6 Access Management

6.1 Introduction

We propose using the existing Silica Mine Road for access to W1832. This raises a number of interesting issues which do not apply to a newly constructed logging road.

The Silica Mine Road is a "found road", not a modern designed road. Is was constructed using 1950's or earlier land management and road construction standards and methods. The exact standards and methods used can not be fully deduced over the many intervening years. It is reasonable to examine the existing road with care.

The first questions to consider are: Is the current general access location suitable and desirable? Is there another general location which provides access with lower environmental and/or social costs or hazards? Our assessment is that yes, the general location is suitable, and no, any other potential locations have higher environmental and/or social costs or hazards.

There are only two general routes to the woodlot area, the existing Silica Mine Road route and a potential alternate route up Paradise Valley Road and through the Dumont Creek watershed. Clear communication from the community through the Winlaw Watershed Committee has indicated that lower portion of the Paradise Valley route is not acceptable to the community due to unavoidable conflicts between industrial and domestic traffic. The environmental and hydrological impacts of the upper portion of this route from Paradise Valley through the Dumont Creek watershed into rest of W1832 are also unacceptable. A road location on this route would rise beside (parallel to) headwaters streams, and require multiple crossings of those headwaters streams.

A road along the south side of Winlaw Creek which crosses the creek to access the Woodlot area is not feasible due to steep unstable slopes and extensive rock outcrops south of the creek, and due to the depth of the Winlaw Creek valley in the area.

While the general location of the Silica Mine road is the best access route choice, consideration should still be given to the question: Is the current road is in the best possible specific location? The road, or sections of the road, could potentially be relocated if a better road location, in terms of slope stability, interaction with water channels, or other issues of ecological sensitivity, could be found.

Factors to bear in mind when considering relocating the road include:

- Any significant elevational shift in a road section will result in construction of extensive additional new road to access the relocated section from the retained existing road, and then to return to the existing road.
- Every meter of alternative road construction is an additional meter of road disturbance in these watersheds. Upgrading the existing road will result in no increase in net road length.
- Replacing any part of the existing road with an alternative location will result in a length of "abandoned road" with inadequate drainage structures and no drainage maintenance.

- The existing road has demonstrated considerable stability by largely staying in place with little or no maintenance for at least 40 years.

Our assessment is that most of the existing Silica Mine road is very well located. The road location methods of the era seem to have relied on building experimental trails with a cat to see which turned out the best. We cannot condone the disturbance levels or the risk of slope failure along the abandoned "dead end trails" created by this approach, but in this case it was successful in finding a good road location. The Silica Mine Road consistently finds and utilizes benches and slope breaks. The road rises sharply over most of its length, minimizing length of road required to rise to W1832 elevation. It is built on dry, south-facing slopes, using angular colluvial material over much of its length. Based on air photo interpretation of the terrain features above and below current road, and field reconnaissance, we do not believe that a better road location is feasible over much of the road length.

The current road does have areas with stability concerns. These are:

- the large old landslide originating at 0+500 m
- the 200 meter section from approximately 0+170 to 0+370 which rises across a Terrain Class IV polygon with steep slopes and sandy soil.
- the 450 meter section from approximately 1+230 meters to 1+680 meters which crosses a Terrain Class IV polygon
- the diverted stream and possible failing buried organic material at 1+530
- the unstable, wet cut slope southwest of the 3+500 switchback
- the 170 meter section of road south east of the 3+500 switchback which runs along the edge of the Class IV terrain polygon

These features, the failure hazard attributable to these features, the potential hydrological impacts of road failure in these locations, and the degree to which road upgrading can reduce hazard levels are discussed in Sections 4.2.3.1 to 4.2.3.4. In general, the noted stability issues are more related to drainage management than inherent slope instability.

In summary, we believe that retaining the current Silica Mine Road as the main access road to W1832 is a sound forest and watershed management choice. The road is in the only suitable general location, and is well designed within that general location path, utilizing slope breaks and stable areas wherever possible. Upgrading the existing Silica Mine Road minimizes the amount of new road disturbance required to access W1832. Road sections with stability issues do exist, but these are largely associated with lack of drainage structures and lack of maintenance, and can be addressed through improvement of drainage structures and conventional maintenance practices.

