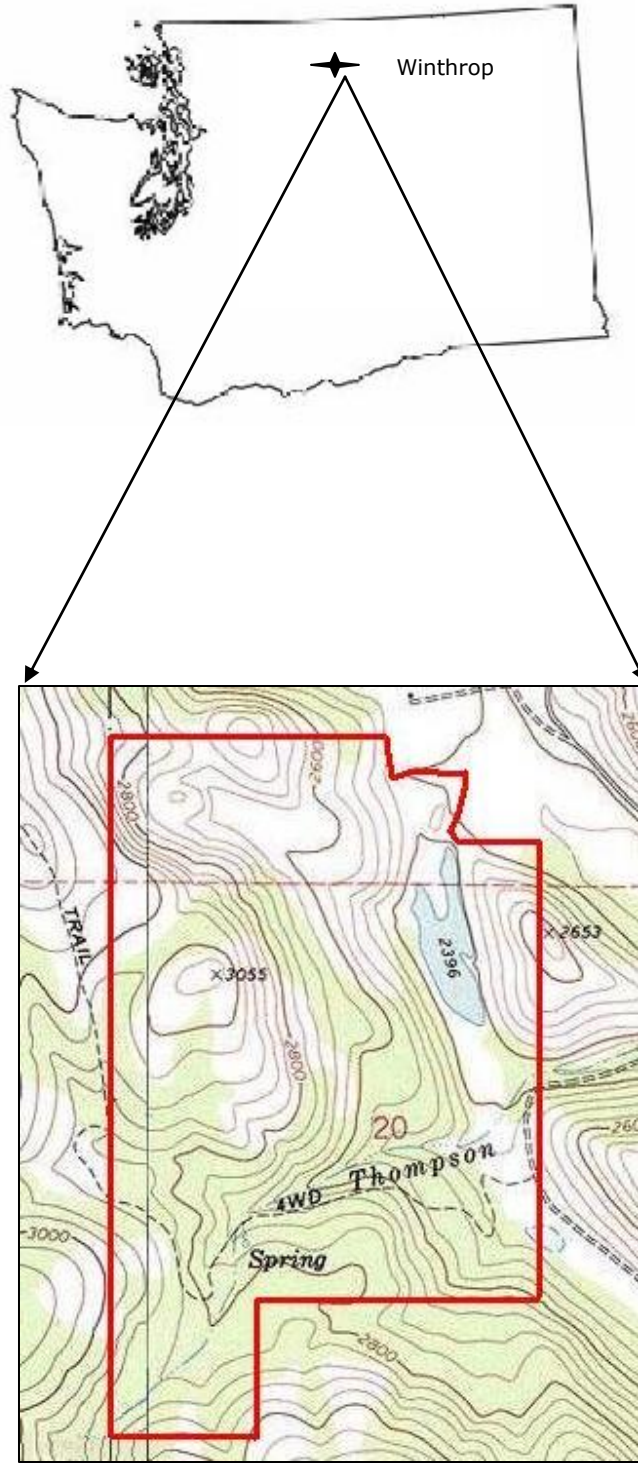


Pine Forest

Stewardship Management Plan



2014



FOREST STEWARDSHIP PLAN

Landowners

Sun Mountain Ranch Club
Pine Forest
Dave Chantler, president
PO Box 1093
Winthrop, WA 98862

Property Location

The Pine Forest property is located in Okanogan County T34N, R21E, S 17 & 20, Sun Mountain Pine Forest 1 off Elbow Coulee Rd from Patterson Lake Rd. approximately 6 miles southwest of Winthrop, WA.

The landowners property consists of 82 acres known as the greenbelt within the 520 acre Pine Forest development area. There are also 85 private permanent and recreational residences.

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Date

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APPENDIX:

Defensible Space Information

“How Much Fertilizer in Slash?” by Chris Schnepf

Woodland Fish and Wildlife

III. Description of Landowners Objectives

The intentions for this property are to manage for and maintain a healthy, sustainable forest with reduced risk from catastrophic wildfire, insects, disease as well as enhancement and safety for visitors and recreational use.

Management Objectives

- A. Lower risks from fire, insect and disease
- B. Promote and maintain a healthy forest
- C. Improve and protect permanent and recreational structures and uses
- D. Maintain and encourage a tree species mix favoring fire tolerant ponderosa pine
- E. Thin the stands “from below” leaving the largest, best-crowned trees
- F. Enhance wildlife habitat, protect riparian and wetland areas
- G. Ensure full stocking by reforesting non-stocked areas

IV. Introductory Overview of the Property

The pine forest community consists of about 520 acres with 85 home sites. This stewardship plan mainly focuses on the 82 acres of forest land known as “the greenbelt”. This greenbelt borders the Pine Forest community area and is interspersed between both developed and undeveloped home sites. The entire area is at extremely high wildfire risks with only one main escape route. If this route is blocked, there is potential for catastrophic loss of life and property.

Size – ±82 forested acres

Aspect – Generally east

Elevation – 2400’ – 3055’

Slope – 10 – 50%

Plant Association – PSME/SYAL (Williams et al 1990)

Site Class – IV

Site Index – 60’ to 80’ (100 yr) (Williams et al 1990)

Tree Species – Douglas fir, ponderosa pine

Stand structure – Single and multi-layered

Age class – Generally 115 years old with a few 275 year old trees

Stocking level –

Diseases – Douglas-fir dwarf mistletoe

Insects – Douglas-fir engraver, mountain and western bark beetles, Ips

Water – A lake, a fish stream (Thompson Creek), two small forested wetland areas, seven non-fish stream segments and five unknown draws

Grazing – No

Past Management Activities

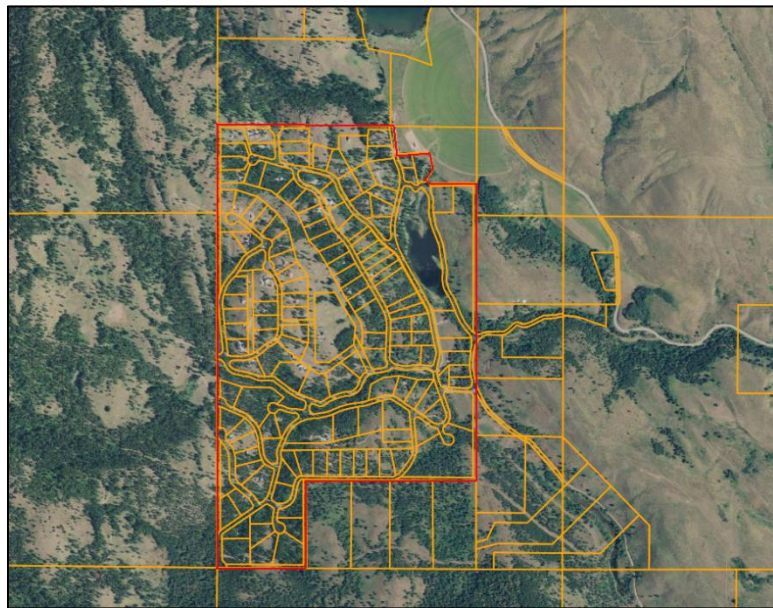
Most of the large old ponderosa pine has been removed with early logging entries in the 1920's. Following the wildfires of 1994, Pine Forest began an active campaign to protect their properties. Since 1998 approximately 150 acres of private and community (greenbelt) property has been either commercially or non-commercially thinned.

