental issue' whether the state's environment and ecology, and the public generally, are to be protected by law from harmful practices of the logging and timber industry." The court found that the due process fault was deepened by the fact that those entrusted with promulgating regulations were pecuniarily interested. The court ruled the Act unconstitutional only insofar as it provided for the promulgation and enforcement of forest practice rules.

a. Pecuniary interest

The unconstitutional rulemaking process involved three tiers: the state board of forestry, district forest practice committees, and private timber owners. The board consisted of seven members, one from the pine producing industry, and one each from the redwood producing industry, range livestock industry, forest land ownership, agriculture, beneficial uses of water, and the general public. The board was charged with developing "an adequate forest policy" and adopting forest practice rules. It could approve forest practice rules submitted to it but could not formulate them. After the state had been divided into four districts, forest practice committees were appointed in each district to formulate rules "to fulfill the purpose of [the Forest Practice Act]." The five members on each committee included two private timber owner-operators, one timber owner with 1,000 acres or more of commercial timberland, one farmer with between 160 and 1,000 acres of commercial timberland, and a board of forestry member or employee of the California Division of Forestry. The latter member could only vote in case of a tie.

30. The facts are stated in the court's opinion.
31. 20 Cal. App. 3d at 11, 97 Cal. Rptr. at 437-38, 3 ERC at 1083.
32. Id. at 12, 97 Cal. Rptr. at 438, 3 ERC at 1083.
33. Id. at 15, 97 Cal. Rptr. at 440, 3 ERC at 1084.
35. Id. at 2826.
37. See id.
39. Id.
40. Id. at 2854.
41. Id.
The composition of the board and district committees was changed in 1970 during the pendency of the action in *Bayside*. One public member was added to the board, bringing the nontimber majority to five of eight.\(^42\) The number of committee members was increased from five to seven\(^43\) by the addition of two members from the general public.\(^44\) The court scrutinized these amendments and saw no "substantial constitutional improvement."\(^44\) It is an "age-old principle of our law," the court reasoned, "that no man should judge or otherwise officially preside over disputed matters in which he has a pecuniary interest."\(^44\) After the 1970 amendments, pecuniarily interested board members were in a minority. It might be said that pecuniarily interested committee members were in a minority too since the fourth of seven members was primarily a farmer.\(^47\) One commentator has deduced from these facts and from broad language in the decision that the court would be unwilling to sustain any scheme in which a single board or committee member is a timber owner or operator.\(^48\)

Rules were drafted by the district committees, but before they were sent to the board for approval, they first had to be approved by owners of two-thirds of the private timber acreage in the district.\(^49\) This was the third and most objectionable tier in the former rulemaking scheme. The district committee members were public officials charged with formulating "forest practice rules to fulfill the purposes of [the Act],"\(^50\) and the board was charged with approving rules "within the purpose

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44. *Id.* § 6. The fifth member, who was from the division of forestry or a board member, could only vote in case of a tie. *Id.* § 7.
45. 20 Cal. App. 3d at 15, 97 Cal. Rptr. at 439, 3 ERC at 1085.
46. *Id.* at 14, 97 Cal. Rptr. at 439, 3 ERC at 1084. The court's notion of pecuniary interest as applied to the board and committee members has no readily apparent limits. All agree that a person should not decide public matters in which that person has a pecuniary interest, but pecuniary interest is narrowly defined. A provision in effect at the time required disclosure of any "direct personal financial interest." Ch. 1087, § 1, [1967] Cal. Stat. 2722 (repealed 1973). The law at present prohibits appointive officers from having any interest which is in "substantial conflict with the proper discharge" of their duties. CAL. GOV'T CODE § 8920 (West Supp. 1975). A person does not have such an interest "if any benefit or detriment accrues to him as a member of a business . . . to no greater extent than any other member of such business . . . ." *Id.* § 8921.
47. The fourth member was a farmer with between 160 and 1,000 acres of a commercial timberland. See note 40 *supra* and accompanying text. It should be recognized that the fifth member could be either an employee of the division of forestry who might own timber or a board member who was a representative of the timber industry. *Id.*
50. *Id.* at 2853.
and intent" of the Act. The votes of private owners, on the other hand, are expected to reflect their personal interest. The infirmity lies not so much in the inference that timber owners are likely not to protect the environment or that they are pecuniarily interested, but that other interests are unrepresented. The regulation of timberland management and logging practices directly affects timber owners, but the indirect effects are suffered by many. The situation is analogous to a law which conditions voting in school board elections upon having children in local schools or owning or leasing property in the district. Both schemes unjustifiably overlook important interests of segments of the public. The court did not mention that the provision giving timberland owners the power to stop the promulgation of forest practice rules was repealed before Bayside Timber became final.

b. Delegation

On the issue of delegation, the court relied on the United States and California Constitutions. The sole federal case cited is Carter v. Carter Coal Co., a 1935 Supreme Court case which, like Schechter Poultry Corp. v. United States and Panama Refining Co. v. Ryan, combined notions of due process and separation of powers to invalidate New Deal programs. Recently, Justice Marshall termed the delegation doctrine "surely as moribund as the substantive due process approach of the same era—for which the Court is fond of writing an obituary . . . —if not more so." There are California cases which tend to support the outcome in Bayside, but a 1968 California Supreme Court decision recognizes that sound judgment requires increasing delegation of rule-making authority in a complex government: "Only in the event of a total abdication of that power, through failure either to render basic policy decisions or to assure that they are implemented as made, will this court

51. Id. at 2856.
54. 20 Cal. App. 3d at 14, 97 Cal. Rptr. at 439, 3 ERC at 1084.
57. 293 U.S. 388 (1935). Schechter and Panama are the only cases in which the Supreme Court has struck down congressional delegations to governmental authorities.
60. Kugler v. Yocum, 69 Cal. 2d 371, 445 P.2d 303, 71 Cal. Rptr. 687 (1968) (upheld city ordinance which decreed that salaries should be no less than the average of those of certain adjoining jurisdictions).
intrude on legislative enactment because it is an ‘unlawful delegation,’ and then only to preserve the representative character of the process of reaching legislative decision.”

Authorities do admittedly find more justification for the delegation doctrine when addressing state legislation, but the delegation doctrine should be resorted to only when there is evidence of abuse, not simply when the statutory scheme seems to allow abuse. “When legislative bodies have failed to provide standards, the courts should not hold the delegation unlawful but should require that the administrators must as rapidly as feasible supply the standards.” If the agency provides adequate standards, the constitutional infirmity is cured. The court in Bayside catalogued at some length the abuses which occurred under the 1945 Act and the rules promulgated pursuant to it. The criticisms included a statement made in 1957 by the author of the Act that self-regulation had failed. But the Forest Practice Rules were never compared with the pro-industry purposes of the Act. Neither were there findings of fact. The court’s approach dictates holding the Act unconstitutional even if it resulted in superior forest practice regulation.

It is not contended that the 1945 Act resulted in exceptional forest practice regulation, only that the court overreached judicial boundaries as a means toward environmental ends. Reforming legislation would have been more legitimate and thus preferable. Bayside did eventually lead to reforming legislation which will be examined to see what net improvements the decision generated.

2. Legislative Aftermath

The Bayside decision left California with no enforceable forest practice rules. Over six months after the decision, emergency legislation was signed into law. The legislation empowered the extant board of

61. Id. at 384, 445 P.2d at 311, 71 Cal. Rptr. at 695.
62. State legislatures are often less responsible then Congress, less skillful at clarifying legislative intent, more responsive to special interest groups, and less thorough in conducting committee investigations. Delegation to petty officers is more common in state governments, and the safeguards against arbitrary action generally are less well developed. K. Davis, Administrative Law Text 36-37 (1972).
63. Id. at 43.
64. Id. at 50-51.
65. 20 Cal. App. 3d at 6-8, 97 Cal. Rptr. at 434-35, 3 ERC at 1080-81.
66. Id. n.18 at 8, 97 Cal. Rptr. n.18 at 435, 3 ERC n.18 at 1081.
67. The Act declared “the necessity of good forest practices in the processes of harvesting such forest resources, and conserving and maintaining the productivity of such forest lands in the interests of the economic welfare of the State and the continuance of the forest industry . . . .” Ch. 85, § 1, [1945] Cal. Stat. 394. See also text accompanying note 18 supra.
forestry on a finding of emergency to adopt rules effective for 180 days.\textsuperscript{69} The board responded by readopting most of the former rules.\textsuperscript{70} Bayside rekindled smouldering emotions, and the political exchanges between conservationists and the timber industry "generated more heat than light."\textsuperscript{71} Some feared that Bayside's ramifications would invalidate other rulemaking procedures.\textsuperscript{72} Others warned that forest practice acts in other states were next in line.\textsuperscript{73}

The legislature moved toward the enactment of successor legislation. The 1945 Act was intended to establish self-regulation of the forest products industry,\textsuperscript{74} perhaps as a political compromise and a belief that self-regulation was better than no regulation. Leaving logging practices unregulated was never seriously considered following Bayside. A number of legislative hearings were held,\textsuperscript{75} and the assembly committee on natural resources and conservation requested a study from the Institute of Ecology at the University of California, Davis.\textsuperscript{76} Three bills were introduced,\textsuperscript{77} two of which were combined to form the Z'berg-Nejedly Forest Practice Act of 1973.\textsuperscript{78} Conservationists hailed the passage of the 1973 Act as an environmental victory.\textsuperscript{79} While the 1973 Act does improve on many of the weaknesses of the former act, the improvements are modest. If not for Bayside, stronger legislation may eventually have passed. However, considering the present political climate\textsuperscript{80} and high unemployment in the forest industry,\textsuperscript{81} that possibility seems small.

\textsuperscript{69} Id. § 2.
\textsuperscript{70} See note 97 infra. The board renewed the rules a number of times before the 1973 Act took effect even though there was no legislative authority to do so. S.F. Chron., June 26, 1973, at 6, col. 1.
\textsuperscript{71} INSTITUTE OF ECOLOGY, U. C. DAVIS, PUBLIC POLICY FOR CALIFORNIA FOREST LANDS iii (1972) [hereinafter cited as PUBLIC POLICY FOR CALIFORNIA FOREST LANDS].
\textsuperscript{72} E.g., PACIFIC BUSINESS BULL., Jan. 5, 1972, at 1.
\textsuperscript{73} E.g., Craig, Conflict of Interest in the Trees, AM. FORESTS, Feb. 1972, at 7.
\textsuperscript{74} CALIFORNIA FORESTRY STUDY COMM., THE FOREST SITUATION IN CALIFORNIA 17, 67 (1945).
\textsuperscript{75} Hearing Before the Assembly Select Comm. on North Coast Timber Economy (Fort Bragg 1973); Hearing on Logging Practices in the Sierra Before the Assembly Comm. on Natural Resources and Conservation (Yosemite National Park 1972); Hearing on Logging Practices in the Sierra Before the Assembly Comm. on Natural Resources and Conservation (Lake Tahoe 1972) [hereinafter cited as 1972 Tahoe Hearing].
\textsuperscript{76} PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71.
\textsuperscript{77} S.B. 1326 (Collier 1972), S.B. 361 (Nejedly 1972), and A.B. 2346 (Z'berg 1972).
\textsuperscript{78} CAL. PUB. RES. CODE §§ 4511-628 (West Supp. 1975).
\textsuperscript{79} L.A. Times, Oct. 11, 1974, pt. II, at 1, col. 5. The final bill was supported by the Sierra Club which fought hard for its passage. S.F. Chron., Sept. 23, 1974, at 8, col. 1.
\textsuperscript{80} See notes 339 and 400-01 infra.
\textsuperscript{81} Loggers claim there is 40 percent unemployment in the industry. S.F. Chron., Apr. 3, 1975, at 22, col. 6.
II

REGULATION OF PRIVATE LOGGING UNDER THE Z'BERG-NEJEDLY FOREST PRACTICE ACT OF 1973

A. California Forest Practice Act

1. Structure of the 1973 Act

The Z'berg-Nejedly Forest Practice Act of 1973 establishes a board of forestry consisting of nine members, five of whom are chosen from the general public, three from the forest products industry, and one from the range livestock industry. All members of the board shall be appointed and shall be selected and approved for appointment on the basis of their educational and professional qualifications and their general knowledge of, interest in, and experience with, problems relating to watershed management (including hydrology and soil science), forest management practices, fish and wildlife, range management, forest economics, or land use planning... The appointments are subject to confirmation by the state senate. Despite the requirement that all members be selected on the basis of their expertise, the original public members included some with no apparent knowledge of timber management. One was a retired manager of an aircraft company, and another was vice president of a gravel company. The Act mandates that the “board shall represent the general public interest,” yet it is difficult to see how the public interest can be represented by people with no expertise, and the public interest suffers while they learn.

One of the board of forestry’s first acts was to divide California into three districts, the coast forest district, northern forest district, and southern forest district. The coast district extends northward from a point at Monterey Bay along the California coast. The northern district encompasses all of the area, except that included in the coast district, which lies north of a meandering line running from San Francisco to Lake Tahoe. The remainder of the state comprises the southern district. A nine-member technical advisory committee (TAC) was appointed by the board for each district to “advise the board in the

83. Id. § 631.
84. Id.
85. Id. § 634.
86. STATE BD. OF FORESTRY, REPORT TO THE LEGISLATURE 1 (1974).
88. Detailed descriptions are contained in the rules. 14 CAL. ADM. CODE §§ 1002 (coast), 1003 (northern), and 1004 (southern) (1974).
establishment of district forest practice rules." The members of the TAC's, like the members of the board, are supposed to be appointed on the basis of their qualifications in watershed management and related fields. As with the board, this has not transpired. Public TAC members include an orthodontist, a newspaperman, a banker, and an insurance agent.