6.2 Road Construction, Major Culverts and Bridges

The Silica Mine Road upgrade project will follow the recommendations of and instructions in:

1. *Road Stability and Prescription Plans: Winlaw Creek Forest Service Road* prepared in March 2000 by EBA Engineering Consultants Ltd.

2. *Detailed Drainage Plan and Terrain Stability Assessment: Proposed Silica Mine Forest Road* prepared in March 2002 by Apex Geoscience Consultants Ltd.

The EBA report is based on a field assessment of Silica Mine Road and an office review of air photos and existing reports on the stability and condition of Silica Mine Road.

The EBA report states:

> *A review of previous literature indicates that generally Winlaw Creek FSR is considered stable over most of its length with the exception of sections of road as identified in Section 4.1 and Section 4.4 (of the EBA report).*

Section 4.1 of the EBA report discusses the landslide which occurred at 0+500. Section 4.4 of the EBA report addresses a section of the Silica Mine Road beyond W1832.

The Apex report is based on a review of the EBA report, on air photo interpretation of the small drainage basins which are crossed by the Silica Mine Road, and on a field assessment of Silica Mine Road. Apex observed that:

> *The large "slide" that occurred in 1971 is an erosion gully that was caused by a unique circumstances including the diversion of a manmade spring. Realignment of the road to avoid the 1971 slide location is not necessary. If culverts are placed as proposed there is a low likelihood of landslide initiation associated with construction of the road.*

The objectives of the Apex work were:

- to ensure that the drainage structures on the road are designed to accommodate all foreseeable surface water flows, even those associated with exceptional events, and
- to ensure that water is not diverted from one small drainage basin to another by the road.

The EBA report contains instructions to place 26 culverts in the road length to be rehabilitated. Apex added 4 culverts in small drainage basin crossings for a total of 30 culverts. These are all to be 450 mm culverts, with the exception of the culvert at 1+530 which will be a 500 mm culvert. The culvert locations are shown in Figure 17.

The road upgrade objectives are to improve the existing road to a degree which permits safe travel of standard highway weight logging truck traffic, and which manages water flow and drainage to minimize the risk of slope instability. Road clearing, running surface width, ditch width, and turnouts will be kept to a minimum which meets these objectives. The road will remain a low impact, low speed haul road with low levels of use.

The general road upgrade will involve:

- removing brush and coniferous vegetation which have encroached on the existing road running surface,
- widening the running surface to minimum safe widths where required,
- smoothing the running surface,
- improving or adding drainage ditches where required,
- adding culvert cross drains as described above, and

- adding the minimum number of well located turnouts required.

Specific upgrade activities at the sites with stability concern listed in Section 6.1 above are discussed in Sections 4.2.3.1 through 4.2.3.4.

The planned road upgrade should have minimal visual impacts, as the existing road grade is largely concealed by 20 to 60 year old regeneration over most of its length. Road upgrading measures will include widening the road right of way in some places, but an intact visual screen will be retained in most locations on the downhill side of the road. Where required, widening and/or reconstruction of the road prism will be largely be carried out by further excavation on the inslope side of the existing road. Sidecasting of fresh material on visually sensitive slopes will be avoided.