Description of Adjacent Properties

Land to the west of the Pine Forest development and south of the section line is National Forest with a combination of open area and very dense timber stands that are at high risk from wildfire.

Properties to the east are private land with mostly open grassy, brushy areas. There are some pasture lands and patches of timber.

Parcels to the north and in the southeast corner are private land densely forested with overstocked stands of Douglas-fir and ponderosa pine at high fire risk.



V. Resource Descriptions and Management Practices

Category I: Forest Health, Wildfire, Invasive species

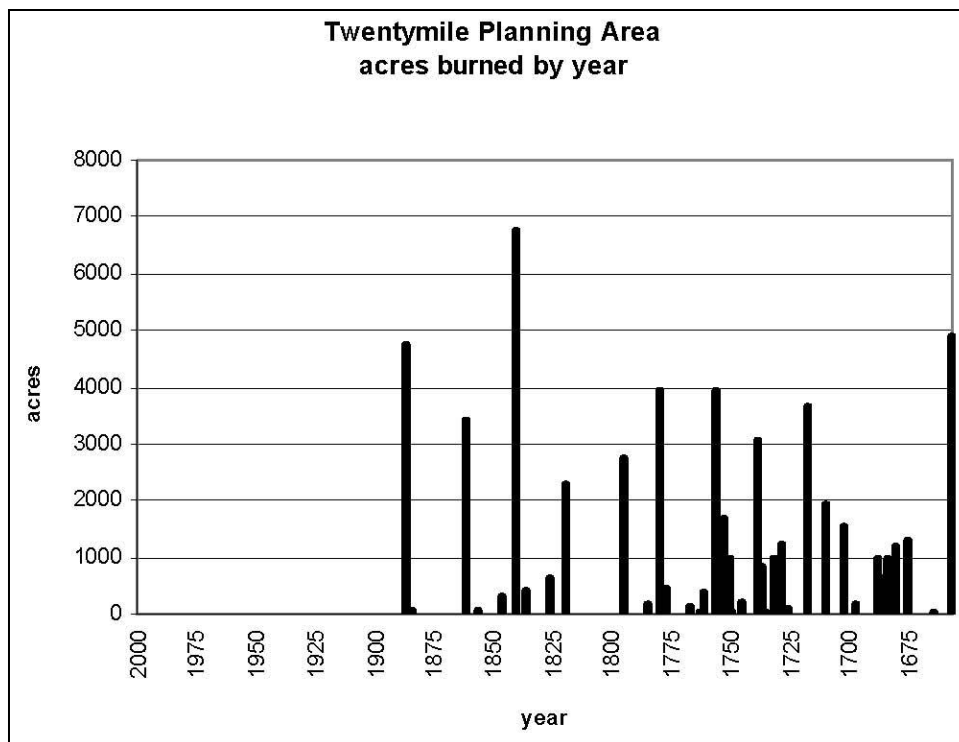
Since fire suppression began around 1900, eastern Washington forests have been dramatically altered. Both stocking levels and species composition have changed (Everett et al 1996) with trees in this plant series increasing in density by 422% (Everett et al 2007). This increase in tree density has favored climax species. Western larch is one of several seral species and the only one to decline by 48% in these plant associations (Ohlsen, Schellhaas 2001).

The change in species composition has created a forest health problem, putting these stands at risk to both insects and diseases that are attracted to low-vigor, stressed trees (Flanagan 1998). In turn there is an increase in both live and dead fuels, predisposing these sites to stand replacement fires (Agee 1993, Agee 1994, Schellhaas et al 2000). Forests like these along with others in Eastern Washington are no longer in sync with the inherent historical fire regimes (Everett et al 1996, 2000).

This stand and similar sites were once dominated by mature western larch and ponderosa pine and were maintained by frequent low to mixed severity fires every 5 – 12 years (Schellhaas et al 2002). Fire scars on remnant snags and stumps on nearby properties show the same fire pattern.

Short fire frequencies suggest that these forests were historically dominated by species tolerant of fire such as western larch and ponderosa pine. Even low severity fires would often kill tree species that were more sensitive to fire (Schellhaas et al 2002).

The following graph shows fires which burned in the Twentymile planning area approximately 14 miles north of Winthrop in Okanogan County from 1600 to 2000. This is a trend for all of Eastern Washington.



Note the dramatic decrease in the number and sizes of fires after 1900 (fire suppression era).

The following is a list of the most common major insects and diseases in eastern Washington forests for Douglas fir, ponderosa pine (Goheen, Willhite, 2006). Overstocked, weakened, unhealthy stands are prime targets for any of these insects or diseases. The ensuing dead or diseased stands subsequently become extreme fire risks.

Douglas fir is host to:

1. *Dendroctonus pseudotsugae* – Douglas fir beetle
2. *Scolytus unispinosus* – Douglas fir engraver
3. *Pseudohylesinus nebulosus* – Douglas fir pole beetle
4. *Choristoneura occidentalis* – western spruce budworm
5. *Orgyia pseudotsugata* – Douglas fir tussock moth
6. *Arceuthobium douglasii* – dwarf mistletoe
7. *Phellinus weirii* – laminated root rot
8. *Armillaria ostoyae* – armillaria root disease
9. *Heterobasidion annosum* - annosus root disease

Ponderosa pine are host to:

1. *Dendroctonus brevicomis* – western pine beetle
2. *Dendroctonus ponderosae* – mountain pine beetle
3. *Ips* spp – Ips bark beetle
4. *Arceuthobium campylopodum* – dwarf mistletoe
5. *Armillaria ostoyae* – armillaria root disease
6. *Heterobasidion annosum* - annosus root disease
7. *Cronartium comandrae* – comandra blister rust

The trees in this community show signs of minimal Douglas-fir dwarf mistletoe and endemic levels of mountain and western pine beetles, ips and Douglas-fir engraver.

Avoid mechanical injury to the trees boles during commercial thinning. This will help protect these trees from windborne spores that can cause butt and stem rot. Remove mistletoed trees and limbs that pose a threat to neighboring trees. Avoid concentrating green pine slash from February to July to reduce the chance of Ips bark beetle outbreak.

To protect these resources and neighboring properties it is recommended that the overstocked stands be commercially and pre-commercially thinned and pruned (Barrett 1968, Barrett 1983, Cochran et al 1994). Thin the understory on a 12' to 16' spacing and the overstory on a 25' to 30' spacing (50 – 70 trees per acre) leaving the largest, best crowned trees, favoring seral species (ponderosa pine). Prune all large crop trees to a height of 17' (O'Hara et al 1995) and leave 50% of live crown on smaller trees. Machine and/or hand pile and burn, or mulch, all slash to protect this stand and adjacent properties. Burning should be scheduled for late fall or winter. These treatments will help ensure the sustainability and good health of this stand.