Some public board members seem intimidated by warnings from the vocal timber industry that regulation will cause undue hardship on the forest products industry. If the public members understood timber management better, they could confidently dismiss many objections. If they were more knowledgeable, they might also be more willing to experiment, recognizing their ability to modify or repeal rules that prove unworkable or counterproductive.

The timber industry as a whole shares common interests: maximizing profits and resisting regulation of private timber managing methods. The interests of the grazing industry are closely aligned with those of the forest products industry, and many livestock owners are engaged in timber production. The board's representative from the range livestock industry has consistently voted in a bloc with the logging representatives. The public members, on the other hand, are meant to represent a broad spectrum of "general public interest," and for this reason they will always be disjointed.

On the TAC level, this disjointedness is evidenced by the fact that all three TAC's have industry representatives as chairmen.

Because of their disjointedness and lack of expertise, the public members often defer to the judgment of the homogeneous industry minority. For example, the board's most important task during its first

90. Id. § 4533:
All members shall be appointed on the basis of their educational and professional qualifications and their general knowledge of, and interest and experience in, ecology, soil science, watershed hydrology, range management, silviculture and forestry, forest recreation, forest landscape architecture, forest products manufacture, forest industry economics, or fish and wildlife habitat.
92. Of California's eight million acres of privately held commercial forest land, 2.7 million acres is owned by the forest industry and 1.5 million is owned by farmers. UNITED STATES FOREST SERVICE, FOREST STATISTICS FOR THE UNITED STATES, BY STATE AND REGION, 1970, at 6. (1972).
94. Politics also plays a part. A public member of the coast TAC believes he is the only member who "votes public sentiment." Interview with Hans Jenny, Professor Emeritus, Soils and Plant Nutrition, U. C. Berkeley, in Berkeley, Mar. 20, 1975.
year in existence was to adopt forest practice rules for each district to
govern timber harvesting and management.\textsuperscript{96} Under the former act,
clearcutting could be conducted on any scale.\textsuperscript{97} The California Division
of Forestry suggested restricting clearcuts in the coast district to 40 acres
in size.\textsuperscript{98} The forest products industry objected to the limitation in a
letter sent to the coast TAC and board members.\textsuperscript{99} The TAC’s recom-
mendation,\textsuperscript{100} which contained no size limitation, was adopted by the
board.\textsuperscript{101} The division of forestry also recommended that road grades
not exceed 12 percent with the exception of pitches of up to 18 percent
for stretches of road less than 500 feet in length.\textsuperscript{102} The forest products
industry termed the recommendation “unreasonable” and suggested 15
percent and 20 percent instead.\textsuperscript{103} It was the recommendation of the
industry and not of the division of forestry which prevailed.\textsuperscript{104}

Promulgation of initial provisions which may be too stringent is
more likely to result in effective environmental protection than promul-
gation of weaker provisions. A well-organized timber industry lobby
exists to present the industry’s views before board and TAC members,
legislators, and the public. The environment, on the other hand, is most
often represented by a disorganized handful of public interest groups
whose energies are divided among many facets of the environment. If a
provision appears too strict, the timber industry, which will be the first
to know, can resort to the political process, and in the meantime, the
provision may have forced foresters to improve their technology. Repre-
sentatives of environmental interests will find it difficult to learn whether
a provision is too weak, and unless a shortcoming is dramatic, any
organized action to remedy the weakness is unlikely.

The board members who make up the industry minority are on
their companies’ payrolls and rarely miss meetings; the public members,
even in the important first year in which the Forest Practice Rules were
approved, often arrived late or not at all.\textsuperscript{105} With one public member

\begin{itemize}
\item \textsuperscript{96} CAL. PUB. RES. CODE § 4511 (West Supp. 1975).
\item \textsuperscript{97} See 14 CAL. ADM. CODE § 913 et seq. (redwood—June 30, 1972).
\item \textsuperscript{98} California Division of Forestry, Suggested Forest Practice Rules: Coast Forest
  District § 913.5 (Apr. 25, 1974).
\item \textsuperscript{99} Letter from Fred Landenberger, Cal. Forest Protective Ass’n, to members of
  the Coast Advisory Comm., May 20, 1974.
\item \textsuperscript{100} Coast Technical Advisory Comm., Proposed Initial Forest Practice Rules:
  Coast Forest District § 913.5 (Sept. 11, 1974).
\item \textsuperscript{101} 14 CAL. ADM. CODE § 913.5 (coast) (1974). A 120-acre limitation has
  recently been enacted. Id. § 913.5 (coast) (1975).
\item \textsuperscript{102} California Division of Forestry, Suggested Forest Practice Rules: Coast Forest
  District § 915.1 (Apr. 25, 1974).
\item \textsuperscript{103} Letter from Fred Landenberger, Cal. Forest Protective Ass’n, to member of the
\item \textsuperscript{104} 14 CAL. ADM. CODE § 915.1(a) (coast) (1974).
\item \textsuperscript{105} Telephone interview with Brian Barrette, Forest Practice Officer, Cal. Div. of
\end{itemize}
absent from a meeting, neither the industry nor the public segment has a majority. But because the public segment is disjointed, it will falter more often than the industry bloc. With just two public members absent, industry is in a majority, and the Act allows all business to proceed with a quorum of five, four of which can be industry representatives. To adopt, amend, or repeal the Forest Practice Rules requires a majority of the authorized membership, which means that the industry bloc only needs to convince one public member to have a majority.

The absences of the public members may be due in part to their being compensated only $50 per day, in addition to necessary expenses, while performing their official duties. The TAC members receive only their expenses. If more money is necessary for more responsible attendance, it should be provided, even if it means reducing the size of the board. The inherent inability of the present structure to represent adequately the public when confronted by the cohesive industry minority can only be remedied by reducing the percentage of industry representation and guaranteeing that a quorum for purposes of rulemaking consist of a majority of public members. With the present proportions of representation, full attendance would be necessary.

2. Comparison with the Structure of the 1945 Act

*Bayside Timber* emphasized the pecuniary interest of the board members yet only three of eight were from the timber industry. The court's objection to their presence on the board is puzzling and leaves unresolvable the question of whether reducing the timber minority from three-eights to three-ninths would satisfy the court. In rulemaking, the present board is more akin to the old district committees which usually drafted forest practice rules. After the 1970 amendments, four of the seven district committee members owned timber or were timber operators, although the fourth was primarily a farmer. The representation on the TAC's is now identical to that on the board: a total of nine members, five from the general public, one from the grazing industry, and three from the forest products industry. The change lessened somewhat the structural bias.

106. "Five members of the board shall constitute a quorum for the purpose of transacting any business of the board." *CAL. PUB. RES. CODE* § 636 (West Supp. 1975).
107. Id.
108. Id. § 635. Exclusive of necessary expenses, compensation to the chairman cannot exceed $2500 and to the others $2000 in any fiscal year.
109. Id. § 4539.
110. See note 42 *supra* and accompanying text.
111. See note 44 *supra* and accompanying text.
112. See note 40 *supra* and accompanying text.
Bayside Timber did not rule on the 1971 repeal of the requirement that rules be approved by timber owners.114 There is good reason to believe that a revival of that provision would be unconstitutional,115 but the 1973 Act discarded that tier in the rulemaking scheme. One of the 1970 amendments mentioned by the court allowed named counties, including San Mateo, to adopt stricter regulations.116 The present statute gives this right to all counties and to the Tahoe Regional Planning Agency.117 The preemption issue which was the gravamen of Bayside Timber Company's complaint can no longer arise.

3. Purposes of the 1973 Act

The Forest Practice Act, like the 1945 Act,118 declares as a goal the achievement of “maximum sustained production of high-quality timber products.”119 However, the 1973 Act requires “giving consideration to values relating to recreation, watershed, wildlife, range and forage, fisheries, and aesthetic enjoyment.”120 Listing the values together suggests they compliment one another, but often they compete. Grazing livestock do not mix well with picnickers, and they compete with wildlife for forage. Recreational use interferes with wildlife habitat. In short, “consideration” cannot amount to giving effect to all the values. Furthermore, the considerations seem more appropriate to a state121 or national forest122 than to private holdings. Why should timberland

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115. See notes 49-53 supra and accompanying text.
118. See text at note 18 supra.
119. CAL. PUB. RES. CODE § 4513(b) (West Supp. 1975).
120. Id. The legislative findings are similarly worded and echo the same hierarchy:

The Legislature thus declares that it is the policy of this state to encourage prudent and responsible forest resource management calculated to serve the public’s need for timber and other forest products, while giving consideration to the public’s need for watershed protection, fisheries and wildlife, and recreational opportunities alike in this and future generations.

Id. § 4512(c).

121. A year after the passage of the Z'berg-Nejedly Forest Practice Act of 1973, a bill introduced by Senator Nejedly amended the legislation governing the state forests, as follows:

"Management" means the handling of forest crop and forest soil so as to achieve maximum sustained production of high quality forest products while giving consideration to values relating to recreation, watershed, wildlife, range and forage, fisheries, and aesthetic enjoyment.

Id. § 4639; cf. id. § 4651. This suggests that private and public forests should be similarly managed, but since the state forest’s provision was enacted after the Forest Practice Act, the amendment could signify a compromise in the conservation of state forests rather than an intent to strengthen the conservational interest in private timberland.

122. "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. . . ." 16 U.S.C. § 528 (1960).
owners who dislike trespassers consider the recreational value of their land?

The Act recognizes that "giving consideration" cannot amount to giving effect to the conflicting values. The Act instructs the board to adopt regulations "to protect the soil, air, fish and wildlife, and water resources." Of the values to be given consideration listed in the statement of policy, all but three—recreation, range and forage, and aesthetic enjoyment—have counterparts in this section, which directs the board to adopt regulations. As to these three values, the board need not adopt regulations for their protection, but in adopting regulations for the protection of the resources listed, the board must act "in accordance with the [Act's] policies," that is, "giv[e] consideration to values relating to recreation, . . . range and forage, . . . and aesthetic enjoyment."

One textual inference which can be made is that the "consideration [of] aesthetic enjoyment" was not intended to weigh very heavily. The appearance of clearcut areas, even when logged with the utmost care and conformance to the landscape, is displeasing to the vast majority of the public. The Institute of Ecology recommended buffer strips along public thoroughfares, yet the Act does not provide for them. What is meant by "giving consideration to" is unclear, but the ambiguity is only in how much consideration is to be given the values short of their overtaking production of timber as the primary concern of the Act.

The passage seems to require consideration of conservational values generally, without indicating the weight to be given those values. On announcing the Institute of Ecology's report and bill, Assembly-
person Z'berg stated: "This is a bill that recognizes the need for timber products and a healthy timber industry. But it provides for prudent and responsible management to promote conservation as well."120 When the catchphrase is first read, it seems to say "giving consideration to conservation." That is its most probable meaning.

B. California Forest Practice Rules

There are three basic public interests directly affected by timberland management: continuous availability of lumber, water quality, and their common denominator, avoidance of erosion. Because they concern natural processes, the three are interdependent: unless maximum regrowth is established immediately on cutover land, the land's productivity is underutilized; failing to reestablish growth also contributes to erosion of topsoil necessary for growing trees; the eroded soil washes into streams, impairing water quality. Despite this inherent interdependence, the following discussion necessarily isolates these and other values. The discussion examines the Forest Practice Act to assess its commitment to various values and then measures the effectiveness of the rules in meeting the commitment.

1. Water Quality

The legislature, in various parts of the Forest Practice Act, recognizes the public interest in protecting water quality. The Act's findings129 and declaration of intent130 refer to the protection of watersheds and fisheries, as do the descriptions of the qualifications of board131 and TAC members.132 The board is directed to adopt forest practice rules "to protect the soil, air, fish and wildlife, and water resources, including, but not limited to, streams, lakes, and estuaries."133 In addition, there is a section which reads:

The purpose of this section is to insure the protection of beneficial uses that are derived from the physical form, water quality, and biological capability of streams. To these ends, in addition to the rules provided for in Section 4562.5, the board shall adopt rules

130. CAL. PUB. RES. CODE §§ 4512(b), (c) (West Supp. 1975). See note 120 supra.
131. CAL. PUB. RES. CODE § 4513(b) (West Supp. 1975). See text accompanying note 120 supra.
for control of timber operations which will result or threaten to result in unreasonable effects on the beneficial uses of the waters of the state. Such rules shall include rules for:

(a) The disposal of petroleum products, sanitary wastes, refuse, and cleaning agents in proper dumps or waste treatment facilities to prevent them from entering streams.

(b) Construction of logging road and tractor trail stream crossings to assure substantially unimpaired flow of water and to assure free passage of fish both upstream and downstream.

(c) Minimizing damage to unmerchantable streamside vegetation, particularly hardwood trees.

(d) Minimizing damage to streambeds or banks resulting from skidding or hauling logs through, across, or into streams, by operating tractors or other heavy equipment in or near streambeds, or by construction of log landings or logging roads in or near the channels of streams.

(e) Control of slash, debris, fill, and side cast earth, resulting from timber operations, which may be carried into streams. In adopting rules, the board must solicit and consider recommendations from the California Department of Fish and Game. The state interest in protecting fish has long been recognized, and the Fish and Game Code contains provisions for protecting these animal resources.