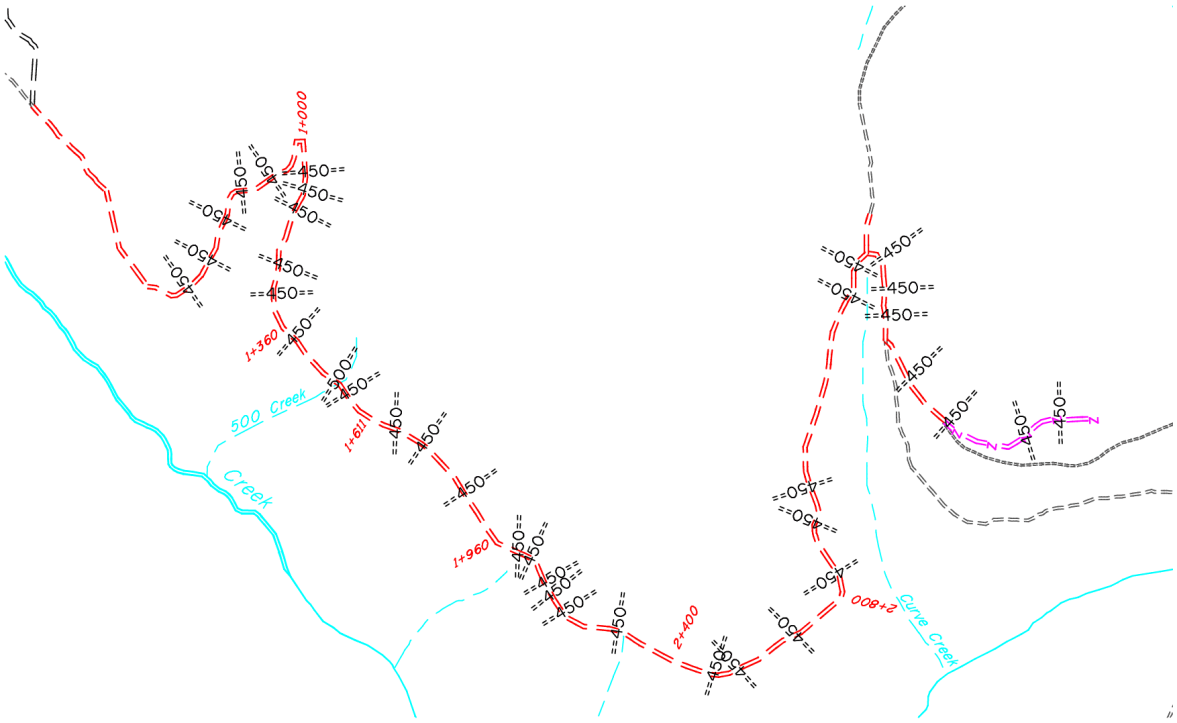

Figure 17: Culvert Locations on Silica Mine Road Upgrade.

200 meters of an existing spur road will be upgraded to provide access to CP A Block 2. This old road is located on gentle (20 to 40%) slopes on a dry, stable hillside. Culvert locations have been determined by Apex Geoscience.

72 meters of an existing spur road will be upgraded to provide access to CP A Block 1. This old road is located on flat (<10%) slopes at a watershed divide. Cross drains are not required.

330 meters of new road will be constructed to provide access to CP A Block 2. This road is located on gentle (20 to 40%) slopes on a dry, stable hillside. Culvert locations have been determined by Apex Geoscience.

The road will eventually be extended past CP A Block 2 to reach the upper portions of W1832. Both of these sections of road will be part of the permanent access network in W1832.

Road Name	Length (0.1 km)	Timing (if critical)	Major Culvert	Bridge Type
Silica Mine Road (Upgrade)	3.7		None	None
Spur Road Upgrade in CP A Blk 1	0.1		None	None
Spur Road Upgrade in CP A Blk 2	0.2		None	None
New Construction CP A Blk 2	0.3		None	None

Table 6: Road Construction, Major Culvert and Bridge Table.

6.3 Road Maintenance

Basic road maintenance will be carried out over the duration of this plan.

Ditches, culverts and cross drains will be kept clear of obstructions at all times. Drainage structures will be inspected every fall to ensure that they are free of obstructions and ready to handle increased winter and spring flows. A second inspection will be performed as soon as possible after snow melt every spring to look for obstructions which may have developed over the winter months.

Any other actions deemed necessary to maintain active roads in a suitable conditions for forestry access and to minimize sediment entry into creeks and streams will be taken.

At this time, we understand that W1832 is to be sole forestry user of the upgraded Silica Mine Road. The MoF has indicated interest in operations past W1832 in the Winlaw Creek watershed. If they decide to operate in this area using the Silica Mine Road, responsibility for maintenance would be shared. However, W1832, as the community based entity, would still retain prime responsibility for monitoring the condition of the road and carrying out standard maintenance to maintain the drainage system and to ensure road stability.

6.4 Road Deactivation

No road deactivation is planned for this Forest Development Plan.