Following a commercial thin, pre-commercial thinning is recommended, preferring the largest, best crowned trees and favoring seral species will help ensure improved radial and crown growth and remove diseased trees. Maintaining crop tree radial growth rates at <15 rings/inch will ensure more vigorous, healthy trees which in turn will help resist insect and disease attacks (Hall 1983).

Thinning the stand will not only improve growth and forest health, but will also shift the dominant species from Douglas fir back to ponderosa pine/western larch and lower the fire risk. Removing a majority of the

understory trees and pruning the crop trees will help ensure that fire will remain on the ground by eliminating most ladder fuels. Ground fires are less intense and consequently emit fewer smoke emissions, are less hazardous for fire fighters and not as costly to suppress.

Category II: Soils

There are several major soil series within these parcels (NRCS soil survey). Below is a table of erosion potential per soil type for different management activities.

Activity or Hazard	Harvest equipment operability	Fire damage susceptibility	Roads and trails	Site Degradation Susceptibility	Haul roads and log landings
235	moderate	moderate	severe	moderate	moderate
257	moderate	moderate	severe	moderate	moderate
301	poor	high	severe	high	severe
302	moderate	moderate	severe	moderate	severe
323	poor	high	severe	high	severe
324	moderate	high	severe	high	moderate
325	poor	high	severe	high	severe
349	moderate	high	moderate	high	moderate
414	well suited	slight	slight	slight	slight
415	well suited	slight	severe	slight	moderate
417	moderate	moderate	severe	moderate	severe
419	poor	high	severe	high	severe
437	well suited	moderate	slight	moderate	moderate
488	poor	high	severe	high	severe
489	moderate	high	moderate	high	severe

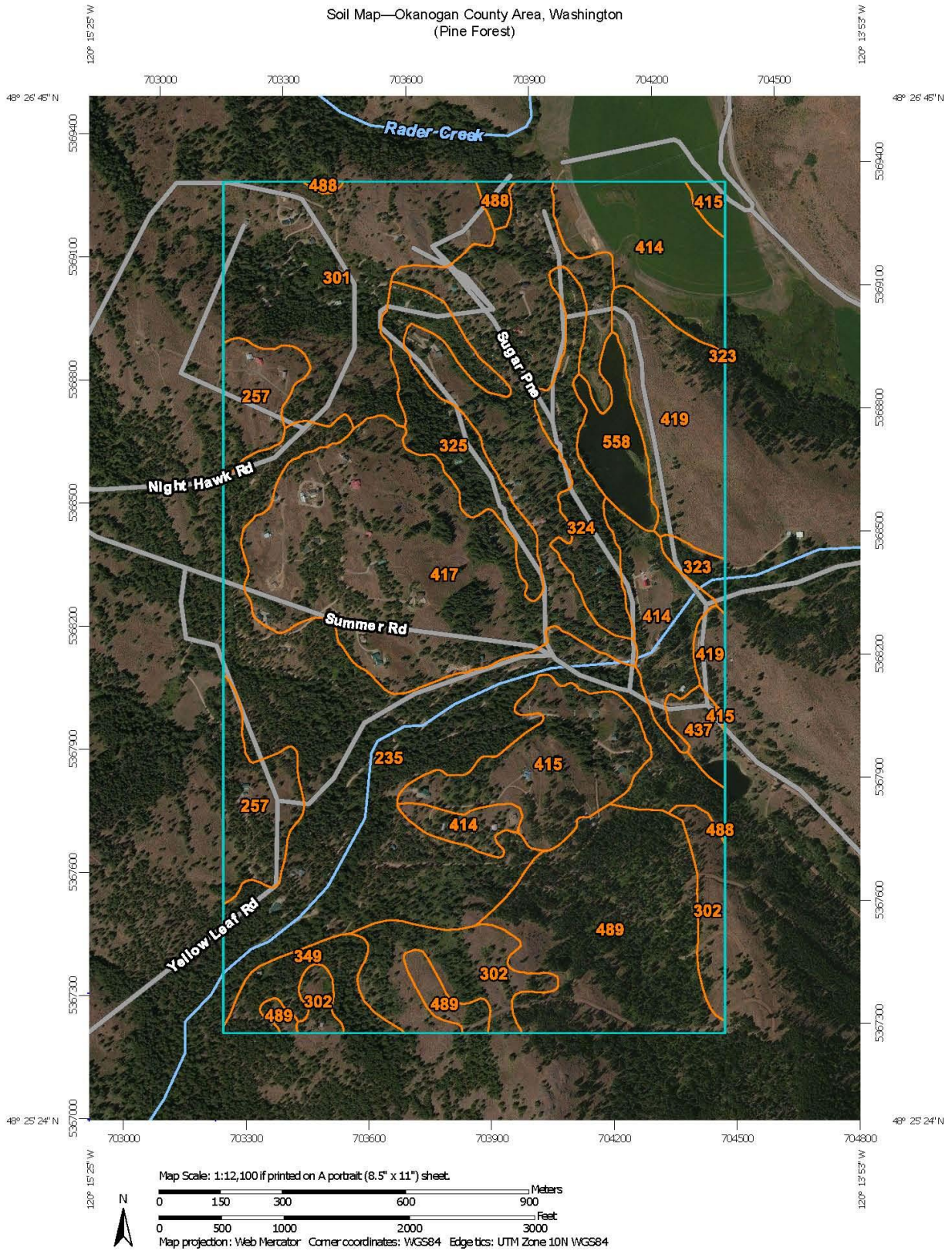
Management of these stands will reduce the risk from fire. This management plan provides protective measures to follow during management activities to avoid erosion. It will adhere to measures described by the Small Forest Landowner Checklist as well as the Road Maintenance and Abandonment Plan (RMAP) jointly when completed and approved as part of a future forest practice application. It is recommended that logging, or any use of heavy equipment, be done on dry soils or frozen ground.

Leaving thinning and pruning slash on site for one year for nutrient recycling will add organic matter, nitrogen and potassium as well as trace nutrients to the soil. Soil organic matter works as a nitrogen reservoir, protects against erosion and makes the soil more porous for water uptake (Miller 1990, Sanchez 1998, Schnepf 2007). The landowner must weigh the risk of leaving slash on the site as a fire hazard versus nutrient loss from piling green slash. (See attached article “How Much Fertilizer in Slash” by Chris Schnepf in appendix.).

The brush and slash can be mulched or chipped and scattered immediately. If a mulching machine or chipper is used, the operator should avoid breaking up old large logs. They will become a fire hazard. Also, the green slash should not be mixed into the soil. It should be left on the surface to avoid tying up nitrogen during decomposition (pers. comm. Chris Schnepf 12/6/07).

Once the management activities are complete, seed and cross drain skid trails. All other disturbed soils should also be reseeded with a native grass mix to stabilize the soil, reducing risk from erosion. This grass mix may also reduce the proliferation of invasive weed species.