The emphasis on maintaining water quality is justified. Organic matter in contact with water increases the amount of dissolved chemicals and nutrients, promoting the growth of bacterial slime and algae, thereby removing oxygen from the water. Siltation is harmful to fish habitat and the public uses of water. Suspended sediment carries pesticide residues and nutrient elements. In all but the rockiest

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135. Id. § 4562.7.
136. Id. § 4551.5.
137. In People v. Truckee Lumber Co., 116 Cal. 397, 400-01 (1897), the California Supreme Court said:

The dominion of the state for the purposes of protecting its sovereign rights in the fish within its waters, and their preservation for the common enjoyment of its citizens, extends to all waters within the state...

139. Measurements have revealed a reduction in saturated levels from 12 mg/l to 2 mg/l. Id.
140. Siltation is especially dangerous to incubating eggs. Spawning gravel with 20 to 30 percent sand or silt is seven times less productive than "clean" gravel. Gebhards, The Vanishing Stream, IDAHO WILDLIFE REV., Mar.-Apr. 1970, at 3, 5.
141. Increased sediment load raises the cost of water treatment for municipal uses, causes wear on turbines, pumps, sprinklers, and other equipment, and makes frequent dredging of dams necessary. Statement by Hurlon Ray, Assistant Regional Adm'r, Region 10, Environmental Protection Agency, 1972 Tahoe Hearing, supra note 75, at 245.
142. ENVIRONMENTAL PROTECTION AGENCY, PROCESSES, PROCEDURES, AND METHODS
streambeds, introducing sediment causes a snowball effect: as sediment levels rise, even larger particles can be supported in solution which in turn enhances the eroding capacity.\textsuperscript{143} In fact, the Environmental Protection Agency calls soil sediment “easily the most important pollutant” in the present state of silviculture.\textsuperscript{144}

The present rules are adequate in keeping organic material out of rivers and lakes and thereby preventing adverse effects on water quality. The rules go beyond outlawing log jams and accumulations of slash (limbs and other unsalvageable parts of trees) sufficient to injure fish in any particular instance and demand that all accidental deposits of slash and debris be removed as soon as practicable.\textsuperscript{145}

\textbf{a. Logging and streamside erosion}

The most obvious means of producing sediment is introducing soil directly into streams by disturbing stream banks and beds.\textsuperscript{146} Logging provides many opportunities for bringing soil into direct contact with streams and lakes. Trees felled into streams dislodge soil from loose banks and scar streambeds. Exposed soil is quickly absorbed by the smoothing waters. The downed trees are stripped of their limbs, bucked (cut) into manageable lengths, and yarded (dragged or carried) to landings where they are loaded on trucks. If the trunks are yarded by bulldozer or rubber-tired tractor rather than by cable, balloon, or helicopter, the bulldozer and tractor become potentially destructive forces.

Under the old rules, nothing prevented a logger from using a stream as a skid trail (tractor-yarded logs), logging road, or landing area as long as clear passage was left for fish.\textsuperscript{147} Section \textsuperscript{5948} of the California Fish and Game Code makes it a misdemeanor, punishable by a minimum $25 fine or imprisonment for ten days,\textsuperscript{148} to cause, or, having caused, to permit to exist, a log jam which is deleterious to

\textsuperscript{143} Suspended sediment increases the viscosity and density of water, causing it to exert greater friction on the bed and banks of its channel. As density increases, so does buoyancy, enabling the water to carry even larger particles. Furthermore, while higher sediment load usually means lower velocity, small increases in sediment load can actually increase velocity, adding to the water’s eroding capacity. J. KITTREDGE, FORESTS INFLUENCES 272-73 (1948).

\textsuperscript{144} EPA, supra note 142, at 25.

\textsuperscript{145} 14 CAL. ADM. CODE §§ 916.1 (coast), 936.1 (northern), and 956(a) (southern) (1974).

\textsuperscript{146} Silvicultural practices with impacts on water quality are not confined to the banks and beds of streams and lakes. Erosion upslope from water courses is the primary example. The geographic distinction is used because of the different practices involved.

\textsuperscript{147} Statement by W. P. Shannon, Director, Cal. Dept’ of Fish and Game, 1966 Berkeley Hearing in MAN’S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 25.

\textsuperscript{148} CAL. FISH & GAME CODE § 12006 (West 1958).
Section 5650 forbids introducing substances deleterious to fish, plant life, or bird life into streams or lakes under penalty of a minimum $100 fine or 25 days in jail, with an additional exaction for removing the substance upon failure of the violator to do so. Use of this provision has been limited, at least as a restriction on logging practices, due in part to the infrequency of inspections. In spite of these laws, a study conducted by the California Department of Fish and Game found that out of four representative streams surveyed, one third of the total mileage surveyed was severely damaged, strongly suggesting more effective protections were necessary. In accordance with an older provision which has been strengthened, any person who "substantially diverts or obstructs the natural flow or substantially changes the bed, channel or bank of any river, stream or lake" must notify the California Department of Fish and Game. The department can require mitigating techniques, but only "when an existing fish or game resource may be substantially adversely affected." Very few, if any, logging practices will "substantially" divert a watercourse to affect "substantially adversely" an existing fish resource.

The present rules state that "the number of places for stream crossings shall be kept to a minimum," and when skid trails must cross a live stream, "a prepared crossing utilizing either a bridge or culvert will be used." The rules outlaw the use of streambeds, lakes, and marshes for landings, roads, or logging skid trails. The provisions do not, but should, prohibit cable yarding of logs through streams.

149. Statement by W. P. Shannon, Director, Cal. Dep't of Fish and Game, 1966 Berkeley Hearing in MAN'S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 27.
150. CAL. FISH & GAME CODE § 12015 (West 1958).
151. Statement by W. P. Shannon, Director, Cal. Dep't of Fish and Game, 1966 Berkeley Hearing in MAN'S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 27.
152. Id. at 29. A "severely damaged" stream was defined as having 75 to 80 percent of its bottom covered with silt. Streams surveyed in July 1966 were the Garcia River, Mendocino County; Redwood Creek, Humboldt County; North Fork of Battle Creek, Shasta County; and Middle Fork of Mokelumne River, Calaveras County. The survey found five times the poundage of trout in the undamaged as opposed to the severely damaged areas.
154. Id. Department proposals not accepted by the person affected are subject to arbitration.
155. 14 CAL. ADM. CODE §§ 916.2 (coast) and 936.2 (northern) (1974).
156. Id. § 916.2 (coast). The southern rules require the use of prepared crossings when "logging skid trails must cross a live stream." Id. § 956(c) (southern) (emphasis added). The northern rule is less explicit: "Logging skid trails shall be laid out and constructed so that skidding operations minimize disturbance of the stream bank and stream bed." Id. § 936.2 (northern).
157. Id. §§ 916.8 (coast) and 936.8 (northern). The southern rule only applies to streambeds. Id. § 936.8 (northern).
lakes, and marshes. The definitions of "stream" do not, but should, include ephemeral streams. There are times at which an intermittent stream is dry and using the channel as a road will be less destructive than building a road. But if a storm blew up, loggers would be strongly tempted to continue using the flowing stream in face of the delay roadbuilding and bridgebuilding would bring. It is also difficult for inspectors to ascertain whether yarding took place before or after stream flow commenced. Since the rules allow operators to make arrangements with the California Department of Fish and Game which supersede the rules, the situations where using the stream bed will result in less harm are probably provided for.

The rules are less effective in preventing damage from the impact of trees as they fall and as they are dragged in and near water. In accordance with their purposes of preventing "unreasonable gouging or cutting of stream and lake banks and beds," the rules for all three districts ask that trees cut within 50 feet of a stream or lake be felled "as nearly as possible" at right angles away from the water "or in such other manner as to minimize erosion and maintain water quality." The coast district adds "by pulling if necessary," implying that pulling is not needed in the other districts. It is patently incongruous that in a region where trees sometimes surpass 300 feet in height, especially on alluvial fans, the use of cables should only be required within 50 feet of a stream.

Outside the 50-foot zone, the districts vary. The northern district rules have no provision against felling trees located outside the 50-foot zone into streams or lakes, and the southern rules request that "due diligence" be exercised to prevent "unreasonable damage to streamside vegetation and water quality." The coast rules demand that trees be felled in line with the skidding direction and away from roads, streams and lakes "to the fullest extent possible that topography, lean of trees, landings, utility lines, local obstructions and safety factors permit."

158. See note 165 infra.
159. PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 68-69.
160. 14 CAL. ADM. CODE §§ 916.2 and 916.8 (coast), 936.8 (northern), and 956(c), (d) (southern) (1974).
161. According to a study in Oregon, sediment load under natural conditions averaged 10 parts per million (p.p.m.); felling trees into the water showed 100 p.p.m., and down stream measured 70,000 p.p.m. Statement by Hurlon Ray, Assistant Regional Adm'rt, Region 10, Environmental Protection Agency, 1972 Tahoe Hearing, supra note 75, at 244.
162. 14 CAL. ADM. CODE §§ 916 (coast), 936 (northern), and 956 (southern—uses "excessive" rather than "unreasonable") (1974).
163. Id. §§ 916.1 (coast), 936.1 (northern), and 956(a) (southern).
164. Id. § 954 (southern).
165. Id. § 914.1 (coast). "Stream" is defined in terms of the United States
"To the fullest extent possible" might be interpreted to require attaching cables to trees felled in proximity to water sources in order to direct their falls. That interpretation is unlikely since the use of cables is explicitly required when within 50 feet. Often it is not possible to fell trees away from roads, streams, and lakes, as when a road parallels a lake or river bank. The skidding direction may be toward the road. In this situation, the rule seems to condone dropping the tree into the water. This inference is stronger when one considers the exceptions recognized by the rules: trees are usually more heavily branched towards the openings in the canopy over water bodies so that safety and the lean of trees will suggest felling into the water. Furthermore, the land around lakes and rivers virtually always slopes towards the water.

In the Lake Tahoe Region, the ordinance on felling trees into streams reads as follows: "No tree shall be felled into a perennial or intermittent stream, or into a meadow or lake." Another jurisdiction which has found the threat of felling trees into water sufficiently ominous to justify imposing a flat ban on the practice is Oregon: "Trees should be felled . . . so that the tree or any part thereof will not fall into or across any Class I stream." These provisions suggest either that it is possible with proper planning to avoid felling trees into the water, or that the potential damage attributable to such felling outweighs the tree's merchantable value. If this is not the case in any situation, the Tahoe ordinance provides for a variance.

b. Protective stream buffers

Activities in and around water bodies are sometimes regulated by means of buffer zones. The buffers, which are strips of undisturbed vegetation, are left during logging because of the role they play in water quality protection. The riparian vegetation shades the water, avoiding

Geological Survey map most recently published and includes some intermittent (as shown on the map) as well as perennial streams. Id. §§ 912.24 (coast), 932.31 (northern), and 952.24 (southern).

166. See text accompanying note 163 supra.

167. TAHOE REGIONAL PLANNING AGENCY TIMBER HARVESTING ORD. § 6.00(3) (1973).

168. DEPARTMENT OF FORESTRY, FIELD GUIDE TO OREGON FOREST PRACTICE RULES §§ 24-541(2)(b) (northwest region) and 24-645(1) (southwest region) (2d rev., 1974) [hereinafter cited as GUIDE TO OREGON FOREST PRACTICE RULES]. "Class I streams' means waters which are valuable for domestic use, are important for angling or other recreation and/or used by significant numbers of fish for spawning, rearing or migration routes. Stream flows may be either perennial or intermittent during parts of the year." Id. §§ 24-101(2).

169. TAHOE REGIONAL PLANNING AGENCY TIMBER HARVESTING ORD. § 11.00 (1973). If the proposed action is consistent with the purpose of the ordinance, a variance may be granted where "owing to special conditions, literal enforcement will result in unnecessary hardship." Id. § 11.10(1).
temperature fluctuations\textsuperscript{170} deleterious to aquatic life.\textsuperscript{171} Optimum width of any buffer for this purpose is a product of topography, susceptibility of the water to solar heating, and height and density of ambient vegetation. The buffers also serve the important function of soil sediment filters: suspended sediment is trapped by the unbroken forest biomass as water flows through the buffers.\textsuperscript{172} The width of soil sediment filters varies with depth and composition of the forest floor, slope, amount of runoff, and sediment load.

The Tahoe Regional Planning Agency employs the buffer zone concept. The “Stream Environment Zone” is defined as follows:

A required land strip on each side of the stream bed necessary to maintain existing water quality. The width of the stream environment zone shall be determined by on the ground investigation. Investigation shall consider, (1) Soil type and how surface water filters into the ground; (2) The types and amount of vegetative cover and how it stabilizes the soils; (3) The slope of the land within the zone and how significant it is for retaining sediment from reaching the streams. The intent of maintaining the Stream Environment Zone shall be to preserve the natural environment qualities and function of the land to purify water before it reaches the stream.\textsuperscript{173}

There is also a provision which prohibits operating yarding equipment or cutting trees within 100 feet slope distance of a stream unless for the purpose of sanitation cutting (removing trees in very poor condition).\textsuperscript{174} Nevada prohibits felling trees inside a 200 foot buffer zone.\textsuperscript{175} In some cases, as with the wind-weak redwoods, the danger of solitary trees overturning may outweigh the benefits from leaving them. It may also happen that denudation of the watershed will raise the water table and thus endanger residual stands.\textsuperscript{176} In such cases, Nevada\textsuperscript{177} and the Tahoe ordinance\textsuperscript{178} provide variances.

\textsuperscript{170} Water temperatures in undisturbed streams vary about 2.2° C. diurnally. Removing all shade results in variations of at least 5.6° C. EPA, \textit{supra} note 142, at 70.

\textsuperscript{171} Different stages in the life cycles of various species of fish require different ranges of temperature. Thus higher temperatures in a segment of a stream can block the migration of anadromous species, such as salmon. Fish are also dependent on the existence of adequate dissolved oxygen in water. Raised water temperatures reduce oxygen saturation by two methods: oxygen solubility decreases and oxygen-using decomposition is accelerated. Substances toxic to fish are more toxic at higher temperatures, and algal growth is stimulated. \textit{Id.} at 69-70.

