

Appendix A: Project Design Features, Environmental Commitments, and Mitigation Measures

Air Quality

1. All air quality and smoke management permits shall be acquired and any project-type burn permits, if required.
2. Piles and concentrations shall be sufficiently free of soil and other noncombustible material for effective burning.

Botanical Resources

3. Prior to the limited operating period (Aug 31 to Nov 1), during the appropriate floristic window the project area targeted for treatment will be surveyed by TNC's contract botanist.
4. If an occurrence of Threatened Endangered and Species of Concern (TESC) species is identified, a 25' no operations buffer shall be flagged around a sensitive plant population until site-specific and species-specific measures can be developed in consultation with the California Department of Fish and Game (DFG).
5. Monitoring will take place during and immediately after project activities in the vicinity of sensitive plant occurrences to ensure protective measures are adequate. All logging slash and construction slash created by operations shall be chipped, masticated, or removed from the site.

Fuels/Fire

6. Pile and burn slash treatments shall be completed no later than June 1 of the year following its creation or within 30 days following climatic access. The piled slash shall be burned at a safe time following the first wet fall or winter weather or other safe periods and according to laws and regulations. Piles created after October 1st that do not have sufficient time to dry to facilitate burning will be treated within 18 months of their creation. Piles that fail to burn sufficiently to remove the fire hazard shall be re-piled and burned in the manner aforesaid or otherwise treated to reduce the fire hazard. All necessary precautions shall be taken to confine the burning to the piled slash.
7. Notification of Burning - The local CAL FIRE representative shall be notified in advance of the time and place of any burning of logging slash. Any burning shall be done in the manner provided by law.

8. Slash burning operations and fire hazard abatement operations shall be conducted in a manner which will not damage residual trees and reproduction to the extent that they will not qualify to meet the silvicultural and stocking requirements of the rules.
9. Firelines would be constructed for prescribed fire operations except where existing roads, skid trails, or natural barriers would serve as control lines. Firelines would not be constructed within riparian areas or within aspen stands.
10. Spring broadcast burning will be done as snow drifts recede ensuring something less than total organic material consumption. Fall burning will utilize existing spring burn units, and fire trail construction for control. In-lieu of a project-type burn permit, broadcast burning shall be done only after the first heavy rains and shall be completed before June 1 and broadcast burning may occur within cleared and/or natural firebreaks of not less than 10 feet in width adjacent to units and/or 4 feet in width if recessed back 50 to 100 feet away from fuel concentrations adjacent to units. Local CAL FIRE/USFS dispatch will be notified of the time and place of all burning and all burning shall be done in the manner provided by law. Baring escapes, no burning will occur within the WLPZ of any class watercourse. No active ignition will occur within spring, wet area, or class II watercourse protection zones.
11. Burn planning will follow TNC protocol and guidance (<http://www.tncfiremanual.org/sfmp.htm> and <http://www.tncfiremanual.org/burnplan.HTM>).

Cultural Resources

12. All cultural resource sites would be protected by avoidance.
13. If any additional archeological sites, features or artifacts are discovered during timber operations work would immediately stop near the find until an assessment of the situation is made. The person who made the discovery shall immediately notify Reclamation, and then Cal Fire, the LTO, the RPF, or TNC. The person first notified shall immediately notify the remaining parties. No timber operations shall occur within 100 feet of the identified boundaries of the new site until the plan submitter proposes, and CAL FIRE agrees to protection measures.

Noxious Weeds

14. All off-road equipment shall be inspected and will be weed-free prior to entering the job site. Staging of equipment would be done in weed free areas. Only clean rock will be used in culvert installation at the Independence Creek road crossing.

15. Known weed infestations would be identified, flagged where possible, and mapped for this project. Identified noxious weed sites on TNC lands within or adjacent to the project area containing isolated patches with small plant numbers would be treated prior to project implementation. Any larger infestations would be avoided by harvesting equipment to prevent spreading weeds within the project.
16. New small infestations identified during project implementation would be evaluated and treated according to TNC's direction. If larger infestations are identified after implementation, they would be isolated and avoided by equipment, or equipment used would be washed after leaving the infested area and before entering an uninfested area.
17. Post project monitoring for effectiveness of weed treatments and control of any new infestations would be conducted after completion of the project.