Soil Map—Okanogan County Area, Washington
(Pine Forest)



Map Scale: 1:12,100 if printed on A portrait (8.5" x 11") sheet.

0 150 300 600 900 Meters






























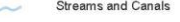

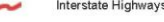

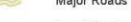
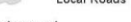

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Map Unit Legend

Okanogan County Area, Washington (WA649)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
235	Cassal ashy loam, 5 to 25 percent slopes	123.8	19.6%
257	Cubhill-Johntom complex, 15 to 35 percent slopes	27.0	4.3%
301	Johntom-Foggydew-Rock outcrop complex, 35 to 75 percent slopes	62.2	9.8%
302	Johntom-Rock outcrop complex, 15 to 35 percent slopes	31.9	5.0%
323	Lani ashy sandy loam, 25 to 65 percent slopes	3.4	0.5%
324	Lani ashy sandy loam, 0 to 25 percent slopes, extremely stony	18.2	2.9%
325	Lani ashy sandy loam, 25 to 65 percent slopes, extremely stony	21.4	3.4%
349	Longort gravelly ashy sandy loam, 15 to 35 percent slopes	12.1	1.9%
414	Newbon gravelly loam, 0 to 8 percent slopes	49.2	7.8%
415	Newbon gravelly loam, 8 to 25 percent slopes	32.7	5.2%
417	Newbon gravelly loam, 25 to 45 percent south slopes	135.3	21.4%
419	Newbon very gravelly loam, 25 to 65 percent slopes, eroded	32.7	5.2%
437	Owhi gravelly ashy fine sandy loam, 0 to 8 percent slopes	5.2	0.8%
488	Shalrock-Johntom complex, 35 to 65 percent slopes	2.4	0.4%
489	Shalrock-Rock outcrop complex, 15 to 35 percent slopes	61.8	9.8%
558	Water	12.1	1.9%
Totals for Area of Interest		631.3	100.0%

Soil Map—Okanogan County Area, Washington, and Okanogan National Forest Area, Washington
(Pine Forest)

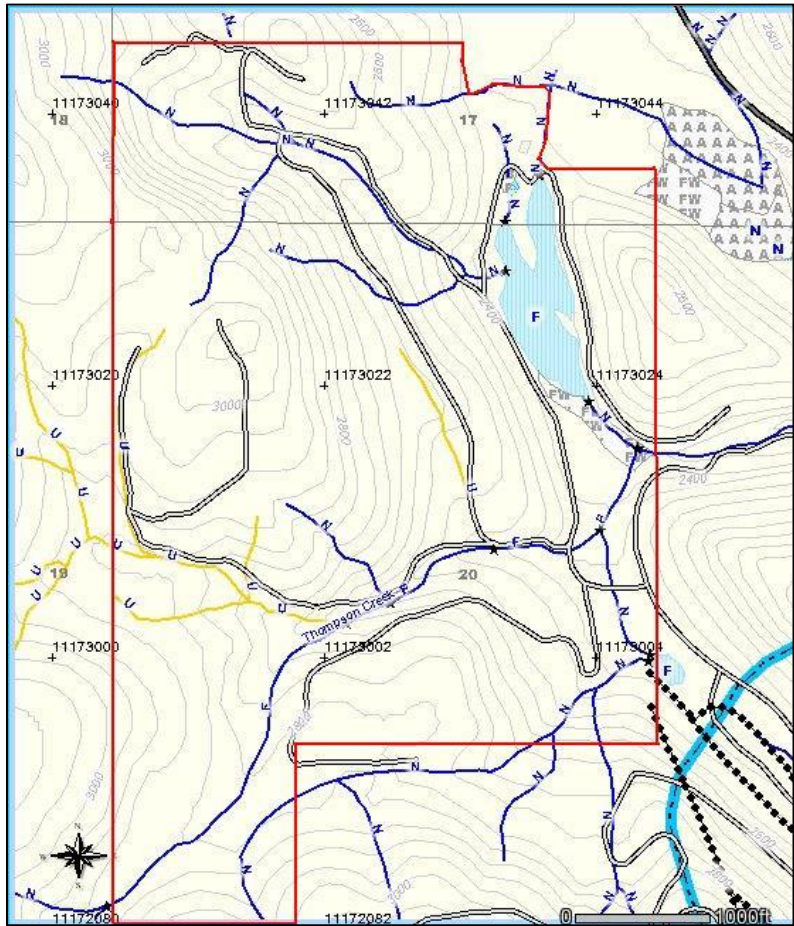
MAP LEGEND		MAP INFORMATION	
<p>Area of Interest (AOI)</p> <p> Area of Interest (AOI)</p> <p>Soils</p> <p> Soil Map Unit Polygons</p> <p> Soil Map Unit Lines</p> <p> Soil Map Unit Points</p> <p>Special Point Features</p> <p> Blowout</p> <p> Borrow Pit</p> <p> Clay Spot</p> <p> Closed Depression</p> <p> Gravel Pit</p> <p> Gravelly Spot</p> <p> Landfill</p> <p> Lava Flow</p> <p> Marsh or swamp</p> <p> Mine or Quarry</p> <p> Miscellaneous Water</p> <p> Perennial Water</p> <p> Rock Outcrop</p> <p> Saline Spot</p> <p> Sandy Spot</p> <p> Severely Eroded Spot</p> <p> Sinkhole</p> <p> Slide or Slip</p> <p> Sodic Spot</p>		<p> Spoil Area</p> <p> Stony Spot</p> <p> Very Stony Spot</p> <p> Wet Spot</p> <p> Other</p> <p> Special Line Features</p> <p>Water Features</p> <p> Streams and Canals</p> <p>Transportation</p> <p> Rails</p> <p> Interstate Highways</p> <p> US Routes</p> <p> Major Roads</p> <p> Local Roads</p> <p>Background</p> <p> Aerial Photography</p>	<p>The soil surveys that comprise your AOI were mapped at 1:24,000. Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Okanogan County Area, Washington Survey Area Data: Version 7, Jun 25, 2012</p> <p>Soil Survey Area: Okanogan National Forest Area, Washington Survey Area Data: Version 13, Jun 29, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Aug 1, 2011—Aug 8, 2011</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Category III: Water, Riparian, Wetland, Fish

This DNR water type map shows a lake, a fish stream (Thompson Creek), two small forested wetland areas, seven non-fish stream segments and five unknown draws.

Thompson Creek is a tributary of the Methow River which is spawning habitat for spring and summer Chinook, sockeye and steelhead. The entire watershed is listed as Environmental Sensitive Unit (ESU) for upper Columbia River spring Chinook and steelhead. This watershed also is listed as a recovery unit for upper Columbia River basin bull trout. These species of fish are listed as having depressed populations and efforts are being made to protect and enhance habitat in an effort to increase abundance.

All streams and draws should be verified in the spring when water levels are highest. A water type modification can be completed to remove non-existent streams or change typing if necessary. The fish stream/lake will require shocking to determine the presence or absence of fish prior to any type changes.



