

## Example Soil Sections (Resource Category 2)

### *Soils Example 1*

The soil type most prevalent on the property is Roche-Killebrew complex, which underlies all of stands 4 and 5, and most of stand 1. This soil type is well-suited for mechanical site preparation, moderately well-suited for harvesting equipment, and well-suited for hand planting. This soil has a high water table, with high seedling mortality potential because of wetness and making it somewhat limited for trails (though this area is the best-suited compared to the rest of the property). There is low compaction resistance and a high rutting hazard. Erosion hazard is slight. Because of these limitations, only low ground pressure equipment should be used, and only during the dry season. Species selection for planting should favor wet-tolerant trees, which could include western redcedar, lodgepole pine, Sitka spruce, red alder, black cottonwood, and others. Douglas-fir may not be a good choice for this site because of the wetness. This soil has a 50-year Douglas-fir site index of 89 (site class IV), which indicates moderately poor productivity.

Deadmanbay-Bazal-Cady complex underlies the western half of Stand 2. This soil type is similar to the Roche-Killebrew complex as it is well-suited for mechanical site preparation, moderately well-suited for harvesting equipment, and well-suited for hand planting. This soil also has a high water table, with high seedling mortality potential because of wetness. This soil is classified as very limited for trails. There is low compaction resistance and a high rutting hazard. Erosion hazard is moderate. Because of these limitations, only low ground pressure equipment should be used, and only during the dry season. Species selection for planting should favor wet-tolerant trees, which could include western redcedar, lodgepole pine, Sitka spruce, red alder, black cottonwood, and others. Douglas-fir may not be a good choice for this site because of the wetness. This soil is more productive than the Roche-Killebrew complex, with a 50-year Douglas-fir site index of 104 (site class III), which indicates moderate productivity.

The Cady-Doebay-Rock Outcrop complex underlies the eastern half of Stand 2 and all of Stand 3. This soil type is characterized by steep slopes. Given the topography of the property, this soil type may not include as much of Stand 2 as the Web Soil Survey indicates, but the boundary may be further east to encompass mostly just Stand 3. Because of the steep slope, this soil is poorly-suited for harvest equipment, and unsuited for mechanical site preparation, and moderately-suited for hand planting. There is low compaction resistance, high rutting hazard, and very severe erosion hazard. It is very limited for trails due to the slope and erosion hazard. The 50-year Douglas-fir site index of 66 (site class V), which indicates poor productivity. Because of these limitations, this area should not be used for timber production and equipment should not be used here.

## **Soils Example 2**

### **A. Current resource conditions, issues, needs, and opportunities**

Based on information from the NRCS Web Soil Survey, the soils on the land consist of three main types according to the table below. The majority of the land is Bertolotti, with smaller amounts of Volperie and Roslyn. These are well drained soils of ashy sandy loam, mantle of volcanic ash, and a restrictive layer greater than 80 inches. The Kladnick soil area is mostly located in the area of the property through which the high voltage powerlines pass. As trees cannot be grown on this area due to the power lines, this portion is omitted from discussion of management.

<b>Soil #</b>	<b>Soil Name</b>	<b>Slope</b>	<b>Acres</b>
90/91	Bertolotti ashy sandy loam	30-60	70
264/265	Volperie very paragravelly ashy sandy loam	30-60	11
213	Roslyn ashy sandy loam	3-25	7
237	Kladnick ashy sandy loam	0-3	3

The Bertolotti soil corresponds roughly with Stands 2 through 5, the steeply sloped northeast and southwest facing portion of the ridge of the property. This soil is Douglas-fir Site Class IV, with a site index of 77. On the south facing slopes (#90), ponderosa pine has the most favorable site index at 94 followed by lodgepole pine at 90, while on the north slopes (#91) the site index favors western hemlock (site index 95) or lodgepole pine (site index 90). When pre-commercial thinning is performed for the overstocked areas of Stands 1 and 2, as the majority of these stands are on the north facing slope, favor may be given to western hemlock and lodgepole pine over other species when all other health and vigor characteristics are equal. If planting is performed in the bare Stand 3, western hemlock and lodgepole pine will be favored. For the open spaces of Stand 4, particularly the western portion of the stand, ponderosa and lodgepole pine will be the favored species.

The Volperie soil corresponds with the southeastern portion of Stand 2 and a portion of Stand 1. This soil is Douglas-fir Site Class V, with a site index of 72. On the south facing slopes (#265 Volperie, warm), ponderosa pine has the most favorable site index at 117 followed by grand fir at 91, while on the north slopes (#264 Volperie) the same are favored with respective indexes of 97 and 91. When pre-commercial thinning is performed for the corresponding overstocked areas of Stands 1 and 2, these ponderosa pine and grand fir will be favored species over others when all other health and vigor characteristics are equal.

The Roslyn soil corresponds roughly with Stand 1. This soil is Douglas-fir Site Class IV, with a site index of 94, ponderosa pine index of 97, and grand fir index of 100. When pre-commercial thinning is performed for the corresponding overstocked areas of Stand 1, these three species will be favored over others when all other health and vigor characteristics are equal.

All of these soils in general are rated at low risk for damage to soil by fire, unsuited or poorly suited for mechanical site preparation, poorly suited for log landings, at moderate risk for soil rutting, and are at severe risk for erosion on and off roads and trails. The limiting feature for most of these ratings is due to the steep slopes of the property in most areas. These risks will have to be diligently considered at the time of harvest to minimize rutting, compaction, and erosion. A patch of erosion exists in this area on the uphill (southwestern) side of the road. When planting is being done as will be planned for Stand 3 and the more open western area of Stand 4, any areas where erosion appears to be taking place may also be planted to help halt progression and reduce risk of further erosion of such areas in the future.

Potential for seedling mortality is variable between soil types and areas—the high potential areas for seedling mortality are the south facing slopes - #90 Bertolotti and #265 Volperie, warm. There is moderate potential mortality for the Roslyn and Kladnick soils. If planting is done in the open western portion of Stand 4, a higher density of seedlings may be planted to compensate for projected higher mortality.