\textsuperscript{172} Id. at 40.

\textsuperscript{173} \textit{Tahoe Regional Planning Agency Timber Harvesting Ord.} § 3.00 (1973).

\textsuperscript{174} Id. § 6.00(1).


\textsuperscript{176} \textit{Public Policy for California Forest Lands, supra} note 71, at 68.

\textsuperscript{177} \textit{Nev. Rev. Stat.} § 528.053 (1973). The variance procedure is outlined in note 224 \textit{infra}.

\textsuperscript{178} \textit{Tahoe Regional Planning Agency Timber Harvesting Ord.} § 11.00 (1973). See note 169 \textit{supra}.
The California Forest Practice Act directs the board to adopt rules for "[m]inimizing damage to unmerchantable streamside vegetation, particularly hardwood trees."\textsuperscript{179} In view of this provision, the coast rules dictate that within 50 feet of streams and lakes which support fish at any time during the year, "broadleaf trees shall not be harvested . . . and damage to unmerchantable conifer timber, young growth and other vegetation shall be kept to a minimum."\textsuperscript{180} The northern district's similarly worded provision\textsuperscript{181} applies within its "stream or lake protection zone"\textsuperscript{182} which reaches from 25 to 225 feet (depending on erosion potential) beyond the "stream or lake transition line," the boundary of permanently established riparian vegetation.\textsuperscript{188} The northern rule asks that unmerchantable riparian vegetation at any distance from the water be protected from "unreasonable damage" and the southern rule from "unnecessary damage."\textsuperscript{184} In the northern and southern districts there is a requirement that 50 percent of the forest canopy in the stream or lake protection zone remain after logging.\textsuperscript{185} This requirement is subject to exceptions, however, the most expansive of which could prove boundless: less cover can be left if necessary to achieve stocking standards. Clearcutting or any other method which leaves as few as four trees 24 inches in diameter or eight trees 18 inches in diameter per acre is prohibited in the northern district's stream or lake protection zone.\textsuperscript{186} Apart from ambiguous standards such as "unreasonable damage" used in the rules, the lack of protection for riparian vegetation is attributable to the Act, which omits protection of water quality by buffers to shade the water and trap sediment.

2. \textit{Erosion Control}

In most natural watersheds there is continuous erosion, but the eroded soil is replaced by decaying matter. Accelerated erosion is that which exceeds the natural levels. It results from disturbance of soil and vegetation which increases the capacity of rainwater to wash soil along thousands of rivulets into more permanent water courses. Soil introduced in solution has the same carrying power as soil introduced directly.\textsuperscript{187} The deposited sediment causes streams to aggrade, and the higher

\begin{footnotesize}
\textsuperscript{179} \textit{CAL. PUB. RES. CODE} § 4562.7(c) (West Supp. 1975).
\textsuperscript{180} 14 \textit{CAL. ADM. CODE} § 916.3 (coast) (1974).
\textsuperscript{181} \textit{id.} § 936.3 (northern).
\textsuperscript{182} \textit{id.} § 932.22 (northern) (1975).
\textsuperscript{183} \textit{id.} § 932.23 (northern) (1974).
\textsuperscript{184} \textit{id.} § 936.1 (northern) (1975); \textit{id.} § 956.1 (southern).
\textsuperscript{185} \textit{id.} §§ 936.1 (northern) and 956.1 (southern).
\textsuperscript{186} \textit{id.} § 936.3 (northern). If the stream or lake protection zone extends 75 feet from the water's edge, four evenly-spaced trees will be 116 feet apart.
\textsuperscript{187} See text accompanying note 143 \textit{supra}.
\end{footnotesize}
waters undercut banks, sometimes reactivating dormant slides. The distinction between water quality protection and erosion control is made in this discussion because of the different practices which trigger soil loss, and because soil loss from the forest floor is a more immediate cause of reduced watershed productivity. Accelerated erosion causes nutrients to be leached from the soil, and the land can be ruined beyond possibility of reclamation for timber production or recreation. Soil movements and sedimentation have destroyed unique preserves of natural splendor and imminently threaten still more. Soil loss also increases flood peaks.

Soil conservation is fundamental to the Forest Practice Act. Besides the declaration that regulation is to include consideration of watershed protection, the Act includes the following provision:

It is the purpose of this section to insure that soil erosion associated with timber operations is adequately controlled to protect soil resources, forest productivity, and water quality. The prevention, retardation, and control of accelerated erosion are the principal goals of this section. . . . The board shall promulgate regulations for

188. It is apparent that Northern California's mountains are eroding at a prodigious rate, and that this rate is greatly in excess of the rate of new soil formation. It is also apparent that man's current land use practices are producing the bulk of this excessive erosion. Foremost of these activities are logging operations.


189. The destruction to the superlative redwood forests on Bull Creek Flat in 1955 is chronicled and explained in School of Forestry, U. C. Berkeley, A Symposium on Management for Park Preservation (1966).

190. At present there are three suits attempting to halt the harm to Redwood National Park caused by logging upstream and upslope from the park. People v. Arcata Redwood Co., No. 56558 (Humboldt County Super. Ct., filed Oct. 31, 1974) (nuisance); Natural Resources Defense Council, Inc. v. Arcata Nat'l Corp., No. 54212 (Humboldt County Super. Ct., partial summary judgment Feb. 19, 1975) (nuisance); and Sierra Club v. Dep't of the Interior, Civil No. 73-0163 (N.D. Cal., July 15, 1975) (decision denying dismissal reported at 376 F. Supp. 90, 6 ERC 1561 (1974)). In light of the unique statute and the recommendations of numerous studies undertaken by the Department of the Interior, Judge Sweigert ruled in Sierra Club that the Secretary's inaction was an abuse of discretion and ordered the Secretary to take reasonable steps by December 15, 1975, to protect the park. Sierra Club v. Dep't of the Interior, 8 ERC 1013 (1975).

191. J. Kittredge, Forest Influences 262-65 (1948). "Peak flows from forested areas rarely exceed 60 sec-ft per square mile, whereas from eroded or denuded lands they may be 500 to 1,000 or more sec-ft per square mile." Id. at 271.

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each district to govern timber operations that may cause significant soil disturbance.\textsuperscript{108}

Assemblyman Z'berg's statement at the signing into law of the Z'berg-Nejedly Forest Practice Act is indicative of the legislative purpose: "The thrust of this bill is to ensure maximum regrowth while applying strong controls against erosion."\textsuperscript{104}

a. Logging roads

Logging inevitably involves building roads. Roads are used for transporting workers and machinery into the forest, for log-transporting trucks, and for post-logging inspections and reforestation. Unfortunately, roadbuilding is often the most destructive logging practice in terms of erosion,\textsuperscript{108} although that may be due to poor design and maintenance.\textsuperscript{108} Roadbuilding cannot avoid cutting into slopes, undermining root structures and exposing unsecured soil which is often infertile\textsuperscript{107} and therefore impossible to stabilize by planting. Particularly in swales, what was previously subsurface flow saturates the soil, resulting in variable point sources evidenced by mass soil movements.\textsuperscript{108}

One means used in Oregon to reduce the number of roads built is requiring that the builder negotiate with adjoining landowners for the use of roads which will adequately serve the harvesting operation.\textsuperscript{199} California does not have a similar requirement, but the restrictions as to

\begin{itemize}
  \item 193. \textit{Id.} § 4562.5. The board is instructed to conduct investigations of monitoring techniques to be applied in the development and maintenance of soil conservation standards. \textit{Id.}
  \item 195. The Environmental Protection Agency calls roads "the principal source of mineral sediments." EPA, \textit{supra} note 142, at 26. The studies are inconclusive because they fail to isolate the effect of well-built roads. For example, a study reported \textit{id.} at 37 compared sediment yields from clearcut logging by skyline (which lifts the logs off the ground during yarding) with yields from 25 percent patch cutting with roads and using high lead logging (where only the leading end of the skidded log is lifted off the ground). The clearcut area yielded less than four percent as much sediment, but it is impossible to say how much of the reduction was due to using the skyline rather than the high lead system.
  \item 196. E. Stone, R. Grah, \& P. Zinke, \textit{An Analysis of the Buffers and the Watershed Management Required to Preserve the Redwood Forest and Associated Streams in Redwood National Park} 71 (1969).
  \item 197. J. Kittredge, \textit{Forest Influences} 315 (1948).
  \item 198. Mass soil movements generally occur when the soil mantle becomes saturated, increasing the internal pore pressure and diminishing shear strength. A study conducted at the H. J. Andrews Experimental Forest in western Oregon recorded 125.9 instances of mass soil movements per 1000 acres in road areas, compared with 3.9 in logged areas, and 0.4 in undisturbed areas. C. Dynness, \textit{Mass Soil Movements in the H.J. Andrews Experimental Forest 10} (USFS Research Paper PNW-42, 1967).
  \item 199. \textit{Guide to Oregon Forest Practice Rules, supra} note 168, §§ 24-421(6) (eastern region), 24-521(6) (northwest region), and 24-621(6) (southwest region).
\end{itemize}
permanent roads are fairly thorough and unambiguous. Trees whose root structures are partially undercut as a result of roadbuilding must be concurrently felled.\textsuperscript{200} General contours of the land must be utilized to the fullest extent possible in order to avoid excessive cuts, fills, and grades.\textsuperscript{201} In two districts, roads must generally be held to single lane width with turnouts at reasonable intervals.\textsuperscript{202} All logging must be preceded by a timber harvesting plan submitted to the state forester,\textsuperscript{203} the function of which is to encourage good planning. The person who files the timber harvesting plan must locate all proposed and existing roads on a map.\textsuperscript{204} Only the coast rules require that roads be laid out on the ground prior to construction.\textsuperscript{205} This procedure, which should be encouraged, enables the forester to avoid slide areas and obstructions which are not shown on maps.

Roads built on slopes gather surface runoff along their upslope rim which is diverted along the road. The steeper the road, the higher the velocity reached by the water. The Forest Practice Rules for the coast and northern districts limit to 15 percent the grade at which any road can be built, although the grade can be increased to 20 percent on stretches of less than 500 feet in length.\textsuperscript{206} These percentages may be exceeded, but only when it is "clearly shown" that there is no other feasible access to the timber, or that using gradients in excess of 20 percent will reduce soil disturbance.\textsuperscript{207} The state could ban steeper roads with the result that geographically isolated stands would not be harvested unless the owner could afford using helicopters or balloons to remove the trees. This would be extremely harsh for small owners, who might have to sell their land to larger owners who could afford to harvest the timber. A second alternative is to yard the logs by tractor over the distance. This method creates deep incisions in the forest floor. Tractor skid trails may be more aesthetically pleasing in the long run because they may be obscured by vegetation after a few years. But the criss-crossing scars of skid trails concentrate water flows and lead to erosion far worse than from longer-lasting roads equipped with ditches and culverts.\textsuperscript{208} The rules apparently allow construction of properly built

\textsuperscript{200} 14 CAL. ADM. CODE §§ 915.1(b) (coast), 935.1(b) (northern), and 955.2(c) (southern) (1974).
\textsuperscript{201} Id. §§ 915.1(a) (coast), 935.1(a) (northern), and 955.2(a) (southern—"cuts and fills").
\textsuperscript{202} Id. §§ 915.1(a) (coast) and 935.1(a) (northern).
\textsuperscript{203} CAL. PUB. RES. CODE § 4581 (West Supp. 1975).
\textsuperscript{204} Id. § 4582(c).
\textsuperscript{205} 14 CAL. ADM. CODE § 915.1(a) (coast) (1974).
\textsuperscript{206} Id. §§ 915.1(a) (coast) and 935.1(a) (northern).
\textsuperscript{207} Id.
\textsuperscript{208} Downspouts or rocks must be provided where culvert outflow is discharged on erodible fill material. Id. §§ 915.2 (coast), 935.3 (northern), and 955.2(h) (southern).
roads as the best alternative for harvesting geographically isolated stands.

Roads once built must be maintained if they are not to erode. Logging is generally completed before the heavy fall and winter rain. When roads are left at the end of the logging season, it is possible for culverts and ditches to plug, backing up water behind the road. The soil becomes saturated and tends to slide, and the water which does pass is increased in velocity. Oregon provides for road maintenance by directing that culverts and outlets be cleaned before and during the rainy season in order to prevent clogging. The requirement should also extend to snow-covered roads during periods of thaw.

b. Log transport systems

The amount of erosion is significantly affected by the log transport system employed. Activities which compact forest soil reduce the rate and capacity of infiltration of water, thus increasing overland flow. Exposed soil is easily detached and transported by surface water. Therefore, yarding methods which cause the least compaction and disruption of soil are best for minimizing erosion. Exotic balloon and helicopter logging are excellent in preventing erosion, but are expensive. During skyline logging, logs are yarded above the forest floor by means of suspended cables, causing relatively little soil disturbance. In high lead logging, only the lead end of the log is lifted above the ground. Consequently, there is more soil compaction and disruption with high lead logging than with skyline logging.