Riparian buffer zone requirements will be determined once the streams have been accurately verified with the water modification field review. If any of these draws are determined to be seasonal streams, they would require a 30 foot equipment limitation zone. The “F” streams will require a 75 foot buffer and perennial non-fish streams require a 50’ buffer (WAC-222-30-022, p 30-23).

An average of 80 to 100 of the largest trees per acre will be left with a basal area of 60 to 80 sq. ft. per acre on all the forested area including management zones.

Thinning and pruning the forest should reduce fire risk. A stand replacement fire could cause upland soil erosion, mud slides and stream/wetland sedimentation.

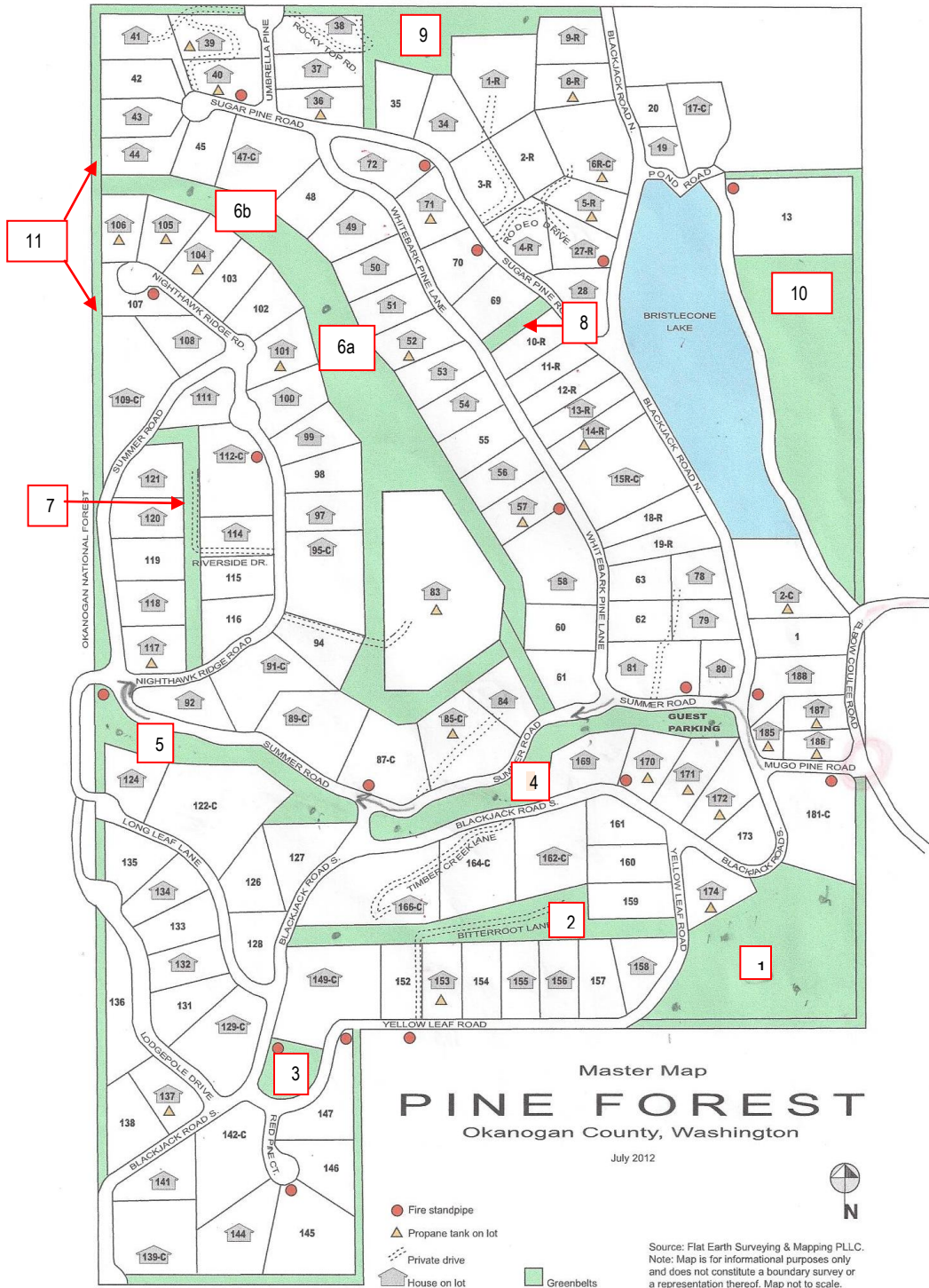
Historically, riparian areas burned on a frequency about half as often as the adjacent side slopes, but burned more severely (Agee 1994, Everett et al 2003). It would be a major loss to lose this valuable resource to fire.

Eastern Washington riparian management zones are intended to provide stand conditions that vary over time. They are designed to mimic eastside disturbance regimes within a range of functional conditions and maintain general forest health (WAC-222-30-0222, pg 30-17).

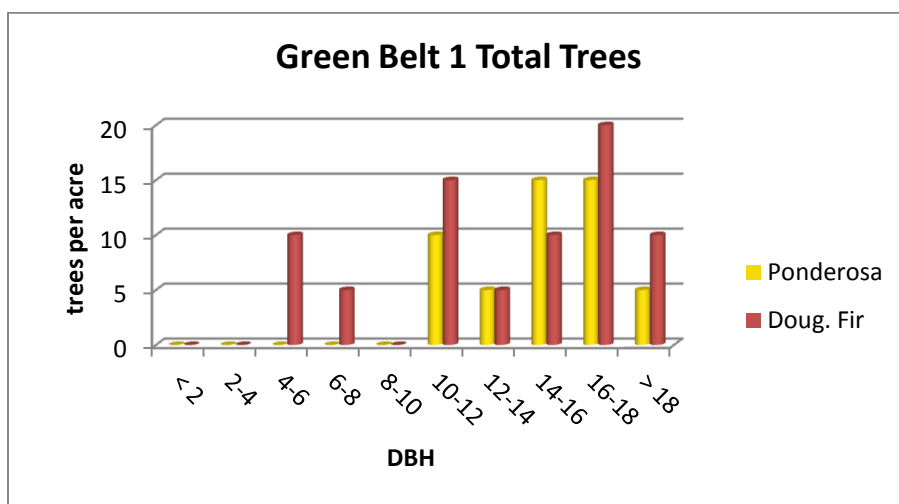
Category IV: Timber and Wood Products

In October of 2013 stand data was collected from 1/20th acre systematic and random plots to determine stocking levels (trees per acre) by species and age classes, current growth rates, basal area, tree heights, crown radius and diameter, insect and disease problems.

There are 11 “green belt” stands.



