

4.9 RESOURCES MANAGEMENT AND RESTORATION

Forest Management

Forested lands are found throughout much of the Lahontan Region. Management of these lands can include commercial timber harvests, vegetation management to address fire risk and forest health, fire suppression, the use of prescribed fire, watershed and ecological restoration, and other activities. The forests of the Lahontan Region have suffered under a century of fire suppression, leaving an unhealthy condition in many locations where an abundance of undergrowth and dense canopy have created increased risk for catastrophic fire. Efforts to reduce these “fuel Loads” and to create defensible space for property owners are an ongoing priority. Forest management activities can also include the use of pesticides and various restoration techniques. Restoration techniques and pesticide use are discussed elsewhere in this Chapter. Other activities on forested lands, such as mining livestock grazing, and recreation are also discussed separately in this Chapter.

Silviculture/Timber Harvests

Silvicultural activities in the Lahontan Region occur on both federal and non-federal forest land. Tree harvesting methods include commercial thinning, clearcutting, sanitation, and salvaging of dead or dying trees, as well as non-commercial thinning to improve forest health and/or reduce the risk of and severity of wildfire. These harvesting operations are performed on areas of up to several thousand acres per project, and often involve heavy equipment such as chainsaws, tractor skidders, bulldozers, log hauling trucks, chip vans for biomass removal, and road watering trucks. Many of these areas project sites have not been harvested for many decades, if at all, and therefore have thick undergrowth, especially near streamcourses or wetlands. Logging—Activities such as log felling/yarding and particularly the road construction, and improvement and use of forest roads, log landings, and watercourse crossings construction, and endlining, can result in significant impacts. These impacts can include soil erosion and/or compaction, discharge to streams, streamcourse

damage, compaction or disturbance and diversion, and removal of riparian or wetland soil and vegetation, and soil and plant loss in wetlands. Such impacts on soils, vegetation and hydrology can in turn affect water quality and beneficial uses.

Control Measures for Silvicultural Activities

Prohibitions on unauthorized waste discharge to surface waters apply throughout the Lahontan Region. Prohibitions on waste discharges to 100-year floodplains apply to forestry activities in the Lake Tahoe and Truckee River watersheds. In the Lake Tahoe Basin, prohibitions on waste discharges to Stream Environment Zones (SEZs) also apply. Exemptions from these prohibitions may be granted for certain types of forest management activities. See Sections 4.1 and 5.2 of this Basin Plan for information on waste discharge prohibitions and exemption criteria.

The Regional Board requires proponents of vegetation or forest management activities with the potential to discharge wastes to surface or ground waters to obtain coverage under waste discharge requirements or a waiver of waste discharge requirements. Dischargers must ensure that their activities comply with the applicable provisions of this Basin Plan (including water quality objectives and waste discharge prohibitions or exemption criteria) and are protective of water quality. The Regional Board reviews proposed forest management activities for compliance with the provisions of this Basin Plan, and acts as a “responsible agency” under CEQA to review timber harvest proposals in the Region. The review of timber harvest activities includes reviewing timber harvest plans to assess the potential for adverse effects to water quality from silvicultural activities, Regional Board staff inspecting the planned harvest project area with the land owner or representative, and prescribing recommend water quality protection measures. If Regional Board concerns during this review are not satisfactorily addressed or if violations are observed, the Regional Board can appeal the harvest plan. The Regional Board reserves the option to adopt waste discharge requirements for forest management activities that pose a threat to water quality may take enforcement actions in accordance with the California Water Code.

The Regional Board reviews-regulates timber harvest proposals for both federal and non-federal lands. However, such review for National Forest System (NFS) lands differs from that on nonfederal lands. Special forest management provisions apply to the Lake Tahoe Basin (see Chapter 5).