Silviculture

18. All trees 12" DBH and larger targeted for harvested will be marked above and below the cut line with blue paint under the supervision of the RPF. Those trees less than 12" DBH will be determined by the LTO based on spacing guidelines. A sample mark of at least 10% of the area will be marked prior to submission of the plan.
19. Biomass thinning will be done with conventional logging equipment, mastication or by hand crews using chainsaws. Machines can be used on slopes up to 40%. Any steeper slopes will be treated by using chainsaws and hand crews.
20. Trees of 1-6 inches DBH shall be spaced at 15-20 feet, trees 7-12 inches DBH shall be spaced at 20-25 feet. Thinning from below shall include the removal of any diseased, damaged, and/or insect infested tree regardless of size, with the exception of designated wildlife or legacy trees; while retaining trees that are healthy, vigorous, and of the best phenotypic quality available in the pre-harvest stand.
21. Young, fast growing Jeffery pines that have a good full top will be kept. White fir should be left only when the more desirable species are not present within a reasonable distance.
22. Desirable residual trees and tree seedlings of commercial species shall not be damaged or destroyed by felling operations, except where unavoidable due to safety factors, lean of trees, location of obstructions or roads, or lack of sufficient openings to accommodate felled trees.

23. Pine engraver brood material (pine slash) will be treated by lopping. Such treatment will be completed as soon after brood material creation as is practical, but not later than one week. This treatment includes lopping all branches from the sides and tops of those portions of the main stem which are more than 3" diameter. Branches shall be scattered so that stems have maximum exposure to solar radiation. Brood material will not be piled.

Soil and Watershed Protection

24. No timber operations will occur within the designated (flagged) Class I WLPZ.
25. Class II Watercourses, springs, and meadows: WLPZ shall be established at the following widths. 50 ft. for side slopes <30%, 75 ft. for side slopes between 30-50%, 100 ft. for side slopes >50%. The WLPZ shall be clearly identified on the ground prior to the start of timber operations.
26. At least 50% of the total canopy covering the ground shall be left in a well-distributed multi-storied stand configuration composed of a diversity of species similar to that found before the start of operations. The residual overstory canopy shall be composed of at least 25% of the existing overstory conifers.
27. Class III watercourses shall be given a 25-foot WLPZ for slopes less than 30% and a 50-foot WLPZ for slopes greater than 30%. WLPZs on Class III watercourses shall be identified by blue and white "Watercourse and Lake Protection Zone" flagging prior to timber operations. Equipment operations within WLPZs will be limited to end-lining trees out and the use of existing temporary skid crossings. Trees felled by mechanical feller-buncher may place tops of bundles within the WLPZ to facilitate removal and protection of the residual stand. Class III watercourses will be centerline flagged with blue and white "Watercourse and Lake Protection Zone" flagging prior to the start of timber operations.
28. Residual or harvest tree marking within the WLPZ may be done in site-specific cases to ensure retention of filter strip properties or to maintain soil stability of the zone. Harvest trees within Class III WLPZs will be marked both above and below the cutline with blue paint prior to operations in any given area.
29. At least 50% of the understory vegetation present before timber operations shall be left living and well distributed within the WLPZ to maintain soil stability.
30. Accidental depositions of soil or other debris in lakes or watercourses below the watercourse or lake transition line shall be removed immediately after deposition. If any limbs

accidentally enter any of the watercourses they will be removed from the stream and placed on the bank in a stable manner.

31. Waterhole truck pads shall be rocked with 2-4" and no minus rock. Brow log/rocks shall be placed between the truck pad and the waterhole to prevent trucks from entering the waterhole.
32. Prior to drafting, the water truck shall be inspected for oil/fuel leaks and if necessary, the water truck operator shall place an absorbent pad/pan under the water truck while drafting to catch any non-water fluids that may drip from the vehicle. The pad/pan shall be replaced and disposed of properly when it becomes ineffective at collecting fluids. No servicing of vehicles will occur on or adjacent to the drafting platforms. The water truck operator shall avoid overfilling the tank to minimize sediment flow back into the waterhole/watercourse. All water trucks draft hoses will be fitted with a filter screen with mesh less than 2 mm in size. Place draft suction strainer in a bucket to avoid substrate disturbance. This mesh/screen shall be maintained in a clean condition. Draft from deepest water source, near bottom. Limited operating period Aug 31 through Nov 1.
33. Water drafting shall be conducted in a manner that provides sufficient bypass flows to keep fish and other aquatic species in good condition. The drafting rate will not exceed 50% of surface flow at any time and 10% of the total daily flow. Water drafting will not occur in the Class I watercourse (Independence Creek) when surface flow drops below 10 gallons per minute.
34. Notify DFG within two working days beginning work in the stream zone. Submit photographs to DFG of the flow diversion structure, finished stream crossing and water drafting sites, and the culvert and rock removal.
35. Skidding operations will be limited to existing skid roads unless identified and flagged by the RPF or his supervised designee prior to use. In no case, will the construction of skid trail be on slopes over 40%.
36. All roads will be out-sloped where feasible and outside berms will be removed.
37. All roads will be limited to 16 feet in width.
38. Material/spoils (rock, soil) from road maintenance activities shall not be pushed into stream protection zones, drainages, swales, and/or over the slope at the discharge sites for any of the erosion control structures. Most, if not all of, such spoils shall be stabilized by incorporating

