Understanding the Private Forest Accord

Management of Steep Slopes

Importance: Many areas of the state are steep and prone to initiating landslides that can deliver large volumes of sediment to streams. Once in streams, these sediment pulses often form debris flows that travel long distances, scouring headwater channels to bedrock before depositing in fish-bearing channels downstream. Debris flows can damage habitat and kill organisms in both scour and deposition zones. Landslides do occur under intact forests and are important sources of large wood and spawning gravels, which can benefit fish habitat several decades after delivery. Timber harvest increases the frequency of landslides as well as alters the amount and characteristics of the material delivered to streams. Removing trees decreases the strength of roots holding soil on hillslopes for 10-30 years after harvest, thereby accelerating the rate of landsliding. Removing trees also increases the ratio of delivered sediment to wood volumes and thus greatly diminishes any contribution of landslides to creating high-quality fish habitat.

Current Law/System: Oregon law allows timber harvest on unstable slopes except where a landslide may negatively affect public safety (OAR 629-623-0000 through 0800). The law currently prohibits timber harvest only on high landslide hazard locations "to reduce the risk of serious bodily injury or death caused by shallow, rapidly moving landslides directly related to forest practices."

Proposed Change: The steep-slopes strategy prohibits timber harvest on hillslopes most likely to deliver landslide-derived sediments to fish-bearing streams. These areas will be identified from high-resolution digital topographic data using a peer-reviewed computer model with further refinement in the field by trained and certified personnel according to a standard protocol. The process begins by identifying modeled debris-flow runout paths with the highest (upper 20%) likelihood of delivering to fish-bearing streams. For each of these runout paths, hillslopes modeled with a high (upper 33%) likelihood of being source areas of landslide-derived sediment are identified. At least 50% of the sediment source areas in a harvest unit will be protected by prohibiting harvest in the selected source areas. Any timber harvest unit that contains sediment source areas will require a written plan. Sediment source areas will be screened for impact and operability. Those that are larger and have the highest (upper 20%) modeled susceptibility of initiating a harvest-related landslide will be prioritized for protection. Yarding through sediment source areas with the highest susceptibility will be prohibited. Yarding through other source areas will be allowed, but the number, size, and location of yarding corridors should be designed to minimize impacts on sediment source areas. For each source area greater than ¼ acre, field crews will further evaluate and mark source areas for protection allowing for adjustments related to safety.

Discussion: The agreement will for the first time in Oregon's history regulate timber harvest on steep slopes to protect stream ecosystems. In conjunction with riparian prescriptions on debris-flow runout paths, prohibiting timber harvest on the steep slopes most likely to initiate landslides that deliver sediment to fish-bearing streams will decrease the potential to harm and

increase the potential to benefit habitats for at-risk aquatic species. This strategy is significantly different from Washington, however, which provides coarser and broader protections of steep slopes. Understanding and monitoring the effects of the strategy will be an important topic for adaptive management.