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Route To: Bruce Erickson

Subject: Knox-Brooks Soil Quality Considerations

To: District Ranger, D7

On June 26, Bruce Erickson and I field checked formerly harvested areas in the Twelvemile Creek watershed and areas proposed for harvest in the Knox-Brooks project. Prior to our field trip we reviewed from the Timber Stand Management Reference System (TSMRS) and the Lolo Land Systems Inventory (LSI). We screened the information to sort out stands or units that were tractor harvested and/or dozer piled in landtypes mapped as highly sensitive to displacement and compaction.

There were no units identified that were previously tractor harvested in sensitive landtypes that are proposed for tractor harvesting in the Knox-Brooks project. There were several units previously tractor harvested, proposed for tractor harvest in Knox-Brooks but on landtypes with low sensitivity to compaction, high sensitivity to displacement. Proposed units Nos. 17 and 92 in this category were field checked. These units are located in alluvial-stream terrace landtypes. In Unit 17 we dug several holes 6 to 12 inches deep in areas that had the appearance of old skid trails. The soil was extremely stony and no suggestion of compaction was evident. The upper one foot of soil was well mixed with no clear delineation of the soil horizons. This may be an indication of displacement in the skid trails but there was no surface "undulation" to suggest that soil had been piled or mounded. Unit 17 was salvage logged in 1983. There are no observable indications of detrimental soil conditions.

Unit 92 also had a very stony soil. While the stones made digging difficult and prevented examination of a soil "clod", the soil in the main skid road and the former landing had a heavy, dense consistency to it. This is a qualitative "feeling" but as there are no trees growing back as compared to the eight feet high lodgepole pine in the surrounding regen unit, I would suspect these areas to be "detrimentally" impacted. The area involved is not extensive enough to be beyond Regional Soil Quality Standards, however I recommend ripping the soil to a depth of at least 12 inches in the main skid road and the landing while we are in the area.

Unit 35 overlaps two LSI units and has two logging systems prescribed. The flatter ridgetop portion has moderate sensitivity to both compaction and displacement. The moderate sensitivity reflects the higher stone content in the soil as confirmed by digging a couple of holes. The steeper downslope portion of the unit has a deep volcanic ash surface more than a foot deep with very few stones; thus easily compactible. We should not be tempted to modify the current prescription to accommodate tractor harvesting beyond the slope break on the 64QC soils in Unit 35.

Stand 71402008 (Mineral Mountain Creek) was tractor harvested in 1967 and 1970. This is a relatively steep, south aspect slope. I dug numerous holes on what appeared to be remnant skid



trails. There were few stones in the soil and there was no compaction evident at all; it was easy to dig, there were many roots and the soil clods crumbled into blocky granular chunks (the “platy” structure in a compacted non-stony soil is apparent).

In summary, for proposed Knox-brooks harvest units that had prior harvesting, I did not find detrimental soil conditions present on areas sufficient to be beyond regional soil quality standards.

/s/ Arne Rosquist

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