Road Deactivation for DU 300, 511, 510 and Duhamel Heights.

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Terms of Reference

• Complete a semi-permanent deactivation plan for DU-300 from 3+060 to the end of the road (upper lift). Four wheel drive access is preferable, however quad access will also work if needed.

• Complete a semi-permanent deactivation plan for the Duhamel heights road and DU-511 (upper lift). Put the roads into a hydrological stable state. Leave stream crossings in and back up all culverts in addition to any work you feel is necessary.

• Complete a permanent de-activation plan for spur DU-510.
Objectives of Road Deactivation:

1. stabilize the road prism and clearing width
2. restore or maintain surface drainage patterns, and control subsurface drainage, consistent with natural drainage patterns
3. minimize the impact of silt and sediment transport on other forest resources.
Semi-Permanent Deactivation

• The intent of semi-permanent deactivation is to place the road in a self maintaining state. Regular inspections of semi-permanent deactivation works are required.
Permanent Deactivation

• The intent of permanent deactivation is to place the road in a self-maintaining state that will indefinitely protect adjacent resources at risk. (Inspections not required).
Cross-ditch

• The purpose of a cross-ditch is to intercept, direct and disperse surface water flow off a road and ditch water across a road. Very little maintenance is required when cross-ditches are properly constructed, placed in correct locations, spaced closely, or when vehicle traffic is light.

• For this project cross-ditches will be constructed such that the outlet feeds onto natural surface or nonerodible material, ditchblocks will be constructed at each cross-ditch.
Waterbar

• The purpose of a water bar is to capture and direct road surface water from the road into the ditch line or across the road surface beyond the shoulder of the road. Note: a water bar, unlike a cross-ditch, collects only road surface water and not water flowing down the ditch line.

• For this project water bars will be constructed to direct water off the road surface and back into the ditch.
Field Procedure

- Deactivation prescriptions were marked in the field with pink flagging stamped with Cross-ditch or Waterbar,
- Additional instructions were written on pink flagging with black permanent marker and recorded as waypoints using a handheld GPS.
- Shapefile and GPX files with attached prescription tables were provided to Kalesnikoff Lumber Company.
Road DU 300

• This road was constructed in the winter of 2013, timber harvesting was completed in the winter of 2013/14.
Partial road fill pullback

• The purpose of partial road fill pullback is to reduce the likelihood of a landslide along the road when full road fill pullback is not needed for immediate stability.

• Partial road fill pullback leaves the stable portion of fill intact, but it may not reduce the road fill landslide hazard to the fullest extent possible.

• This technique is appropriate to maintain motor vehicle access.
History of Duhamel Heights Road.

- The original road (Duhamel Face FSR) was built in the early 1990’s and permanently deactivated in 2003(?).
- In 1997 there were at least 3 debris slides off or below this road. The slides are not present on the 1995 airphotos but are there on the 1997 airphotos.
- In 2007 Kalesnikoff contracted Perdue Geotechnical Services to provide road construction recommendations to reconstruct portions of the deactivated road to access CP 21, this road is now called Duhamel Heights Road.
- Perdue noted the presence of perched fills from the original road and the presence of four debris slides, of which at least three and likely all four were associated road drainage (Perdue 2007).
- Since reconstruction, there have been at least two (2010 and 2011) debris slides, two of which have reached Duhamel Creek.
2009 imagery showing the deactivated road and 1997 slides
Duhamel Heights Deactivation 2014:

- Deactivation mostly consisted of cross-ditches, waterbars, culvert back up and other drainage management measures.
- Perched fills were noted downslope of the middle section of the road, near the initiation zone of the 2010/11 slides.
- Remediation of these fills was beyond the scope of this project and would cut off access, water was directed away from these areas.
Description of site: Sloughed cut, pooling water, partially blocked culvert inlet, culvert is broken currently partially discharging into fill.

Prescription: Remove culvert-construct cross-ditch, inslope road to keep water off fillslope.
2010 and 2011 debris slides

• According to the landslide investigations (Perdue 2010, Kalesnikoff 2011) both slides at least partially initiated within “perched” fills from the Duhamel Face FSR which had not been totally pulled back.
“Perched Fill”

Station 077: Decomposing stump within old fill from the “deactivated FSR”. The stump is exposed in the scarp of a small “slump”. Adjacent to the 2011 slide.
“Perched” Fill

Slumped fill (stump from previous photo just behind the dog). Just downslope of Duhamel Heights road. The dog is on the head of the slump. A swale upslope feeds this area, water is directed to a culvert just down the road gradient.
Slide Scarp 2011

Rock in the cutslope is parallel to the slope. There is a spring just below the road in the slide scarp. Scarp appears to be at least partially in old road fill with organics. It is possible that the spring saturated the toe of the old fill. The decomposed organics likely failed.
History of Road DU 510 (in block spur road)

• This road was constructed to access within block #5 of CP 21; Perdue 2007 provided stability assessment and road construction recommendations. According to the DTSFA there were no signs of instability.

• This road was deactivated in 2011, most of the culverts were removed and cross-ditches installed, the end landing had partial fill pullback and was partially recontoured.
DU 510 2014 Deactivations:

- All remaining culverts were removed and cross-ditches constructed.
- 7 additional cross-ditches were prescribed.
- Bridge crossing was removed.
- Some minor fill pullback.
Station 38

• Over steep burnt landing, tension cracks 1m back from edge, water flows into the cracks.

• Improve shallow cross-ditch to direct water away from this slope. Partial pullback 2m from edge (2m x 10m x10m) place material against cut.
History of Road 511

• This road was constructed off the upper lift of the Duhamel Heights road, there was no detailed terrain stability assessment completed on this road.

• 2014 Deactivation consisted mostly of cross-ditches and ditchline improvements.
Prescribed series of Cross-ditches

Excavate ditch to direct “stream” to culvert.