Chapter 17

Regulation of Forest Fertilization in the Pacific Region: A Brief Review

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ABSTRACT. Regulation of forest fertilization in Washington, Oregon, Idaho, and British Columbia is covered by forest practice rules of state or provincial agencies. In California, state agriculture rules govern fertilizer use in the forest setting. All require direct water protection of at least the higher class streams. Only California and Oregon do not require buffer zones as an additional measure to protect water and fisheries during fertilizer application. In the foreseeable future, fertilizer regulations will remain insignificant and change little, with one exception—increased protection for wetlands.

This chapter offers a brief comparison of rules of the states of Washington, Oregon, Idaho, and California and the province of British Columbia pertaining to forest fertilization, followed by a discussion of the potential changes on the horizon. For a more detailed study the reader will need to consult the individual state and provincial laws directly. Fertilizer regulation began primarily in the 1970s with the advent of forest practice laws. Those laws lump most fertilizers together in the general section dealing with chemicals, including insecticides and herbicides. Some exceptions are made specifically for the fertilizers.

State and Provincial Regulations

Washington

Washington State requires a permit from the Department of Natural Resources (DNR) to apply fertilizer to forests. DNR and the Washington Department of Ecology prohibit the direct application of fertilizer on any surface water. Fertilizers are treated like other chemicals within the rules regarding streams, with one exception: fertilizer buffer strips need to be only 8 meters (m) wide compared with 15 m for other chemicals.

Washington has an alternate plan provision for any forest practice rule. Such plans, if approved, permit deviations from the standard rule as long as the proposal meets or exceeds the public resource protection required under the standard rule. Alternate plans are subject to evaluation under the state's Timber/Fish/Wildlife (TFW) cooperative scientific agreement to regulate forest practices. TFW includes the Departments of Ecology, Wildlife, Fisheries, and Natural Resources, the Tribes, environmental groups, and others.

Creating the first alternate plan dealing with fertilizer use (in 1989) was a highly scrutinized and cumbersome process. It involved a great deal of debate and numerous meetings by TFW representatives and scientists, plus state and city health departments and their toxicologists. The proposal was fully discussed, adjusted, and carefully evaluated. Concern diminished to the point that a test was permitted which allowed direct application of fertilizer into class 4 and 5 streams (streams with lower resource values). Extensive water quality monitoring was required as part of the test. The results are presented elsewhere in this volume (Bisson et al.; Louse Creek study). It was found that water quality did not drop below federal Environmental Protection Agency (EPA) standards even with direct application. Monitoring during a similar alternate plan in 1990 gave the same outcome.

The result has been approval of subsequent alternate plans allowing direct application of fertilizer to minor streams where buffers are impractical; as a trade-off, buffers of 45 m are required for class 1, 2, and 3 streams (domestic water and fish-bearing streams).

Oregon

In Oregon, all applications of chemicals, including fertilizer, require notification to the Oregon Department

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of Forestry (ODF). If fertilizer is to be applied within 30 m of any class 1 stream (essentially fish-bearing or domestic water use streams), a written plan is also required. However, the requirement of a plan may be waived if no significant direct effects are expected in the riparian management areas. In the case of fertilizers no buffer is required, but no fertilizer can be broadcast directly into streams. This is in contrast to other chemicals, which require a strict 20 m untreated buffer.

Like Washington, Oregon will accept an alternative plan showing that the proposal fulfills the *purpose* of the rules even though it does not follow the restrictions specified. Alternate plans must evaluate the effects on water quality (a primary concern being eutrophication), and they require approval of the Oregon Department of Fish and Wildlife, which consults with the Oregon Department of Environmental Quality. According to ODF, requests to use alternate fertilizer practices have not been common and would generally be approved, because detrimental effects are rarely encountered.

British Columbia

In British Columbia, notification is not required for forest fertilization, partly because the provincial Ministry of Environment (MOE) has not expressed concern over effects of fertilizer use. This is in marked contrast to the rigorous process required to apply other chemicals in British Columbia. However, the federal Department of Fisheries and Oceans (DFO) did have concerns about forest fertilization, eventually leading to rules regulating practices detrimental to fish. Even though there is no *notification* process, there are rules and there is an established interagency referral process for both fisheries and water quality concerns.