Despite the excellent soil protection characteristics of high lead and skyline logging, there are few provisions in the Forest Practice Rules which regulate yarding methods. One provision is in the coast district. During the period between November 15 and April 1, yarding under "excessively wet ground conditions" must be by cable (skyline, high lead, or some system) "unless specific additional provisions to minimize

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209. GUIDE TO OREGON FOREST PRACTICE RULES, supra note 168, §§ 24-424(2) (eastern region), 24-524(2) (northwest region), and 24-624(1) (southwest region).
210. EPA, supra note 142, at 32.
211. Id. “As long as the 2.5 to 7.5 cm (1 to 3 in.) layer of surface organic matter remains intact, there is seldom any detachment and subsequent transport of sediments. In fact, there is seldom any surface runoff water.” Id.
212. One study found that balloon logging caused six percent bared soil and 1.7 percent compacted soil in the watershed compared with tractor logging which resulted in 35.1 percent bared soil and 26.4 percent compacted soil. Id. at 33. Sediment production is directly proportional to soil compaction and disturbance. Id. at 32.
213. Skyline logging yielded 12.1 percent bared soil and 3.4 percent compacted soil. Id. at 33.
214. High lead logging caused 14.8 percent bared soil and 9.1 percent compacted soil. Id.
erosion are set forth in the timber harvesting plan.\footnote{215} Even assuming that the last exception does not eviscerate the provision, "excessively wet ground conditions" is not defined. Therefore, it is doubtful that the provision applies to any but the soggiest ground conditions, when harvesting probably would not be undertaken at all.

Another yarding system restriction applies in the northern district, but only during the winter months when the "estimated erosion potential\footnote{216} is "high" or "extremely high."\footnote{217} At such times, tractor logging is not allowed on slopes in excess of 60 percent.\footnote{218} In the coast district, the operator must flag the location of constructed tractor roads in advance of construction on slopes over 50 percent where the "erosion hazard rating\footnote{219} is "extreme."\footnote{220} This does not address the problem of unprepared skid trails, but another rule declares that skid trails shall not be so steep as to require use of the bulldozer blade for braking.\footnote{221} Only extremely steep slopes are off limits under this restriction. The coast rules also require the use of cable, helicopter, or balloon systems when clearcutting old growth stands on slopes exceeding 70 percent if the erosion hazard rating is extreme.\footnote{222} Cable or other systems are not required when using seed-tree cutting, which differs from clearcutting in that four seed trees of 24 inches in diameter or eight seed trees 18 inches in diameter per acre must remain after logging.\footnote{223} It is incomprehensible why leaving as few as four trees per acre obviates the requirement that cable, helicopter, or balloon systems be employed on extreme slopes with highly erodible soils. The California rules appear especially weak considering that Nevada and the Tahoe Regional Planning Agency prohibit tractor logging on slopes over 30 percent. On steeper slopes, another yarding system must be used unless the operator is granted a variance.\footnote{224} California should adopt a 30 percent slope limitation on

\footnote{215} CAL. ADM. CODE § 915.7 (coast) (1974).
\footnote{216} Erosion potential, which is a product of soil type, slope, and geology, is estimated by using a table. \textit{id.} § 932.5 (northern).
\footnote{217} Using the table for the northern district, the only soils which have high or extremely high erosion potentials on 70 percent slopes are sandy soils of less than 40 inches in depth (unless clayey subsoil is present, in which case soil depth may exceed 40 inches). \textit{id.}
\footnote{218} \textit{id.} § 935.6 (northern).
\footnote{219} The coast district's erosion hazard rating combines erosion potential used in the northern and southern districts with a climatic stress factor based on mean annual precipitation. \textit{id.} § 912.7 (coast). \textit{Compare} § 932.5 (northern) with § 952.6 (southern).
\footnote{220} \textit{id.} § 915.3 (coast).
\footnote{221} \textit{id.} § 914.2(d) (coast).
\footnote{222} \textit{id.} § 913.5 (coast).
\footnote{223} \textit{id.} § 913.4 (coast).
\footnote{224} NEV. REV. STAT. § 528.048(1) (1973); TAHOE REGIONAL PLANNING AGENCY TIMBER HARVESTING ORD. § 7.00(1) (1973). The Tahoe variance procedure is outlined at note 169 \textit{supra}. In Nevada, the request for a variance must include data on soil.
tractor logging, perhaps with a reduction in the slope on which tractor logging is allowed as the soil erosion potential increases. A variance procedure could empower the state forester to make minor adjustments for good cause, such as when the use of small tractors would cause less soil disturbance.

c. Stocking

There is some indication that the effects of deforestation on soil stability are small compared to the effects of roads and skid trails, but deforestation's effects should not be underestimated. Removing vegetation influences snowpack accumulation and persistence, and water released by rapidly thawing snow can be as destructive as heavy rains. Interception and transpiration slow the incidence of mass soil movements as does mechanical root support. Surface runoff is decreased by the forest's effect on infiltration capacity and depression storage. From areas of undisturbed vegetation, surface runoff is negligible; but where vegetation has been seriously disturbed, runoff may amount to over 50 percent of precipitation. This directly affects floods by increasing the amount and synchronization of water flow off watersheds.

Once trees are removed, it is necessary to reestablish vegetation in order to conserve soil. After harvesting, sediment production increases. Reforestation can reduce sediment production by 96 percent over 18 years. The process is slow because new roots must grow to hold the soil and pass water through new leaves into the atmosphere. New foliage shields the soil from sun and rain, and fallen leaves add to its water storage capacity.

characteristics, reproduction capability of the area, litter cover and ground cover, erosion hazards, natural drainage features, percent of gradient and aspect of slopes, a description of the silvicultural method and the equipment to be used, and any other information requested. Nev. Rev. Stat. § 528.043(2) (1973). In acting on the request, the state forester firewarden is to consider the extent to which tractor logging may destroy advanced regeneration, may cause erosion, and may cause siltation and eroded soils to infiltrate the 200-foot stream buffer. Id. § 528.048(3). If a variance is granted, it may be made subject to conditions. Id. § 528.048(2).

225. See note 198 supra.
228. Denudation followed by gradual deterioration of root systems accelerated the frequency of slides over a period of a few years in a study conducted in Alaska. D. Bishop & M. Stevens, LANDSLIDES ON LOGGED AREAS IN SOUTHEAST ALASKA 16-17 (USFS Research Paper NOR-1, 1964).
229. J. Kittredge, Forest Influences 233 (1948).
230. Id. at 235.
231. Sediment yield is inversely related to forest cover. EPA, supra note 142, at 47.
232. Id.
The Forest Practice Act sets standards of "minimum acceptable stocking" to utilize growing space, making no mention of the erosion prevention characteristics of reforestation. The board of forestry adopted the Act's standards word for word in spite of clear indications that the minimum standards were intended to be temporary. The low standards must be met within five years after the completion of logging. Two or three years would be more realistic, even if it meant lower standards, for poor regeneration must be spotted and corrected early in order to avoid prolonged erosion.

The state forester's stocking inspection must take place within six months after receipt of the stocking report required of the timber owner within five years after logging. The report records the number of trees and their dispersion. In a large company, the task of preparing the stocking report falls on the staff foresters. For small owners, hiring a professional will be an out-of-pocket expense. To compound the expense, more complicated reports must be filed each year if planting or artificial seeding is used. A present member of the coast TAC recommends that small owners preparing stocking reports and timber harvesting plans be given state support or free advice.

d. Silvicultural methods

There are four common silvicultural or harvesting methods: clear-cutting, seed-tree, shelterwood, and selection. Clearcutting entails severing all trees and results in even-aged stands. Douglas-fir is a California conifer whose seedlings depend on ample light. Douglas-fir is clearcut to give it a better opportunity to compete with its shade-tolerant neighbors. If clearcuts are small, they are sometimes called block,

234. 14 CAL. ADM. CODE §§ 912.23 (coast), 932.20 (northern), and 952.23 (southern) (1974).
235. The Act provides that timberland harvested before the board adopts stocking standards "shall be classified as adequately stocked if . . . the minimum standards specified in this section are met." CAL. PUB. RES. CODE § 4561 (West Supp. 1975). "It is not the intent of the Legislature in designating minimum standards that such standards shall be deemed to be preferred as the standards to be adopted by the board." Id. § 4561.1.
236. Id. § 4561. The California Division of Forestry recommended a two-year stocking period. California Division of Forestry, Suggested Forest Practice Rules: Coast Forest District § 913.5(b)(2) (Apr. 25, 1974).
238. Id. § 4587.
239. 14 CAL. ADM. CODE §§ 913.11 (coast) and 933.8 (northern) (1974).
241. For technical definitions see SOCIETY OF AMERICAN FORESTERS, FORESTRY TERMINOLOGY (3d ed. 1958).
242. EPA, supra note 142, at 7-8.
patch, or group cuts. Seed-tree cutting also results in even-aged stands. It differs from clearcutting in that some trees are left to reseed the cutover areas. The seed trees are often removed when reseeding has been accomplished. The seeds of some tree species do not disperse as readily as those of other species, so more trees must remain to accomplish comparable reseeding. In shelterwood cutting, older and unwanted trees are removed in a series of harvests designed to provide sufficient light for natural regeneration. Uneven-aged stands result from selection cutting where individual trees are removed as they mature. Shade-tolerant species found in California which are best adapted to this method include redwood, white fir, incense-cedar, Jeffrey, and ponderosa pine.

Although the timber harvesting plan may designate any number of silvicultural methods, only two are important for purposes of complying with the rules: clearcutting and seed-tree cutting. Any other method employed need only comply with the leave and stocking requirements of seed-tree logging. In the northern district, for example, selection cutting is defined as “the removal of timber . . . at relatively short intervals, commonly 5 to 20 years, repeated indefinitely, by means of which the continuous establishment of natural reproduction is encouraged and an uneven-aged stand is maintained.” The residual stand must equal or surpass that required under the seed-tree rule, which is four trees per acre. The small leave required is inconsistent with the definition of continuous, uneven-aged management, for four standing trees per acre hardly constitutes a well-managed, uneven-aged forest. Although a forester is free to select cut, there is no requirement that select cutting be used.

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243. Id. at 7.
244. The southern rules provide an example: “When any silvicultural method other than clear cutting or thinning is used the residual stand shall be not less than the requirements of Section 953.4 [seed-tree method] unless the land is adequately stocked . . . upon completion of logging.” 14 CAL. ADM. CODE § 953 (southern) (1974).
245. Id. § 933.2 (northern).
246. Id.
247. Id. § 933.4 (northern). The four trees must each average at least 24 inches in diameter when measured at 4½ feet above the average ground level. Trees measuring 18 inches can be substituted on a two for one basis. Accord, id. §§ 913.4 (coast) and 953.4 (southern).
248. If a forest of trees which take 100 years to mature is to be logged at 20-year intervals, to encourage “the continuous establishment of natural reproduction . . . and [maintain] an uneven-aged stand,” no more than roughly 20 percent of the forest may be removed at any time.
249. The coast and southern districts recognize exceptions to this in special areas. In the high use forest subdistrict, which comprises about half of the area of the southern district but few of its commercial forests, logging must leave at least half of the trees 12 inches or larger in circumference. Id. § 953.8 (southern). A certain number of trees must be left standing in the southern area of the coast district, which includes that part of the
The southern rules restrict clearcuts to 40 acres in size and 600 feet in width. If four trees per acre of at least 24 inches in diameter are left after cutting, it fits the definition of seed-tree logging. Seed-tree logging can leave cleared areas of 400 feet in width. In the northern district, clearcuts are restricted to 80 acres in size when the estimated erosion potential is low and 20 acres when extremely high. When natural regeneration is relied on, clearcuts cannot exceed 1000 feet in width. Site preparation is necessary to expose mineral soil over 50 percent of the cutover ground. Holding the width of the cutover areas to 600 rather than 1000 feet is all that seed-tree cutting demands, and if the forester designates seed-tree cutting on the timber harvesting plan, no site preparation is required. Neither is there a requirement, as there is for clearcutting, that a "determined effort" be made to regenerate the logged area the first season following logging.

The coast district imposes a 120-acre maximum on clearcuts and requires direct seeding or planting for restocking. Block cutting, which relies on natural regeneration, cannot leave cutover areas of over 1000 feet wide. Seed-tree logging also relies on natural regeneration and only allows 300-foot wide cuts. But while the seed-tree method imposes a higher burden in terms of numbers of trees left, there is no corresponding benefit, for both methods mandate recourse to artificial regeneration if after two years stocking by natural means is inadequate.

As a general proposition, the more trees severed, the more erosion; the more downed timber removed, the more soil surface disturbed. The Forest Practice Rules as amended do recognize the probability that high

coast district south of Sonoma County. Id. § 913.9 (coast). These exceptions to the general scheme are areas with relatively high populations. Another exception is the Tahoe Region where patch cuts, if allowed, are restricted to three acres in size. Tahoe Regional Planning Agency Timber Harvesting Ord. § 3.00 (1973). See also San Mateo County, Cal., Ord. Code ch. 8, pt. I, div. VIII. § 10,450 (1971). 250. 14 Cal. Adm. Code § 953.5 (southern) (1974). The limit on width can be exceeded if explained in the timber harvesting plan. 251. Id. § 953.4 (southern). 252. Id. 253. Id. § 933.5 (northern) (1975). The limitations may be exceeded "to improve the total management of the property." Id. For an explanation of estimated erosion potential, see note 216 supra. 254. 14 Cal. Adm. Code § 933.5(b)(1) (northern) (1975). 255. Id. § 933.5(b)(6) (northern). 256. Id. § 933.5(a) (northern). Cf. id. § 913.5 (coast). (coast). 257. Id. § 913.5 (coast). If the erosion hazard rating is extreme, the maximum size, recognizing the state forester's prerogative, is 60 acres. 258. Id. § 913.5(b)(1) (coast). 259. Id. § 913.4 (coast). 260. Id. §§ 913.4 (coast—seed-tree) and 913.5(b)(7) (coast—block cutting).
volume cutting will increase erosion, but they rely on regeneration for continued production and not for protection of the soil. Regeneration failure in most commercial species is reduced by creating larger openings in the canopy, permitting sunlight to penetrate to the forest floor, but soil conservation may call for giving higher priority to avoiding damage to the soil in the first place.261 Regardless of whether stocking or low volume cutting protects soil more, both could be better used to prevent erosion. Outlawing clearcutting, as Nevada has done,262 is not necessary, but limitations on the size of clearcuts, comparable to those in the northern and southern districts, should be adopted in the coast district, and the allowable size should be related to the erosion potential of the soil. The leave requirements of selection logging should be raised to a realistic level, and the selection method should be required in areas of severe instability, especially near water-courses.