into the road surface; any spoils not incorporated into the road surface shall be stabilized where transport to a drainage or watercourse is unlikely.

39. The Licensed Timber Operator (LTO) shall take any other action deemed necessary to prevent concentration of water and overland flow on the road surface and to prevent the erosion of road cut banks and fills.
40. All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operation. Installation of drainage facilities and structures, is required from October 15 to November 15 and from April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.
41. Waterbreaks shall be constructed immediately upon conclusion of use of tractor roads, roads, and landings which do not have permanent and adequate drainage facilities, or drainage structures. Waterbreaks shall be located to allow water to be discharged into some form of vegetative cover, duff, slash, rocks, or less erodible material wherever possible, and shall be constructed to provide for unrestricted discharge at the lower end of the waterbreak so that water will be discharged and spread in such a manner that erosion shall be minimized. Where waterbreaks cannot effectively disperse surface runoff, including where waterbreaks on roads and skid trail cause surface run-off to be concentrated on downslopes, roads or skid trails, other erosion controls shall be installed as needed.
42. Waterbreaks shall be cut diagonally a minimum of 6 inches into the firm roadbed, skid trail or firebreak surface and shall have a continuous firm embankment of at least 6 in. in height immediately adjacent to the lower edge of the waterbreak cut.
43. Waterbreaks or any other erosion controls on skid trails shall be maintained during the prescribed maintenance period and during timber operations so that they continue to function in a manner, which minimizes soil erosions, and slope instability and which prevents degradation of the quality and beneficial uses of water. The method and timing of waterbreak repair and other erosion control maintenance shall be selected with due consideration given to the protection of residual trees and reproduction.
44. The prescribed maintenance period for waterbreaks and any other erosion control facilities on skid trails shall be at least one year.
45. Rolling dips shall be installed on all seasonal haul roads. Rolling dips shall be placed along the road per the minimum waterbreak standards and sufficiently close enough together to

minimize rill erosion. All surface drains on roads shall be built broad enough to permit uninterrupted passage of standard vehicles.

46. Road surface drainage shall be accomplished by out sloping or crowning existing roadbed.
47. Upon completion of timber operations or before the start of each winter period after operations commence, whichever is first, the LTO shall break down the berm on the outside edge of all main roads (haul or skid) to allow drainage to freely move off the road running surface.
48. Summer hauling shall be accompanied by dust control and watering to maintain road surface stability.
49. Upon the conclusion of operations, all landings shall be ditched and out-sloped for proper drainage to prevent water from accumulating.
50. "Winter period" means the period between November 15 and April 1, except as noted under special County Rules at Title 14 CCR 925.1, 926.18, 927.1, and 965.5 (a) Except as otherwise provided in the rules: (1) all waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations. (2) Installation of drainage facilities and structures is required from October 15 to November 15 and (3) April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.
51. The use of logging roads, tractor roads or landing is prohibited where saturated soil conditions exist, or when visibly turbid water from road, landing, or skid trail surface may reach a watercourse.
52. Upon completion of timber operations the LTO and RPF shall evaluate the WLPZ, skid trails, roads and landings for sites where sediment could potentially be transported into watercourses. If any are found, the following soil stabilization procedures apply:
 - All landings will be sloped and ditched to prevent water from accumulating on the landing, and properly drained so that landing and road drainage flows cannot transport erosive material to the WLPZ. If necessary to prevent drainage flows from carrying erosive materials into the WLPZ, landings shall be treated by mulching with wood chip material to a depth of 2 inches over all the exposed mineral soil. If insufficient wood chip is available, straw mulch may be substituted.