Prior to logging in some coastal salmon-bearing drainages, a "nutrient sensitivity determination" for the watershed is done by DFO. The determination is completed to make sure that there is no problem with excess chemical loading, primarily of phosphorus and nitrogen.

The fertilization rules specify standard 10 m fertilizer-free zones (FFZ) along average class 1 and 2 streams (commercial and sport fish-bearing streams). In watersheds designated nutrient sensitive, a 30 m FFZ is specified. Some variability is allowed depending on the experience of the operator, but the bottom line is no fertilizer in class 1 and 2 streams. This does not apply to lesser streams, where direct application into the water is allowed. (However, guidelines for B.C. Forest Service operations prohibit fertilizing any body of water.)

Idaho

The Idaho Department of Lands requires notification for fertilizer use in forests. To date, the agency has never denied such use, nor has the Idaho Department of Environmental Quality (DEQ), which monitors fertilizer application on forest lands, raised any objections. Admittedly the practice is very infrequent in Idaho.

In the chemical section of its Forest Practices Act (FPA), Idaho does have rules pertaining specifically to fertilization. The buffer requirement of 15 m for class 1 and 2 streams is half the width specified for other chemicals.

California

California is the exception, in that rules pertaining to forest chemicals are regulated exclusively by the California Department of Food and Agriculture (CDFA), and are not covered in the state's Forest Practices Act (FPA). According to the California Department of Forestry, fertilization is done so infrequently that it has been specifically exempted from their forest chemical rules. No permit or even notification is required to apply forest fertilizers. CDFA regulations preclude direct application into streams, but no buffering is required.

The Future

What does the future hold? Unlike a lot of other forest practice rules, regulations governing fertilizer use seem relatively stable for the foreseeable future.

That does not mean that there are no problems. Concern is still expressed over effects on macroinvertebrate populations in fish streams; on lethal effects from ammonia on hatchlings if application is during peak fish-egg hatching times; on groundwater nitrates causing mental retardation in children; on birds and other wildlife ingesting pellets before they dissolve; and on the uncertainty over effects of long-term nutrient storage and release.

In the long run, studies on these and other concerns may result in a need to change the rules. Or, more likely, a tightening of the water quality standards of the U.S. Environmental Protection Agency or the Canadian Ministry of Environment may force more stringent rules and/or adherence.

The one notable exception is the protection of wetlands—a very hot topic right now. Since wetlands, especially bogs, are very sensitive to nutrient changes, it is likely that fertilization will be prohibited in most wetlands in the near future.

Because of the limited use of fertilizer in California, Idaho, and Oregon, no changes are anticipated on a five-year horizon. In British Columbia, use of phosphorus fertilizers may prompt implementation of new rules governing their specific use, but no change is expected in current rules governing nitrogen fertilizer. In Washington the Department of Ecology is proposing a *loosening* of the rules to allow for direct application into class 4 and 5 streams where buffering is impractical.

The lack of demonstrable impacts to water quality, the limited use of fertilizer, and forest practice issues of much higher concern mean that fertilization is an insignificant issue in the immediate world of forest regulation.

Questions and Answers

You said that a survey must be made to judge the "nutrient sensitivity" of a watershed before fertilization (in order to determine "nutrient loading"). Sounds technical. And what is the scientific basis? How is this done? Or is it merely avoiding riparian zones?

British Columbia uses a "nutrient sensitivity determination." Despite what the rules say about assessing nitrogen loading, the primary concern is the impact of phosphorus on the system, especially in the lower reaches where human inputs may result in nutrient levels near the threshold. Since phosphorus fertilization isn't used much in British Columbia yet, the matter isn't taken seriously. The process, undertaken by the Department of Fisheries and Oceans, involves water sampling before fertilizer application and an assessment of phosphorus inputs in the watershed. No fertilization has been stopped as a result.

Why are Washington's rules and regulations much more restrictive than those of neighboring states and provinces?

The forest practice rules pertaining to water were co-promulgated with the Washington Department of Ecology, which has water quality responsibilities in Washington. DOE was concerned about any changes in water quality and, until monitoring proved there were no significant effects, was unwilling to permit an exception to the chemical rules for fertilizer. As I mentioned, we expect this to change.

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