3. Sustained Production of Timber

The primary commitment of the Forest Practice Act is to continuous wood production.268 It was also basic to the former act,264 and California's dwindling timber inventory was the central concern in 1945 of the California Forestry Study Committee.265 Promotion of continuous production is alluded to in California's adoption266 of the federal Clarke-McNary Act,267 which concerns forest fire prevention and regeneration. Sustained production by improving reforestation was adopted by the second board of forestry as a goal in 1919.268 Despite the regard for sustained production thus evidenced, "the California State Board of Forestry has moved very slowly if surely along that path during the ensuing half century."269

a. Stocking

The Act suggests minimum stocking standards "to insure that a cover of trees of commercial species, sufficient to utilize adequately the suitable and available growing space, is maintained or established after

261. PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 14.
263. See discussion at Section II A. 3. supra.
264. PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 18.
265. CALIFORNIA FORESTRY STUDY COMM., THE FOREST SITUATION IN CALIFORNIA 9 (1945).
266. CAL. PUB. RES. CODE § 4185 (West 1972).
269. Id. at 446.
timber operations." As well as ensuring full utilization of timberland, stocking serves the function of erosion prevention. Stocking was examined above primarily as it relates to soil stabilization, but the criticisms are applicable to sustained production as well.

The stocking rules outline procedures to ensure regeneration after clearcutting. The rules require that a "determined effort shall be made to regenerate any clear-cut area during the first planting season following log removal and site preparation on that area." If the stocking standards are not met within three years, the owner must plant "annually at least three times if necessary" to reach the standards.

Although the board adopted only the minimum stocking standards suggested in the Act, the standards adopted compare well with those in Oregon. For instance, the coast district requires the achievement of an average point count per acre of 300 seedlings, saplings, and trees within five years after logging. In Oregon's adjacent southwest region, a point count of only 100 per acre need be met in four years.

Even when harvesting methods other than clearcutting are employed, the timber owner cannot rely on natural regeneration to stock the land, for if the stocking standards have not been met at the end of two years following the first August after completion of timber operations, artificial regeneration must be employed. This requirement obtains regardless of the size of the openings created in the forest, thereby adjusting inconsistencies among the silvicultural methods in the size of areas deemed capable of natural regeneration.

Another important production-oriented goal is stocking of the nonstocked timberlands in California. According to the 1970 U.S. Forest Service survey, 759 thousand of 8.008 million acres (9.5 percent) of California's private commercial forest land is nonstocked, i.e., has less than 10 percent of the trees it is capable of supporting. The

271. 14 CAL. ADM. CODE § 913.5(a) (coast) (1975); accord, id. § 933.5(a) (northern). There is no parallel provision in the southern district.
272. Id. §§ 912.23 (coast), 932.20 (northern), and 952.23 (southern).
273. Id. §§ 913.5(a) (coast) and 933.5(a) (northern—"planting as necessary").
274. See note 235 supra and accompanying text.
276. GUIDE TO OREGON FOREST PRACTICE RULES, supra note 168, § 24-602 (southwest). No comparison can be made to the Tahoe Region where clearcutting is prohibited: cuts may be no wider than two times the height of the tallest tree removed. TAHOE REGIONAL PLANNING AGENCY TIMBER HARVESTING ORD. § 3.00 (1973).
277. E.g., 14 CAL. ADM. CODE §§ 913.2 (coast—selection), 913.4 (coast—seedtree), and 913.5(b)(7) (coast—blockcutting) (1975).
278. See, e.g., text accompanying notes 258-60 supra.
279. UNITED STATES FOREST SERVICE, FOREST STATISTICS FOR THE UNITED STATES, BY STATE AND REGION, 1970, at 11 (1972). A statute enacted in 1965 declares that "there are within the state more than two million acres of burned and cutover lands not now
board is directed to adopt rules prior to January 1, 1976, for stocking these areas which have been damaged by fire, insects, disease, wind, flood, and other disasters.\textsuperscript{280} It is possible that much of the land is low site (of low quality for growing trees), but the overall increase is bound to be substantial.\textsuperscript{281}

When artificial seeding or planting is used, it is extremely important not to allow the establishment of maladapted ecotypes—genetic strains poorly suited to the environmental conditions. The Institute of Ecology considered requiring a reserve supply of suitable seed as a prerequisite to logging.\textsuperscript{282} The Institute suggested making certification as to local seed source or adaptation to the site a mandatory requirement for artificial regeneration.\textsuperscript{283} The Act gives little guidance on the subject, only declaring that stocking should ensure "a cover of trees of commercial species."\textsuperscript{284} There is no requirement that seedlings be well-suited to timber production, but the state maintains nurseries\textsuperscript{285} which may be able to supply proper stock.

\textit{b. Conversion}

The Forest Practice Act requires that a permit be obtained before timberland\textsuperscript{286} can be converted to agricultural, residential, or other uses.\textsuperscript{287} To encourage sustained production of timber through stocking contributing adequately to the growth of forest crops nor to the economy of the state."\textsuperscript{288} CAL. PUB. RES. CODE § 4691 (West 1972). This large estimate probably results from inclusion of public land and from a stricter definition of "contributing adequately."

\textsuperscript{280} CAL. PUB. RES. CODE § 4561.6 (West Supp. 1975).

\textsuperscript{281} While the amount of nonstocked private forest land in California increased 8.8 percent between the years 1953 and 1962, over the same period Oregon and Washington shared a 2.5 percent decline due to their stricter stocking rules. Statement by Henry Vaux, Professor of Forestry, U. C. Berkeley, 1972 Tahoe Hearing, supra note 75, at 127.

\textsuperscript{282} PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 67.

\textsuperscript{283} Id.

\textsuperscript{284} CAL. PUB. RES. CODE § 4561 (West Supp. 1975).

\textsuperscript{285} Id. §§ 4681-85 (West 1972).

It is further declared to be in the interest of the people of California that the state determine feasible means and methods for reforesting nonproducing forest lands to the end that all forest lands will eventually be brought up to their maximum growth capacity.

\textsuperscript{286} Id. § 4691.

\textsuperscript{287} Id. § 4621 (West Supp. 1975). The permits are conditioned on the granting of any necessary zoning or use permits. Id. § 4622.
cutover and nonstocked lands, as well as to maintain water quality and control erosion, this conversion process must not be used as it was in the past to circumvent the Act. The 1945 Act exempted conversion logging from compliance with the Forest Practice Rules; the 1973 Act expressly provides that conversion comply with the rules.

A timber harvesting plan is necessary, but there are three exceptions to the normal format. The silvicultural method need not be designated: it is taken for granted that the converter will clearcut. Stocking plans are not required, for the owner wants to put the land to another use, not grow trees on it. Thirdly, the timber harvesting plan need not be prepared by a registered forester, suggesting a belief that faulty planning is less dangerous when land is stripped for building or grazing than when timber is removed for sale. This belief is mistaken. The reason for logging has little to do with how timber operations are conducted. In fact, one who converts land to pasture is less likely to be concerned with maintaining the productivity of the soil. There are still problems in maintaining water quality, for example, which are no different than for commercial timber operations and where the professional forester's planning is no less important. In addition, small owners may convert their land instead of managing it for timber production simply to avoid the cost of having a timber harvesting plan prepared by a professional.

Under the Act, any person who will conduct timber operations must submit a timber harvesting plan, and any person who will devote timberland to a nontimber use must file for a conversion. The board is empowered, where consistent with the Act's purposes, to exempt a small class of people "whose activities are limited to the planting, growing, nurturing, shaping, shearing, removal, or harvest of immature trees for Christmas trees or other ornamental purposes or of dead, 

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289. See note 20 supra.
290. CAL. PUB. RES. CODE §§ 4625 and 4624(d) (West Supp. 1975).
291. Id. § 4622.
292. "Timber operations" means the cutting or removal or both of timber or other solid wood forest products, including Christmas trees, from timberlands for commercial purposes, together with all the work incidental thereto. Removal or harvest of incidental vegetation from timberlands, such as berries, ferns, greenery, mistletoe, herbs, and other products, which action cannot normally be expected to result in a threat to forest, air, water, or soil resources, does not constitute timber operations.
293. Id. §§ 4581-82.
294. Id. § 4621.
dying, or diseased trees of any size...". The board has exercised this power by exempting certain practices from the timber harvesting plan requirement. But the board has made two exemptions without statutory authority: single conversions of less than three acres need not file for a conversion permit, and timber operations on ownerships of less than three acres in one parcel are exempt from filing a timber harvesting plan. Since the Forest Practice Act designates certain activities which may be excluded from the timber harvesting plan requirement, those exclusions may be deemed exclusive, making the board's action ultra vires. The board has only limited administrative resources, including inspectors, which it should try to allocate efficiently. The exclusion of small owners might therefore be justified under a de minimus rational. But the de minimus justification is weakened by the fact that logging on small ownerships may be damaging to a much greater extent than their size would suggest, especially if the logging is conducted under wet conditions on steep slopes of erodible soil.

The state forester must deny a timberland conversion permit if the applicant does not have a bona fide intent to convert the land. If the state forester finds that conversion has not taken place after logging, the permit may be revoked and stocking ordered. But neither the Act nor the rules provide for a follow-up inspection to determine if conversion has taken place. The only post-logging inspection occurs immediately following completion of timber operations, although later inspections may be made if the state forester deems it necessary. In view of past abuses, this emission is unfortunate. The board can and should order periodic follow-up inspections to ensure that valuable timber-growing space is not wasted by shortsighted owners. The rules should also set standards for determining when conversion has not taken place. In Oregon, conversion must be accomplished within the period normally

295. Id. § 4584.
297. Id. § 1102.2.
298. Id. § 1038.1.
299. See People v. One 1941 Ford 8 Stake Truck, 26 Cal. 2d 503, 159 P.2d 641 (1945), where the doctrine of expressio unius est exclusio alterius was used to uphold the forfeiture of an automobile used for transportation of marijuana without the owner's knowledge where the owner did not meet the statutory exception.
300. See text accompanying note 344 infra.
301. See, e.g., NLRB v. Pease Oil Co., 279 F.2d 135 (2d Cir. 1960) (extension of NLRB's jurisdiction to less than the statutorily authorized scope).
302. CAL. PUB. RES. CODE § 4624(c) (West Supp. 1975). The board has delegated its authority to the state forester. 14 CAL. ADM. CODE § 1100 (1974).
304. Id. § 4604(c).
305. Id. § 4604(d).
required for reforestation. The time allowed for conversion could vary with the anticipated use, since converting to pasture, for example, takes less time than building condominiums.

c. Uneven-aged management

Any policy aimed at perpetuating sustained production of trees must regulate the distribution of trees among age classes so that there are always trees reaching merchantable size. Stocking alone cannot ensure a continuous supply of wood; it only ensures that timberland has trees growing on it. The board's failure to encourage some form of uneven-aged management (where a forest's trees are at different stages of maturity) exemplifies the state's inability to come to grips with sustained production. State or federal control is one means of avoiding gluts and shortages in the lumber supply. It would be necessary to inventory the ages and amounts of all commercial species, a significant administrative burden. State control would be unpopular and could disrupt the economy of regions and local governments which rely heavily on the timber industry. The district or county level could provide more protection of local interests, but the administrative burden would only be fragmented, not lessened. Local administration would still constitute considerable governmental impingement.

The best approach may be to encourage individuals, perhaps in conjunction with others if small owners are concerned, to practice some form of sustained yield management. If owners and groups of owners removed only a small portion of timber from an all-aged forest in any

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306. GUIDE TO OREGON FOREST PRACTICE RULES, supra note 168, § 24-103. The period required for reforestation varies from three growing seasons to six years depending on the region.

307. PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 79-80.

308. The only direct federal regulation of private timberland management was the National Industrial Recovery Act of June 16, 1933, ch. 90, 48 Stat. 195. NIRA was declared unconstitutional in Schechter Poultry Corp. v. United States, 295 U.S. 495 (1935), after some regulations were promulgated. H. FALK, JR., TIMBER AND FOREST PRODUCTS LAW 248 (1958). For federal income tax purposes, timber, like oil and gas, is subject to a depletion allowance. INT. REV. CODE OF 1954, § 611. For a brief history of congressional attempts to regulate private forest practices see Robinson, supra note 4.

309. Twenty-five of California's 58 counties contain 93 percent of the private forest land and account for 96 percent of the log production. PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 89. State reductions or adjustments in allowable cut will affect local revenues from property taxes, the number and length of available jobs, and businesses which serve loggers and the logging industry.