- Skid trails on slopes greater than 30% shall be mulched with logging slash, rice straw or wood chips, whichever is available. Where mulch is needed for ground cover and slash or wood chips are not available, certified weed free straw or rice straw will be used.
- To maintain water bars, water bar outlets that do not exit on naturally vegetated ground or on ground with enough organic material (such as mulch or slash) or rocks to disperse flows will have outlets armored.

53. Use of skid trails will be limited in number and width to the minimum necessary for removal of logs.
54. Existing skid trails will be used instead of constructing new skid trails.
55. Ground based equipment will not be operated on unstable areas.
56. Waterbreaks will be constructed immediately upon conclusion of use of tractor roads, roads, and landings which do not have permanent and adequate drainage facilities, or drainage structures.
57. All roads including erosion control structures, crossings, etc. shall be maintained to provide adequate drainage of the road surface in a manner that will not degrade the beneficial uses of water for a period of at least one year.
58. To the fullest extent possible and with due consideration given to topography, lean of trees, landings, local obstructions, and safety factors, trees shall be felled to lead in a direction away from watercourses and lakes.
59. Fire trails will be constructed by tractors on slopes less than 40% and by hand crews near watercourses, large down log, snags, and along sensitive areas.
60. Fire trail construction will utilize existing roads and skid trail where possible.
61. Follow provisions of Timber Waiver (# Application 3/19/12, Category 5, ID# 6AT5412067) through required implementation and effectiveness monitoring requirements.

Wildlife and Aquatic Organisms

62. A Limited Operating Period (LOP) is in place from August 31 to Nov 1.

63. As agreed with DFG, TNC will survey a specified meadow on the Preserve for great gray owls. TNC will follow Survey Protocol for the Great Gray Owl in the Sierra Nevada of California (2000) Beck & Winter.
64. Review of the site will be conducted within 10 days prior to the onset of operations by the RPF responsible for marking timber. Trees targeted for removal within the harvest area will be physically inspected for signs of raptor activities. When an occupied nest site of a listed bird species is discovered during timber operations, the timber operator shall protect the nest tree, screening trees, perch trees, and replacement trees and shall immediately notify the Department of Fish and Game and the Department of Forestry and Fire Protection. If a bird of prey, its nest, or eggs are discovered in the plan area, timber harvesting operations within $\frac{1}{4}$ mile will be stopped, and DFG will be contacted to initiate a consultation to determine an adequate buffer until: 1) the young are capable of sustained flight and can take prey independently; 2) August 15; or 3) the nest has failed after June 1 as determined by a wildlife biologist familiar with raptor biology.
65. During timber operations, if a fisher, marten, wolverine, Sierra Nevada red fox, American badger, or Sierra Nevada mountain beaver are observed CAL FIRE and DFG shall be notified immediately. If dens or a female with young are observed, operations shall cease within .25 miles. CAL FIRE and DFG shall be notified immediately as a means to evaluate proposed protection measures and the plan shall be amended to illustrate the den location and describe any additional protection measures prior to operations in the affected area.
66. As a precaution prior to felling, any tree with a hollow, or opening in the bole, the fallers will hit the tree with their falling ax to make noise to protect bats (including western red bat, Townsends's big-eared bat, Yuma myotis, long-eared myotis, spotted bat, California mastiff bat, fringed myotis, small-footed myotis).
67. The LOP is observed to avoid possible interference with mountain yellow-legged frog during a time when they may move away from stream courses. Each year, prior to the limited operating period (Aug 31 to Nov 1), the water drafting areas will be surveyed for mountain yellow-legged frogs (MYLF) by a representative from, TNC, TRWC, or the RPF. If MYLF are detected, DFG and the U.S. Fish and Wildlife Service will be notified.
68. Where feasible, large woody debris shall be left on site.
69. All hardwoods shall be retained within the WLPZ, except for those damaged due to conifer removal. Damaged hardwoods shall not be removed from the WLPZ, but shall be left on site as downed woody debris.

70. Riparian areas within the project area will be protected during logging operations with WLPZ. The Class II and III WLPZ should provide sufficient protection measures so that the resources (vegetation & water) within the zones will not be significantly affected.
71. To promote aspen restoration, aspen stems shall be retained by the LTO and not damaged. All conifers (<12"DBH) within the confines of the aspen stands will be targeted for removal. Hand crews will be used to remove small conifers from aspen stands. Equipment, located outside of the stand may be used for end-lining large trees.
72. No equipment will be used within 150 feet of Independence Lake. WLPZ are identified on all Class II & III watercourses.