APPENDIX D
Fire Effects

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Fire 2000 Assessment
FIRE EFFECTS
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The team also observed many stands that were severely burned by wildland fire both in 1994 and 2000. These stands pose the greatest challenge in terms of recovery. Of particular concern are areas in the drier habitat types, with short fire return intervals, where wildland fire is most likely to occur in the short-term. The timeframe required for completing our planning process compared to the rate of deterioration of commercial value makes it likely many of these areas will not be treated through commercial removal. Recovery of these sites will require some form of fuel treatment before tree planting. If natural regeneration occurs the heavy fuel loading from fire killed trees make it likely the new stand will be killed in future fires. These areas of heavy fuel also pose threat to adjacent managed stands particularly where intense fires can start and move uphill or downwind into managed stands. Mechanical fuel treatment may be a solution where watershed conditions allow. On steeper slopes the treatment options are more limited.

Some of the team's observations about unmanaged stands include:

1). Fire intensity varied a great deal among similar stands with similar fuel conditions.
2). Some areas of heavy down fuel did not burn at all even though the fire could have entered the stand.
3). In some stands with a good component of larch, Douglas fir and ponderosa pine enough of the overstory survived to provide well stocked stands after the understory is treated.

Re-burn potential:

In recent years there has been a lot of talk about re-burn potential after a wildland fire. This is a simple term that is often used to describe a complex concept much the same way the term ecosystem management is used to express a complex management scheme. Since this term has been widely used in the context of ecosystem management it is best defined using EM concepts.

Every wildland fire is technically a "re-burn" of the previous fire in all ecosystems that are fire dependant or fire adapted. Whether the previous fire occurred 5 years ago or 500 years ago, the vegetative structure and resulting fuel complex, are in part, a result of the most recent fire as well as pervious fires. The real concern is not "if" a post-fire fuel complex will be affected by fire but rather when and to what degree will the next fire causes change in biotic and physical environmental attributes.

If we think in terms of "fire return interval" or "fire free interval" as the range of time from the last fire event to the next fire event rather than "reburn potential" the question becomes more clear. For every vegetative response unit (VRU) there is a range of historic

variability for fire return interval as well as for fire intensity. The real question is not if a so called "re-burn" will occur but rather "will the next fire occur to soon, with to much intensity compared to the historic range of variability for that VRU or to meet management objectives prescribed outside the historic range of variability for a given area?"

Did the most recent fire burn in a fuel complex different from the historic range of fuel complexes for the VRU involved?
Was the fire too intense and as a result were fire resistant stand components killed?
Did the fire result in a type conversion that is not desired either from a historic range of variability standpoint or from a management standpoint?
Was the fire so extensive and the mortality so complete that the seed sources for desirable species were removed?
Will the fuel remaining on the site post-fire plus the dead and living biomass that will accumulate over time make the regenerated stand vulnerable to a high intensity, stand replacing fire? If so, is this desirable?

The repeated burning of some sites, including 1889, 1910 and fires in the 1920's, resulted in the loss of seed source for fire tolerant species. Lodgepole pine, because it produces seed at a young age, was able to occupy these sites. If the management objectives for these sites include re-establish other seral species then the post-fire fuel complex may need to be altered.

There is a range of possible post-fire fuel scenarios including:
1). Total stand replacement. All dead and much of the living fuel has been consumed. Because needles and smaller limbs, as well as live brush, were consumed in the fire the post-fire fuel complex will eventually consist of larger down woody debris as well as the material that accumulates during vegetative recovery.

Define fuel arrangement. All dead and living vegetation on a given site that may contribute to the spread and intensity of wildland fire.