Ch. 4, IMPLEMENTATION

Federal Lands. The United States Forest Service (USFS) has the authority and responsibility to manage and protect the land which it administers, including protection of water quality. When the USFS plans a timber harvest, it is generally listed quarterly in a notice called the Schedule of Proposed Actions (SOPA). Water Board staff review the quarterly SOPA notices and comment on those projects that have the potential to significantly impact water quality within the Lahontan Region. The USFS generally writes a National Environmental Policy Act (NEPA) document and routes it for public review. When the Notice of Decision is approved, the USFS writes a timber sale contract agreement with the hired logger. This agreement lists the terms of contract and includes protection measures for streamcourses, sensitive vegetation, soil stabilization, and erosion prevention that the logger must follow.

~~The State of California has a Memorandum of Understanding (MOU) with the USFS to insure that the State Clearinghouse receives copies of NEPA documents for major projects. The Clearinghouse then distributes copies to the appropriate state agencies for the designated review period. The MOU applies to projects which have the potential to exceed State or regional water quality standards or violate other provisions of this Basin Plan.~~

~~More specific to timber harvest plans~~ There is a Management Agency Agreement (MAA) between the USFS and State Water Resources Control Board (State Board). The MAA recognizes the mutual desire of each agency to achieve the goals of the Federal Water Pollution Control/Clean Water Act and to assure control of water pollution through implementation of Best Management Practices (BMPs). Each agency mutually agrees to coordinate water quality monitoring, share data, and cooperate in other water quality management planning activities.

During timber harvest activities on NFS lands, the USFS requires use of BMPs to directly or indirectly mitigate adverse effects to water quality and beneficial uses. Once BMPs are applied during a timber operation, their effectiveness is evaluated by the USFS. If BMP implementation did not produce the desired results, the USFS initiates corrective action and the BMPs may be modified as needed.

Timber harvest BMPs that are intended to protect water quality within National Forest lands include:

- The location and method of streamcrossings, and location of skid trails and roads, must minimize impacts to water quality.

- Maintenance of the natural flow of streams and reduction of sediment and other pollutants that may enter watercourses.
- All project debris must be removed from the streamcourse in the least disturbing manner.
- Timber sale contracts shall specify that timber operators must repair all damage to streamcourses, banks and channels.
- Water bars and other erosion control structures must be located to prevent water and sediment from being channeled into streamcourses and to dissipate concentrated flows.
- Equipment must stay a set minimum distance from streamcourses depending upon slope and high water mark.
- Proper drainage must be maintained during use of log landings.
- Used landings must be ditched or sloped to permit drainage and dispersion of water.
- Appropriate water quality or visual monitoring shall be conducted.

The USFS must obtain waste discharge requirements (permit) or a waiver thereof from the State Water Board or the Regional Board prior to implementing projects that have the potential to discharge wastes to surface or ground water. The permit or waiver considers the BMPs that have been developed by the USFS and may include additional conditions to protect water quality.

Non-federal lands. The State Board recognizes the water quality authority of the Board of Forestry (BOF) and the California Department of Forestry and Fire Protection (CDFCALFIRE) during timber operations on non-federal lands. The State Water Board has certified a water quality management plan which includes Best Management Practices for these timber operations on non-federal lands.

In cases ~~W~~when a timber owner wishes to conduct commercial timber harvest on private lands, a registered professional forester (RPF) is required to complete and sign a Timber Harvest Plan (THP). The THP includes a topographic map of the area, determination of number of acres, expected time period of operation, locations of roads, large landings and stream crossings, type of harvest, and watercourse and wetland protection measures. This THP is then filed with CDFCALFIRE. A review team

4.9, Resources Management and Restoration

meeting is held at the regional ~~CDF-CALFIRE~~ office. This meeting may include representatives from ~~CDF-CALFIRE~~, the Regional Board, California Department of Fish and ~~Game-Wildlife (DFGDFW)~~, and California ~~Department of Parks and Recreation~~ ~~Geologic Survey (CDP&RCGS)~~. After the meeting, a copy of the THP with any revisions is sent to the Regional Board for its review of potential water quality impacts.