Green Belt 1



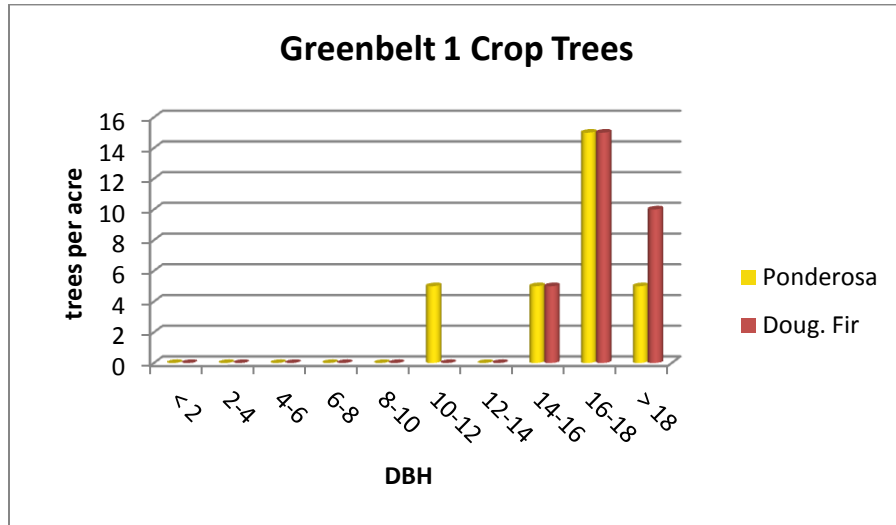
DBH	Ponderosa	Doug. Fir	Total
< 2	0	0	0
2-4	0	0	0
4-6	0	10	10
6-8	0	5	5
8-10	0	0	0
10-12	10	15	25
12-14	5	5	10
14-16	15	10	25
16-18	15	20	35
> 18	5	10	15
Total	50	75	125

Resource conditions

Generally, this is an even aged, single layered stand. This stand was commercially thinned about 17 years ago (1996) followed by non-commercial thinning. Currently, this 115 year old stand has a nice selection of large 12" to 22" diameter ponderosa pine (40%) and Douglas-fir (60%) trees at 125 trees per acre and a basal area of 120 sq. feet per acre. These leave trees are still growing at an adequate, healthy rate of 10 to 14 rings per inch, which means it has taken 10 to 14 years to add 2" diameter.

A few older remnant ponderosa pine are scattered throughout the green belts. These trees are roughly 271 years old which means they started growing in 1742. They show a tree ring release in 1912 from either the first logging entry or the last historical fire.

There are a few small patches of non-thinned Douglas-fir poles and/or saplings. All slash has been piled and burned.



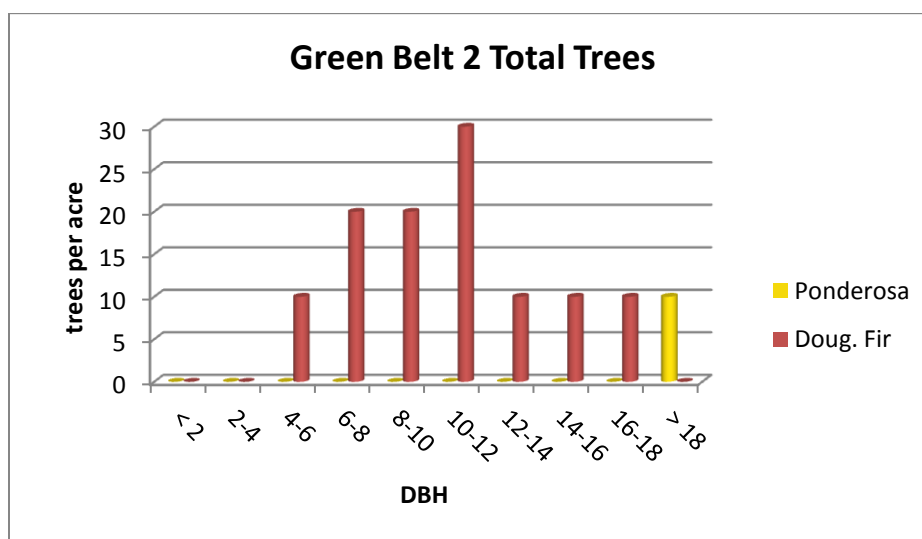
DBH	Ponderosa	Doug. Fir	Total
< 2	0	0	0
2-4	0	0	0
4-6	0	0	0
6-8	0	0	0
8-10	0	0	0
10-12	5	0	5
12-14	0	0	0
14-16	5	5	10
16-18	15	15	30
> 18	5	10	15
Total	30	30	60

Management practices

Consider a second commercial thinning in 5 to 10 years or when current radial growth rates have slowed to ≥ 15 rings per inch. Thin on a 25 to 30 average spacing (70 – 48 trees per acre). Leave the largest, healthiest, best crowned trees. Shift the species mix to predominantly ponderosa pine. Do not thin on a “grid”. Leave some very nice trees in clumps with some scattered openings. Remove the taller brush “ladder fuels” or brush that will carry fire up into the tree crowns. Cutting the brush will not destroy it. It will return from the roots and must be maintained to prevent overgrowth. Patches of tall brush that do not contact tree crowns may be left for wildlife habitat.

Prune the leave trees up to 16 feet, or enough to keep limb tips at least 8 feet above understory vegetation. Young trees can be pruned as well, but leave at least 50% crown. Some of the dense Douglas-fir patches which would not pose a fire threat to nearby homes could be left for wildlife cover.

Green Belt 2

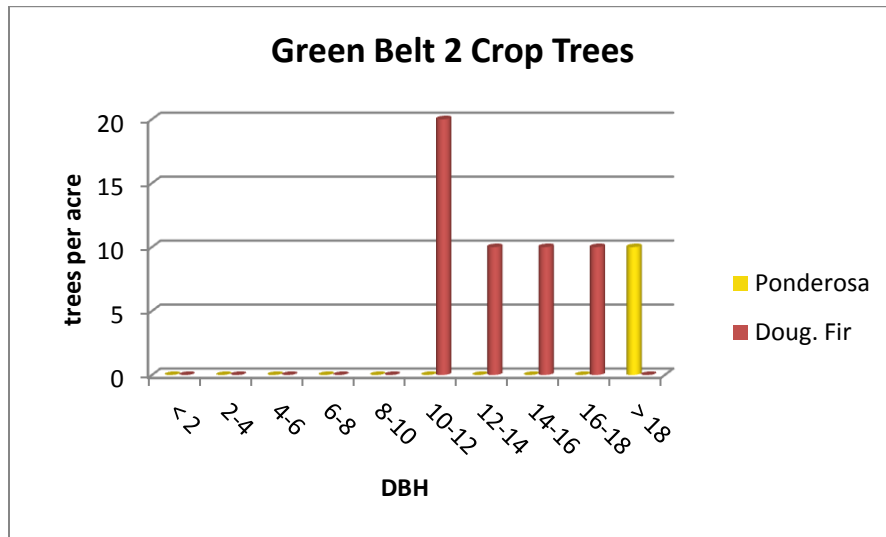


DBH	Ponderosa	Doug. Fir	Total
< 2	0	0	0
2-4	0	0	0
4-6	0	10	10
6-8	0	20	20
8-10	0	20	20
10-12	0	30	30
12-14	0	10	10
14-16	0	10	10
16-18	0	10	10
> 18	10	0	10
Total	10	110	120

Resource conditions

Green belt 2 was also commercially and non-commercially thinned about 16 years ago with slash piled and burned and is at low fire risk. This current stand is dominated by Douglas-fir (92%) with only 8% ponderosa pine. There are patches of Douglas-fir dwarf mistletoe in this stand. Trees are still growing well. The forested area is a very good growing site (site class III) with trees over 100' tall. The central and eastern portion is non-commercial forest land due to hot, dry exposure, shallow soils and difficulty in reforestation.