310. Sustained yield is the "yield that a forest can produce continuously at a given intensity of management. Sustained-yield management therefore implies continuous production so planned as to achieve at the earliest practical time a balance between increment and cutting." SOCIETY OF AMERICAN FORESTERS, TERMINOLOGY OF FOREST SCIENCE, TECHNOLOGY PRACTICE AND PRODUCTS 267 (1971) (cross-references deleted).
cutting, all timber types would be in continuous supply. An owner of 6,000 acres of one species on a 60 year rotation (determined by the fact that the timber will be harvestable after 60 years) might remove 100 acres of growth every year. This could be accomplished by clearcutting the 100 acres, but clearing such an area can lead to soil and nutrient loss, concomitantly slowing the growth rate. Patchcuts would be preferable. Adjustments in the law could allow the owner to postpone logging for a number of years and make a higher percentage cut at that time. This goal is not presently realizable, however, since sustained yield presupposes normal distribution of trees among age classes, a condition unattainable in California for at least 30 years.\footnote{11}

Only the bill introduced by Senator Nejedly contained a sustained yield concept. The bill declared a “goal of maximum sustained production of high quality timber products in an even flow,”\footnote{12} defining “even flow” as “the capability to harvest in any given year at least the same amount and type of timber harvested during the prior year . . . perpetually on a statewide, regional, or other basis, as determined by the board.”\footnote{13} Sustained yield, as the Institute of Ecology report explains,\footnote{14} depends on the establishment and maintenance of productive forest stocks and the realization of an approximately normal (all-aged) distribution of forest productivity among age classes. The Institute of Ecology recognized the necessity of sustained yield,\footnote{15} but Z’berg’s bill, which was prepared by the Institute, adopted only the first of the essentials of sustained yield, the establishment and maintenance of stocking,\footnote{16} urging that detailed information on age-class distributions be immediately compiled and analyzed to determine practical public policy goals.\footnote{17}

While the California Forest Practice Act does not embrace sustained yield management as a goal, one solution to the continuous production problem available under the Act seems to lie in select logging of small percentages of mature timber over long periods of time, called the selection system,\footnote{18} which results in uneven-aged stands with

\footnote{11}{PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 81.}
\footnote{12}{S.B. 361 § 4515(c) (Nejedly 1972).}
\footnote{13}{Id. § 4524.}
\footnote{14}{PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 93.}
\footnote{15}{Id. at 87.}
\footnote{16}{Id. at 93.}
\footnote{17}{Id. at 94-95. Assemblyman Z’berg seems to have been satisfied with stocking as a means of continuous production, underestimating the importance of the timing of yields. Statement by Assemblyman Edwin Z’berg, Chairman, \textit{Hearing on Logging Practices in the Sierra Before the Assembly Comm. on Natural Resources and Conservation} 12 (Yosemite National Park 1972).}
\footnote{18}{The selection system is an “uneven-aged silvicultural system in which trees are removed individually, here and there, from a large area each year—ideally over a whole forest or working circle, but from practical considerations almost always over the
only the largest trees removed. The California Forestry Study Committee strongly favored the selection system, recommending that it be "encouraged wherever possible." The Committee noted that the selection method "may need fostering by the State in some cases, and compulsion in a few others unless a satisfactory substitute method can be offered."\textsuperscript{319}

In furtherance of the purpose of sustained production, the Act allows the board to "encourage" selection or other forms of uneven-aged management where consistent with the biological requirements of the species.\textsuperscript{320} Unfortunately, the only benefits which the board can offer owners are those which already exist: less vulnerability to fire, infestation, and disease; more aesthetically pleasing forests; and better erosion prevention. It is difficult, therefore, for the board to encourage selection cutting or make it more desirable without outlawing what are now more economical processes. The board could burden clearcutting and seed-tree logging by reducing the size of allowable cuts, at least for the tolerant species. The Act empowers the board to "regulate the size and shape of areas in which even-age management of timber is utilized."\textsuperscript{321} It is arguable that the board cannot legislate block cuts down to a tiny size, for at some point even-aged management would cease to exist. Other language may also restrain the board's prerogative: the Act states that the board "may encourage"—not require—other types of management.\textsuperscript{322} Because of the board's questionable statutory authority, it would be more legitimate for the legislature to make this determination.

Another solution is to make the methods which are conducive to sustained production of timber more economically attractive. A guaranteed price for timber managed pursuant to approved methods would entail an enormous expense. Liquidation is inviting to many who are unsure if they will live to profit from long-run returns. In addition, a tree's value will not grow as fast as money invested at present interest rates.\textsuperscript{328}
A tremendous stumbling block is a provision in the California constitution which discourages selection logging and the holding of timber until maturity. It provides a 40-year exemption from the ad valorem tax for immature timber growing on land from which 70 percent or more of all trees over 16 inches in diameter has been removed. The board of forestry is powerless, of course, to change the constitution. Revision which is presently being considered will hopefully prove to be the first step in establishing a long-needed policy to assure continued production.

4. Enforcement

It was the purpose of the legislature in drafting the Forest Practice Act to create "an effective and comprehensive system of regulation." In logging operations, major abuses are easily detected, making them easier to correct. Yet, as with yarding in streams, apparent damage can be slight and actual cumulative damage tremendous and irreversible. Therefore, to be effective, regulation must protect against small abuses to water and soil resources. The emphasis of enforcement must be on causes rather than effects.

a. Performance bond vs. lien

A performance bond is a limited enforcement tool because it only corrects obvious effects: a prohibition against yarding in streams is virtually unenforceable by a bond procedure. Nevertheless, large abuses are deterred by fear of forfeiture. Nevada, San Mateo County in California, and the Tahoe Region are jurisdictions which make posting a performance bond a prerequisite to logging.

The Forest Practice Act does not provide for a performance bond. Instead, there is a lien which attaches to the property upon

with 10 to 15 percent for industry as a whole. A well-managed forest, therefore, will always be in danger of exploitation by the forest industry and will seem to be inefficiently managed in the minds of unimaginative, shortsighted people.

Robinson, supra note 4, at 10.

324. CAL. CONST. art. XIII, § 3(j).
325. For discussions of private timberland taxation in California and recommendations for reform see NATIONAL INSTITUTE FOR APPLIED RESEARCH, TAX POLICY FOR CALIFORNIA TIMBERLANDS (Summary Report to the State Assembly, 1974); CALIFORNIA'S PRIVATE TIMBERLANDS, supra note 17; PUBLIC POLICY FOR CALIFORNIA FOREST LANDS, supra note 71, at 96-109.
327. NEV. REV. STAT. § 528.043 (1973).
329. TAHOE REGIONAL PLANNING AGENCY TIMBER HARVESTING ORD. §§ 4.70(6), 6.00(7), and 7.00(6) (1973).
330. Senator Nejedly's bill provided for a bond of at least $50 per acre. S.B. 361 §
which corrective action has taken place.331 The state forester may take corrective action with332 or without333 a court order. The out-of-court procedure is somewhat lengthy: notice must be given at least 30 days in advance and the owner may request a public hearing before the board of forestry. Like a bond, a lien is only effective against major logging abuses. A lien may appear unfair compared to a bond because the lien threatens the owner and not the timber operator who is most often responsible for logging damage. It is unrealistic to expect a timber owner to supervise effectively independent timber operators. To combat this objection, the Act empowers the state forester to bring an action in debt against the person responsible—operator or owner—to recover expenses incurred by the state forester in taking corrective action.334

The California attorney general may enforce compliance with the Act and rules,335 but private attorneys general are not encouraged. The Act allows any person to sue for a writ of mandate to compel the board and state forester to carry out their statutory duty.336 But the state forester can apparently refuse to bring an injunctive action and use instead the out-of-court procedure of remedying abuses as a matter of discretion.337 Thus, the decision may be unreviewable. Willful violation of any rule promulgated by the board is a misdemeanor punishable by a fine of up to $500 and imprisonment of up to six months.338 Criminal prosecution can be an effective tool, deterring smaller abuses, but it is impossible to compel the attorney general or the state forester to prosecute. The fact that low penalties can be imposed will hopefully encourage prosecution. However, at the present time, opposition to state regulation is so strong in the timber producing counties339 that convictions may be extremely difficult to elicit from juries and judges.


331. CAL. PUB. RES. CODE § 4608 (West Supp. 1975). The lien has the same force and priority as a judgment lien.

332. A court may authorize the state forester to take emergency action to correct violations which threaten “immediate and irreparable harm . . . to soil resources or the water of the state.” Id. § 4605.

333. Id. § 4608.

334. Id. § 4610. The amount of the debt includes administrative costs reckoned at $250 or 10 percent, whichever sum is greater.

335. Id. § 4603.

336. Id. § 4514.5.

337. “The State Forester may bring an action to enjoin the violation, or threatened violation, of any provision of this chapter or the rules and regulations of the board . . . .” Id. § 4605.

338. Id. § 4601.

339. Some loggers have publicly declared that they are logging in defiance of state law, claiming that they must do so to survive. S.F. Chron., Apr. 3, 1975, at 22, col. 6.
b. Inspections

Any system of enforcement must include a means of discovering infractions. Under the Forest Practice Act, inspections serve this function. The inspection procedure was probably the major failing of the former Act. There were only eight full-time inspectors. The number of inspections per season actually made averaged 1.4 per timber operator, with many operators never inspected. The enforcement coordinator of the division of forestry estimated that for adequate compliance, at least four inspections per logging operation per season were necessary. To achieve this minimum would require a six-fold increase in the staff. Under the new Act, the division received this increase and presently employs 48 foresters. A minimum of four inspections is specified. The first must occur within ten days of filing of the timber harvesting plan, unless the state forester finds that it would not add "substantive information he deems necessary for enforcement," in which case the state forester may forego the inspection. During the timber operation, three inspections are mandated: at commencement, while operations are underway, and following completion. The last may take place seven months after completion of logging. The stocking inspection occurs even later. The first inspection will be most important if new logging roads must be built. Under the statutory scheme it is possible to have as few as three inspections during a 3½-year timber operation, since the timber harvesting plan may outline a three-year operation and the last inspection may not occur until seven months after completion. However, the state forester is authorized to make more inspections, and the rules discourage perennial operations, stating that the plan "should be limited to that area on which timber operations normally will be completed in one twelve-month period after filing date and in no case shall it extend beyond 36 months."

There is no room for unofficial inspectors. One public check could be to ascertain whether natural features, such as unstable slopes, con-

340. MAN'S EFFECT ON CALIFORNIA WATERSHEDS, supra note 1, at 50.
341. Id. at 49.
342. Id.
343. Id. at 50.
344. STATE BD. OF FORESTRY, REPORT TO THE LEGISLATURE 3 (1974).
346. Id.
347. The operator has one month after completion in which to file a report. Id. § 4585. After receipt of the report, the state forester has six months in which to conduct an inspection. Id. § 4586.
348. See text accompanying note 238 supra.
350. Id. § 4604(d).
351. 14 CAL. ADM. CODE § 1041 (1975).
form to their description in the timber harvesting plan. But it is usually impossible for the public to inspect logging sites. Unlike official inspectors, private persons are trespassers. It could also be beneficial to check the adequacy of plans in their conformance to the Forest Practice Rules; in effect, to review the performance of the state forester. Notice of filing of a plan is posted in the proper county and can be obtained from the state forester by written request, but the timber harvesting plans themselves are filed only in the district in which timber is to be cut and in Sacramento. Even within a district, the place of filing may be miles away from the timber operation. Shortcomings are difficult to remedy. An operator whose plan is rejected can request a public hearing before the board, but there is no corresponding right for one to attack a plan which has been approved. The only recourse is to file suit against the state forester.

The quality of the inspections will have a great deal to do with the success of the Forest Practice Act. The new inspectors are given training in soils and many will become peace officers. If they witness an illegal practice during an infrequent inspection, the practice should be sanctioned. If a prepared stream crossing is not used, in violation of the rules, the operator should be cited. It is not enough that the inspector warn the operator or direct that a crossing be built, for failing to punish will encourage noncompliance. One observer believes that at least some inspections have not resulted in conscientious enforcement of the Act and rules. On the other hand, the forest manager of a timber company reknowned for its good forest practices states that past inspections were quite cursory, but complains about the overzealousness of the new inspectors.

353. 14 CAL. ADM. CODE § 895.3(a) (1975).
354. Id. § 895.3(c); CAL. PUB. RES. CODE § 4582 (West Supp. 1975).
355. 14 CAL. ADM. CODE § 1032 (1975). Besides placing a copy on file, the state forester must transmit a copy to the California Department of Fish and Game, the appropriate regional water quality control board, county planning agency, and the Tahoe Regional Planning Agency. CAL. PUB. RES. CODE § 4582.6 (West Supp. 1975).
357. For example, a plan for harvesting in Del Norte County must be filed in Santa Rosa, Sonoma County, almost 300 miles away. 14 CAL. ADM. CODE § 1032 (1975).
358. CAL. PUB. RES. CODE § 4582.7 (West Supp. 1975).
359. STATE BD. OF FORESTRY, REPORT TO THE LEGISLATURE 5 (1974). Notice the similarity to the first board of forestry in the text accompanying note 8 supra.
360. The Act does not apply to employees with wages as their sole compensation. CAL. PUB. RES. CODE § 4528.5 (West Supp. 1975). The definition of timber operator recognizes this fact and excludes wage earners. Id. § 4526.5.
c. Ambiguity of the rules

The Act and the rules do not provide for ubiquitous policing of timber operations, and a reasonable budget would not permit the installation of onsite stream turbidity monitors and other devices. The only alternative is to make meaningful the few inspections which are made. This can be accomplished by enforcing regulations against specific behaviors which cannot be tolerated.

The rules fail miserably in isolating objectively determinable behaviors. The most fatal enforcement problem is the ambiguity of the rules. The northern rules direct that areas of 800 square feet of exposed mineral soil within the stream or lake protection zone\(^\text{363}\) "shall be treated, if necessary, for reduction of soil erosion prior to November 15 of the year of disturbance."\(^\text{364}\) At this late date in the season, the only opportunity for enforcement will probably be the inspection following completion of logging. The timber operation may encompass hundreds or even thousands of acres, so there is no possibility that every stream and pond can be inspected for landslides and unstable fills. Snow may cover the ground. But supposing an inspector does discover a large slide, the rule is almost meaningless because it requires stabilization only "if necessary." To prove beyond a reasonable doubt that treatment was necessary will be close to impossible. The lack of an objective definition of when treatment is necessary will prevent effective sanctioning of all but the most outrageous abuses.