Regional Board staff may elect to meet on-site with ~~CDF-CALFIRE~~ staff and the RPF who completed the THP. The land or timber owner and ~~a-DFG inspector or other review team agency representatives~~ may also be present. The timber harvest operation is inspected to ensure compliance with State Forest Practice Rules (FPRs) and the Regional Board's Basin Plan and permit or waiver. These FPRs include the following provisions:

- Timber operations shall prevent unreasonable damage to riparian vegetation, and site productivity must be maintained by minimizing soil loss.
- Appropriate levels of protection are assigned to different types of watercourses, including minimum distances logging machinery must be kept away from streamcourses and wet areas (buffer zones). The widths of the buffer zones depend on side slope and beneficial uses of the water.
- ~~At least 50% of the understory (acts as sediment filter) and overstory (shades water to maintain temperature) must be retained along streamcourses and wetlands. Depending on the watercourse classification there are retention standards for understory and overstory vegetation.~~
- Watercourse crossings must be kept to a minimum.
- If fish are present, the crossing must allow unrestricted passage of fish and water.
- Roads must be located and constructed to minimize impacts to water quality.
- Roads and landings should have adequate drainage.
- Heavy equipment is not to be operated on unstable soils or slide areas.
- Waterbreaks must be installed before the winter period. Standards are to be followed for distances

between water breaks on slopes. These water breaks should allow water to discharge into vegetative cover, duff, slash, rock or less erodible material to minimize erosion and should be maintained during timber operations.

- Timber operations during the winter period must not be performed under saturated soil conditions.
- Material from logging operations shall not be discharged into waters of the State in quantities deleterious to beneficial uses of water.
- Timber operators shall not use watercourses, marshes or wet meadows as log landings, roads or skid trails.
- ~~Vegetation and soil bordering or covering meadows and wet areas shall be retained and protected during timber operations.~~
- Trees cut within watercourse and lake protection zones shall be felled away from the watercourse by endlining to protect vegetation from heavy equipment operations.

Lake Tahoe Basin. Special control actions for forest management activities within the Lake Tahoe Basin are included in Chapter 5 of this Plan.

Recommended Future Actions for Silvicultural Activities

Regional Board staff should continue to actively review both federal and non-federal timber harvest proposals and to conduct on-site inspections as necessary. Since 2003, the Regional Board has had conditional waivers of waste discharge requirements for vegetation management activities on both public and private lands in California (Timber Waivers). These timber waivers address both commercial and non-commercial timber harvest and vegetation management activities. Non-commercial activities may be conducted for fuel reduction and forest health purposes. Timber Waivers must be renewed every 5 years and may be terminated at any time by the Regional Board. The timber waiver renewal must occur in a public hearing with prior public noticing. Significant research and equipment innovation is being conducted to address the shift in forest management associated with fuel reduction activities. The timber waiver acknowledges that new approaches are being developed to address forest and watershed health. The waiver allows for project specific analysis of implementation approaches and an avenue to regulate practices as new technologies are developed. The timber waiver

Ch. 4, IMPLEMENTATION

and the Basin Plan need to have flexibility in allowing for increased future utilization of biomass created during fuel reduction activities. Future Regional Board efforts should focus on cumulative adaptive management, the use of innovative technology, and design features and BMPs that reduce water quality impacts of forest management activities.

Fire Control and Prescribed Burns

Wildfires are part of the natural process of the forest ecosystem. Some species of trees and other plants are dependent upon wildfires for seed germination and/or seedling establishment. However, these fires, both natural and human caused, can have major impacts on vegetation conditions with subsequent effects on soils and water quality. In many forests, fire suppression techniques are commonly used, adding an abundance of available "fuel" to the forest. This "fuel" can contribute to a high intensity wildfire which magnifies impacts on vegetation, soils, and water quality.