There is a draw (spring) with short, very steep side slopes (80%) running through the western part of this green belt. The water is pooled in places, but not flowing at survey time.



DBH	Ponderosa	Doug. Fir	Total
<2	0	0	0
2-4	0	0	0
4-6	0	0	0
6-8	0	0	0
8-10	0	0	0
10-12	0	20	20
12-14	0	10	10
14-16	0	10	10
16-18	0	10	10
>18	10	0	10
Total	10	50	60

Management practices

Consider a second commercial thinning of the forested area in 5 to 10 years or when current radial growth rates have slowed to ≥ 15 rings per inch. Thin on a 25 to 30 average spacing (70 – 48 trees per acre). Leave the largest, healthiest, best crowned trees. Attempt to shift the species mix to predominantly ponderosa pine. Do not thin on a “grid”. Leave some very nice trees in clumps with some scattered openings. Remove trees with mistletoe.

Remove the taller brush “ladder fuels” or brush that will carry fire up into the tree crowns. Cutting the brush will not destroy it. It will return from the roots and must be maintained to prevent overgrowth. Patches of tall brush that do not contact tree crowns may be left for wildlife habitat. Leave brush which does not pose a threat as ladder fuels on the steep slopes around the spring to help stabilize soils and prevent erosion.

Prune the leave trees and trees in the non-commercial area up to 16 feet, or enough to keep limb tips at least 8 feet above understory vegetation.

Thinning residue may be utilized as firewood or chips. The management and utilization of the thinning slash will remove fuels that would otherwise require treatment.

Green Belt 3



Resource conditions

This small isolated patch consists of overstory ponderosa pine and Douglas-fir trees the 14" to 20" diameter class with scattered aspen, snowberry and willow. The lower part is dominated by overstory Douglas-fir with tall brushy ladder fuels

Management practices

Prune all large trees up to 16' and remove all brush that poses a threat as ladder fuels.

Maintain the aspen patch by thinning out competing conifers. New growth can be encouraged by cutting out some declining stems.

Green Belt 4



Resource conditions

This green belt has Thompson Creek flowing through it. It consists mainly of a few larger overstory Douglas-fir and ponderosa pine with a very dense understory brush layer of dogwood, Douglas maple, alder, willow and some aspen. There is water in this draw with very steep side slopes. The draw runs below private homes.

There are dense patches of Douglas-fir poles that are a fire risk to nearby homes.

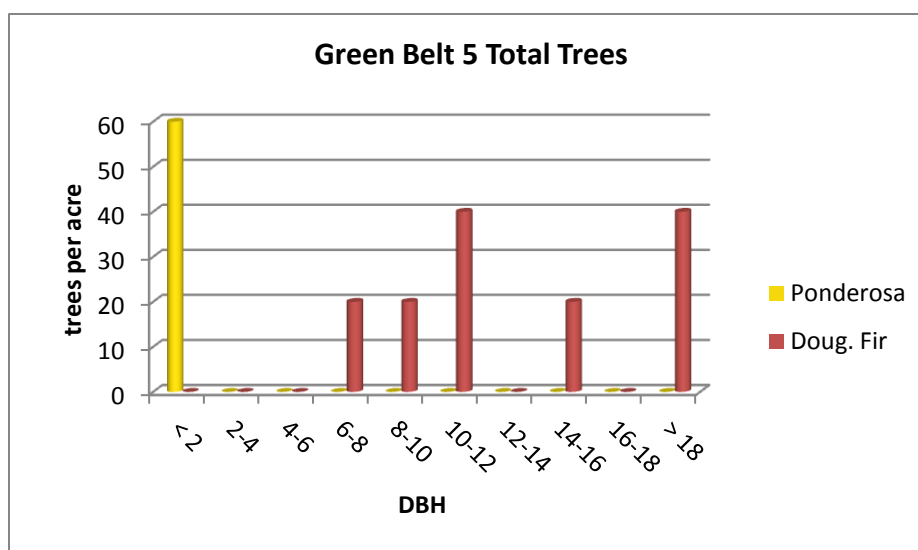
Management practices

Thin the overstocked Douglas-fir thickets on a 16' to 20' spacing. Prune the overstory trees up to 16', or enough to keep limb tips at least 8 feet above understory vegetation. Brush on the uphill sides of the creek could be cut back and maintained to remove ladder fuels.

With cooperation of adjacent landowners, this narrow green belt could be used as a fuel break by thinning trees on either side of the road on a wide (30') spacing and removing brush on the uphill portions.

Thompson Creek is listed as a fish stream which limits management activities along the stream. If the stream and connected lake were surveyed for presence of fish, and none found, the stream could be reclassified which would open up opportunities to better manage the forest land for fire resistance. Non-threatening brush should be left on the steep side slopes to prevent erosion into the stream bed which could be carried downstream. See water

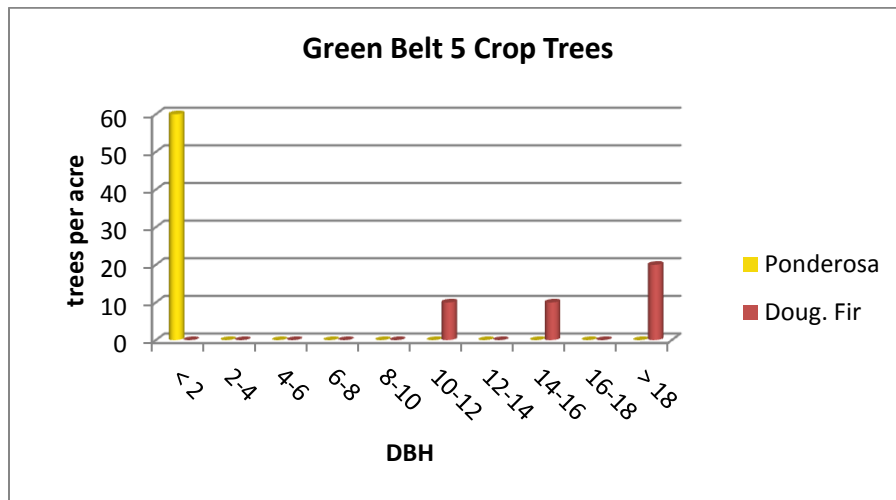
Green Belt 5



DBH	Ponderosa	Doug. Fir	Total
< 2	60	0	60
2-4	0	0	0
4-6	0	0	0
6-8	0	20	20
8-10	0	20	20
10-12	0	40	40
12-14	0	0	0
14-16	0	20	20
16-18	0	0	0
> 18	0	40	40
Total	60	140	200

Resource conditions

The Green Belt 5 forested area averages 200 trees per acre with 80 trees less than 8" DBH and 40 trees per acre larger than 18" DBH. Seventy percent of these are Douglas-fir. There is a tall, dense brush layer which could act as ladder fuels, taking fire up into the crowns of the conifer trees. A draw runs through this unit and there is an old logging spur road in the bottom. The flatter areas on top have also been commercially thinned about 17 years ago. There are areas with ponderosa pine seedlings coming in.