Other examples of vague wording abound. The southern rules demand that riparian vegetation be "retained and protected insofar as practical."\(^\text{365}\) "Cable lines shall be installed, hung, and operated so as to minimize damage to residual timber and reproduction."\(^\text{366}\) In the northern district, harvesting "shall not be conducted under ground conditions which, due to excessive moisture, result in unreasonable soil compaction or accelerated erosion."\(^\text{367}\) Roads in the logging area "shall be treated for stabilization when necessary to prevent excessive loss of road surface material."\(^\text{368}\) The coast rules demand that "to the fullest extent possible" trees shall be felled away from streams and lakes.\(^\text{369}\) Besides the contradictions and exceptions in this last provision which are noted above,\(^\text{370}\) the rule is practically unenforceable because what

\(^{363}\) See text accompanying note 182 supra.

\(^{364}\) 14 CAL. ADM. CODE § 936.4 (northern) (1974).

\(^{365}\) Id. § 953.9 (southern) (emphasis added).

\(^{366}\) Id. § 954.5 (southern) (emphasis added).

\(^{367}\) Id. § 935.6 (northern) (emphasis added).

\(^{368}\) Id. § 935.2 (northern) (emphasis added).

\(^{369}\) Id. § 914.1 (coast).

\(^{370}\) See text accompanying notes 165-66 supra.
was "possible" is not readily ascertained after the fact. A better approach is to outlaw the practice and, while leaving the ultimate burden of proof on the prosecution, allow the defendant to show that the result could not be reasonably anticipated.

Ambiguous standards are also objectionable from the logger's standpoint. Many rules, like the one charging that damage to unmerchantable vegetation in the stream and lake protection zone "shall be kept to a minimum," are so vague that convicting someone whose conduct does not fall within the hard core of the prohibition could amount to a denial of due process. In this case, the only behavior clearly within the prohibition may be wanton destruction of residual riparian vegetation.

The vagueness of the rules may cut against loggers in a more subtle way due to the rules' function as a standard by which to review timber harvesting plans. The state forester's role in reviewing timber harvesting plans appears innocuous: "The State Forester shall have 15 days . . . to review the plan to determine if it is in conformance with the rules and regulations of the board and with the provisions of this chapter." With unambiguous standards, approval of a well-drafted plan is certain; but if the law is vague, the state forester can use standards higher than those anticipated by the applicant. For example, the northern rules do not regulate the size or location of culverts on logging roads other than to require that they "be installed at such intervals, in such manner, and of sufficient size to reasonably prevent gullying or washout of such roads." A timber harvesting plan proposing a road with culverts of a certain size spaced at certain intervals may be rejected by the state forester for failing to "reasonably prevent gullying or washout."

Without reference to similar examples of the discretion exercised by the state forester, a trial court judge found that approval of timber harvesting plans is a discretionary, not merely a ministerial, act. That finding, which is consistent with an opinion of the California attorney general, overcame the major impediment to subjecting timber harvesting plans to the environmental impact report requirement of the

371. 14 CAL. ADM. CODE § 936.3 (northern) (1975).
372. CAL. PUB. RES. CODE § 4582.7 (West Supp. 1975). "The rules and regulations adopted by the board . . . shall be used as standards by persons preparing timber harvesting plans." Id. § 4552.
373. 14 CAL. ADM. CODE § 935.3 (northern); accord, id. § 915.2 (coast) (1974).
California Environmental Quality Act, which exempts ministerial projects from the preparation of environmental impact reports.

d. California Environmental Quality Act (CEQA)

In 1970 the California Legislature adopted CEQA, which directs that "all agencies of the state government which regulate activities . . . which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage." It further declares that it is state policy to "ensure that the long-term protection of the environment shall be the guiding criterion in public decisions.

Under CEQA, any state agency, board, or commission which proposes to approve any project which may have a "significant effect on the environment" must prepare, or contract for the preparation of, an environmental impact report (EIR). The EIR is to provide the public agency with a "detailed statement" of the environmental impact of the proposal, to list mitigation measures, and to suggest alternatives.

A timber harvesting plan is similar in function to an EIR. Timber harvesting plans must describe, among other things, the silvicultural methods to be applied, the type of yarding equipment to be used, etc.

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377. Id. §§ 21000-174.
378. Id. § 21080. Various members of the timber industry have said that there was an agreement at the time of the passage of the Forest Practice Act that logging activities would not be subject to the California Environmental Quality Act (CEQA). N. E. Hill, What is Going on in Sacramento?, 2 CAL. EIR MONITOR No. 7, at 2 (1975). The typically sparse legislative history indicates that some legislators, including Assemblyman Z'berg, were aware of the likely application of CEQA. Hearing on Logging Practices in the Sierra Before the Assembly Comm. on Natural Resources and Conservation 41-45 (Yosemite National Park 1972).
379. CAL. PUB. RES. CODE § 21000(g) (West Supp. 1975).
380. Id. § 21001(d). These assertions are environmentally somewhat stronger than the later directions to the board of forestry in the Forest Practice Act. See discussion at section II A. 3. supra.
381. The definition includes "activities involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies." CAL. PUB. RES. CODE § 21065(c) (West Supp. 1975).
382. Defined id. § 21083. The secretary for resources has adopted guidelines, as required by section 21083, implementing CEQA's definition. 14 CAL. ADM. CODE § 15000 et seq. (1975).
384. The EIR is to include a description of any unavoidable adverse effects, mitigation measures, alternatives, the "relationship between local short-term uses . . . and the maintenance and enhancement of long-term productivity," any irreversible environmental changes, and the growth-inducing impact. Id. § 21100.
385. Id. § 21061.
386. Id. § 4582(d); accord, 14 CAL. ADM. CODE § 1034(1) (1975).
387. CAL. PUB. RES. CODE § 4582(d) (West Supp. 1975); accord, 14 CAL. ADM. CODE § 1034(p) (1975).
the methods used near streams to avoid excessive erosion,\textsuperscript{388} the location of erodible soils, old slides, and areas of slope instability,\textsuperscript{389} specific steps taken to minimize soil excavation and erosion,\textsuperscript{390} and any additional provisions to minimize erosion from steep slopes or during winter operations.\textsuperscript{391} From the information provided in a timber harvesting plan, the state forester should be able to judge the environmental impact. If not, the board may require that more information be supplied.\textsuperscript{392} The judgment made by the state forester is simplified by the fact that the timber harvesting plan, since it must be in conformance with the Forest Practice Rules,\textsuperscript{388} will already reflect decisions made by the board as to what practices will be acceptable under what conditions. Not only will the information provided in the timber harvesting plan and EIR be duplicative, making more work for the division of forestry, but the added cost will be borne by the applicant.\textsuperscript{394}

From the enforcement standpoint, CEQA adds possibilities for judicial review of the timber harvesting plan process. CEQA allows private actions for failure of the agency to determine whether there will be a significant impact on the environment,\textsuperscript{395} for an improper determination,\textsuperscript{396} and for inadequacy of an EIR.\textsuperscript{397} The state forester and board will also have to comply with the standards of the EIR review process. Under the emergency scheme for EIR review, which technically was

\textsuperscript{388} CAL. PUB. RES. CODE § 4582(e) (West Supp. 1975); accord, 14 CAL. ADM. CODE § 1034(s) (1975).
\textsuperscript{389} 14 CAL. ADM. CODE § 1034(u) (1975).
\textsuperscript{390} Id. § 1034(v).
\textsuperscript{391} Id. § 1034(x).
\textsuperscript{392} CAL. PUB. RES. CODE § 4582(h) (West Supp. 1975).
\textsuperscript{393} Id. § 4583.
\textsuperscript{394} See id. § 21089. The present administration attempted to alleviate duplication and other problems by creation of a "functional equivalent" to the EIR process. Under CEQA, the secretary for resources can exempt classes of projects which do not have a significant effect on the environment. Id. § 21084. Borrowing from federal cases which exempt the Environmental Protection Agency from the preparation of environmental impact statements under the National Environmental Policy Act (e.g., Buckeye Power, Inc. v. EPA, 481 F.2d 162, 5 ERC 1611, (6th Cir. 1973) and cases cited therein; see discussion in ENVIRONMENTAL LAW INSTITUTE, FEDERAL ENVIRONMENTAL LAW 256-67 (1974)), the secretary for resources adopted emergency guidelines implementing an order of the Governor to prepare the functional equivalent process. 14 CAL. ADM. CODE § 15115 (emergency measure adopted Feb. 18, 1975). Then the secretary found that logging operations described in timber harvesting plans reviewed pursuant to the emergency guidelines would not have a significant impact on the environment, thus exempting them from CEQA. 2 CAL. EIR MONITOR No. 6, at 5 (1975).

A bill has been introduced to provide a statutory basis for the functional equivalent process which is of doubtful legitimacy. S.B. 707 (Nejedly 1975). For a history of the adoption of the guidelines see N. E. Hill, What is Going on in Sacramento?, 2 CAL. EIR MONITOR No. 7, at 1 (1975).

\textsuperscript{395} CAL. PUB. RES. CODE § 21167(a) (West Supp. 1975).
\textsuperscript{396} Id. § 21167(b).
\textsuperscript{397} Id. § 21167(c).
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not pursuant to CEQA, the state forester and the board of forestry may not approve proposed timber operations they find will result in "substantial adverse impacts on the environment." Assuming that the state forester has properly determined that a timber harvesting plan is in conformance with the Forest Practice Act and rules, allowing judicial review of this additional determination will undermine the integrity of the Act and rules. If the legislature believes the Forest Practice Act is too weak, it should amend the Act; if the rules are not in conformance with the Act, there are judicial and legislative remedies. Since timber harvesting plans and EIRs have similar functions, it makes little sense to duplicate paperwork and retain possibly contradictory standards of review.

The trial court's ruling that timber harvesting plans are subject to CEQA and the administration's decision to require EIRs even though the court's ruling was stayed pending appeal were greeted with violence and demonstrations. The legislature reacted by introducing nine bills and the Sierra Club urged the Governor to temporarily exempt logging operations from the EIR requirement. Less than two months after the Sierra Club's request, the secretary for resources declared that the administration opposed the "virtually useless" EIR requirement. Shortly thereafter, the legislature enacted an amendment to the Forest Practice Act which took effect immediately to suspend the requirement of EIR preparation on timber harvesting plans.

398. See note 394 supra.
400. One logger publicly chopped down trees to challenge the EIR requirement. S.F. Chron., Mar. 6, 1975, at 9, col. 3. When one tree, aimed at an effigy of Governor Brown labelled "Brown the Fuhrer," missed its mark, another logger beheaded the dummy with a chain saw. Id.
401. At one demonstration the capitol building in Sacramento was surrounded by logging trucks. S.F. Chron., Feb. 4, 1975, at 7, col. 3.
402. Three would exempt the Forest Practice Act from CEQA (S.B. 476, S.B. 477, and A.B. 838), one would validate timber harvesting plans submitted before March 10, 1975 (S.B. 531— to help clear up the backlog of unreviewed EIRs), another would only require EIRs when clearcutting or logging on erodible soils or near recreational areas (Z'berg, A.B. 328), a sixth would remove the EIR requirement but would add provisions to the timber harvesting plan provisions (A.B. 655), another would allow the secretary for resources to adopt special provisions under CEQA for timber harvesting plans (A.B. 762), one would repeal CEQA outright (S.B. 502), and the last would legitimate the "functional equivalent" system adopted by the resources agency (Nejedly, S.B. 707—see note 394 supra).
403. S.F. Chron., Mar. 6, 1975, at 9, col. 2.
404. S.F. Chron., May 30, 1975, at 7, col. 3. The administration exacted a strengthening of the Forest Practice Rules in return for its stand. See id. The amendments which followed have been incorporated into this Comment.
405. The bill, S.B. 476 (Collier 1975), was sent to the Governor on June 30, 1975. California Legislature, Interim Senate History 23 (July 18, 1975).
CONCLUSION

The Z'berg-Nejedly Forest Practice Act of 1973 recognizes a broader public interest in logging and private timber management, but aside from this, it is not a radical departure from prior law. The new Act directs the board to consider recreation, range and forage, and aesthetics, but the Act's overriding purpose is production of timber. Environmentalists have attacked the Forest Practice Rules, claiming they are inconsistent with the purposes of the Act, but except in minor instances (such as the small-owner exemption from the timber harvesting plan requirement), the rules are consistent with the Act taken as a whole. The major weakness of the rules is their failure to identify objectively determinable behaviors, without which the threat of prosecution is vacuous.

*Bayside Timber Co. v. Board of Supervisors of San Mateo County* accelerated the pace of California's evolving forest practice regulation. Now that the dust has settled, one must question the sagacity of the decision. The nearly four years of bitter political battles which followed *Bayside* might be justified as a cost of a government based on separation of powers, if *Bayside* was well-founded in principle; but that justification is removed if the decision is viewed as an example of judicial overreaching. *Bayside* brought about an improved Forest Practice Act and improved forest practice rules, but legislative impetus wanes quickly in the wake of an inquisition. Judicial activism is no substitute for the will to legislate. Sustained yield on a state-wide basis, reasonable protection of watercourses, and recomposition of the board of forestry are three of many improvements to be made in the Act and rules before California will have a balanced and effective system of forest practice regulation.

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