Fires initiate a process of soil movement that continues through subsequent rainstorms. The process begins as fires consume vegetation. With the vegetation removed, effective ground cover to hold soils in place is also removed. The vegetation is no longer removing and using soil nutrients like nitrogen and phosphorus. Many nutrients are left in the ashes which can easily be transported to surface waters by stormwater runoff or ground water flow. If the fire destroys the duff layer (a biologically rich protective layer of decaying needles and branches), only easily erodible ashes are left to cover the bare mineral soils. The duff layer normally functions like a sponge, soaking up precipitation, including snow melt. Without the duff layer, the water which would normally infiltrate to ground water becomes erosive runoff. In areas of sandy soils, intense burning of the duff layer can chemically alter the soils, creating a water repellent or "hydrophobic" layer which can further increase runoff. Runoff can rapidly erode bare mineral soil and flush nutrient-rich ashes into rills and gullies. ~~With more runoff~~Over time, these gullies can increase in size, eventually draining to surface waters, eroding upland areas, scouring some natural stream channels while adding sediments to some channels and lakes. This increased sedimentation can impact fish spawning gravels and fill pools and riffles which are important aquatic habitat components. Sediments also contribute large amounts of nutrients to streams and lakes. Fires can further impact water quality by increasing the ~~return periods~~magnitude of floods associated with moderate and extreme storms. Fires

can also impact water temperature by reducing stream shading.

Burning under prescribed conditions to control undesirable vegetation, control insects or pathogens, or to maintain ecological succession, can have similar water quality impacts to those of wildfires, but usually on a lesser scale.

Thus, from a water quality perspective, controlling fires is important. However, fire fighting can also leave its mark on watersheds. The activities of firefighters and heavy equipment can result in soil disturbance, vegetation removal, and stream sedimentation. Chemical fire retardants also have the potential to impact water quality. Many of these fire retardants are ammonium-based and decompose to such products as ammonia, sodium cyanide and sulfuric and phosphoric acids. Some retardants are mixes of foaming and wetting agents. Aquatic toxicity testing of these fire retardants has shown aquatic organism sensitivity to many retardants. In the case of foaming agents, the water surface tension is reduced which interferes with the ability of fish and other organisms to obtain oxygen from the water. Surface waters in many of the forested watersheds of the Lahontan Region are naturally oligotrophic, and loading of nitrogen and phosphorus from fire retardants to surface waters may contribute to eutrophication.

Control Measures for Fire Control and Prescribed Burn Operations

The Regional Board shall rely on the water quality expertise of the USFS and GDF-CALFIRE to promptly take measures after fires to reduce the adverse effects on water quality and beneficial uses. The Regional Board shall further rely on the USFS and GDF-CALFIRE in the design and use of fire control activities and prescribed burn activities which avoid or minimize adverse impacts on water and soil resources. The Regional Board encourages the USFS and GDF-CALFIRE to consider the following measures to protect water quality and beneficial uses.

- Burning under prescribed conditions should generally be located away from stream channels or standing water. Some types of burns may be closer to standing water. The Regional Board should be notified of any proposal to conduct burning activities near watercourses. Prescribed burning activities may be covered by the Regional Board's waiver of waste discharge requirements or other regulatory mechanism. Efforts shall be made to limit fire intensities, prevent transport of ash and soil to waters, increase recovery of

vegetation and/or implement BMPs to quickly stabilize soils following burning.

- When the residual fuel load will be acceptable, non-burning techniques such as scattering or hauling away slash are preferred, especially where the slash, chipped or masticated material will provide soil protection. (Timber harvests and herbicide use, both possible means of reducing fuel loads, are discussed elsewhere in this Chapter).
- When selecting and stocking fire retardants, fire protection agencies should consider the relative potentials of different compounds for toxicity to aquatic life (particularly to threatened/endangered species), and for eutrophication of naturally oligotrophic waters. When fighting fires, direct drops of fire retardants into streams, lakes, wetland areas, or riparian areas should be avoided.

Recommended Future Actions for Fire Control and Prescribed Burn Operations

The Regional Board should request each state and federal land management agency within the Region to submit information on any fire retardant proposed for use in fire fighting. This information should include chemical composition, chemical decomposition products, results of any aquatic organism toxicity or other toxicity testing and mode of action (foaming, wetting, etc.). Following any fire fighting activities, information on amounts used and locations of use should be submitted to the Regional Board.

-
-
-