DBH	Ponderosa	Doug. Fir	Total
< 2	60	0	60
2-4	0	0	0
4-6	0	0	0
6-8	0	0	0
8-10	0	0	0
10-12	0	10	10
12-14	0	0	0
14-16	0	10	10
16-18	0	0	0
> 18	0	20	20
Total	60	40	100

Management practices

Commercially thin overstory trees to 40 trees per acre as a fuel break when trees slow to 15 rings per inch growth rates. Remove ladder fuel brush. This will also allow the ponderosa pine seedlings to grow unhindered. Brush growing in areas not considered to be a fire threat, allow patches of brush for wildlife cover.

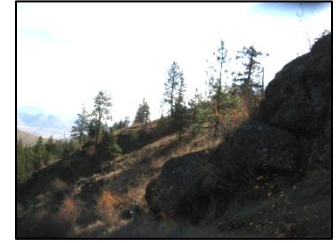
Prune the leave trees and trees in the non-commercial area up to 16 feet, or enough to keep limb tips at least 8 feet above understory vegetation. As pine seedlings grow, they can be pruned to leave 50% to 60% crown.

Adjacent landowners could be encouraged to thin their forested property with similar spacing to widen the fuel break.

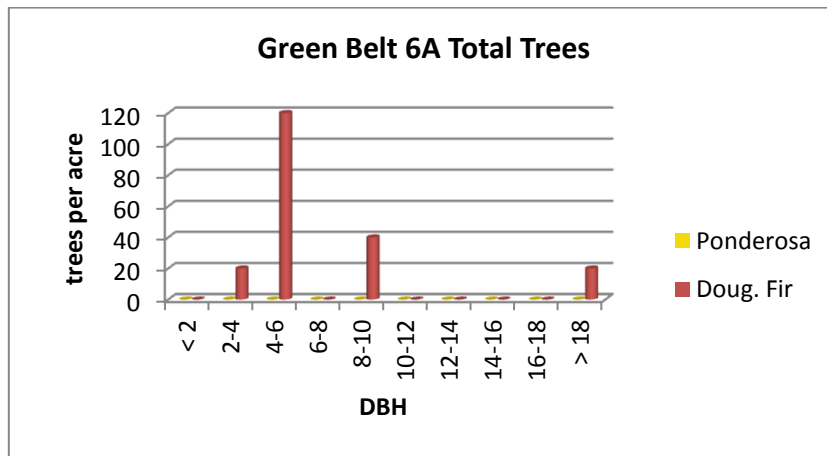


Green Belt 6

Greenbelt 6 is predominantly open and non-forested with small patches of trees scattered throughout. There were two dissimilar larger patches needing different management so we have separated these.



Green Belt 6a



DBH	Ponderosa	Doug. Fir	Total
< 2	0	0	0
2-4	0	20	20
4-6	0	0	0
6-8	0	0	0
8-10	0	40	40
10-12	0	0	0
12-14	0	0	0
14-16	0	0	0
16-18	0	0	0
> 18	0	20	20
Total	0	80	80

Management practices

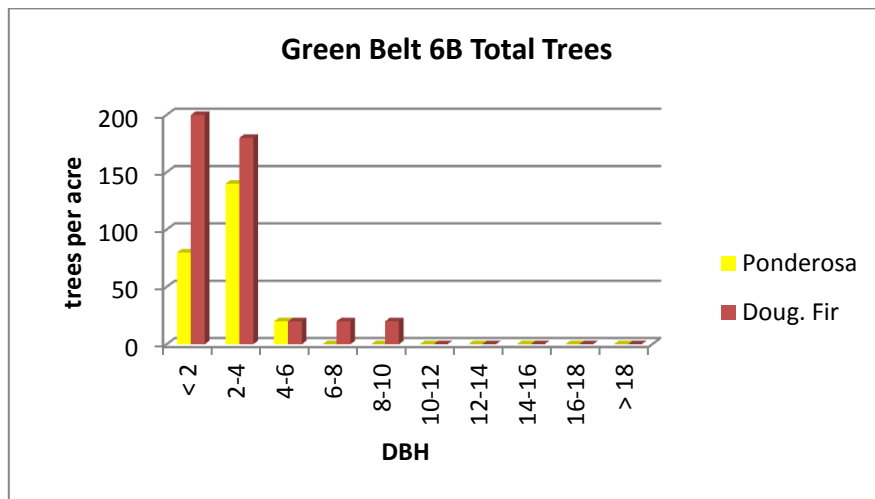
Some thinning has been done in 6a. However, there are still too many trees left. This area would also make a good fuel break. Private lot boundaries were not identified here, but this stand condition overlaps into the private properties making them at extreme fire risk.

Management practices

To manage as a fuel break, remove all trees less than 8" DBH. Leave any seedling/sapling trees. Prune overstory trees to 16 feet. Pile and burn slash or have it mulched.

The scattered patches of trees throughout the open area can also be treated to the same specifications.

Green Belt 6b



DBH	Ponderosa	Doug. Fir	Total
< 2	80	200	280
2-4	140	180	320
4-6	20	20	40
6-8	0	20	20
8-10	0	20	20
10-12	0	0	0
12-14	0	0	0
14-16	0	0	0
16-18	0	0	0
> 18	0	0	0
Total	240	440	680

Resource conditions

This is a younger, multi-layered stand on very steep slopes (70%) with a dense brush understory. Currently there are 680 trees per acre with a mix of Douglas-fir (65%) and ponderosa pine (35%). Most of these trees are less than 8" diameter.

Management practices

Manage as a fuel break. Thin these approximately 40 year old trees on a 20 foot average spacing leaving ponderosa pine as the preferred species. Prune, leaving 50% live crowns or on larger trees allow an 8 foot clearance from limb tip to ground vegetation. Remove brushy ladder fuels. Due to the steepness and limited access, it will be very expensive to treat this stand. Slash can be lopped and scattered or piled and burned. This dense stand borders private lots that should also be treated.

Green Belt 7

Resource conditions

Green belt 7 is mainly an open non-forested narrow strip with a few scattered trees at the south end.

Management practices

Thin and prune isolated patches and prune all trees within this area.

Green Belt 8

Resource conditions

This is a very narrow strip of trees between private lots. Some pruning has been done.

Management practices

Thin trees on a 20' spacing and prune all trees to 16 feet. See if neighboring property owners will also treat their land.



Green Belt 10

Resource conditions

This is a hillside due east of Bristlecone Lake and is considered a non-forested area.



Management practices

No management recommended.

Green Belt 11

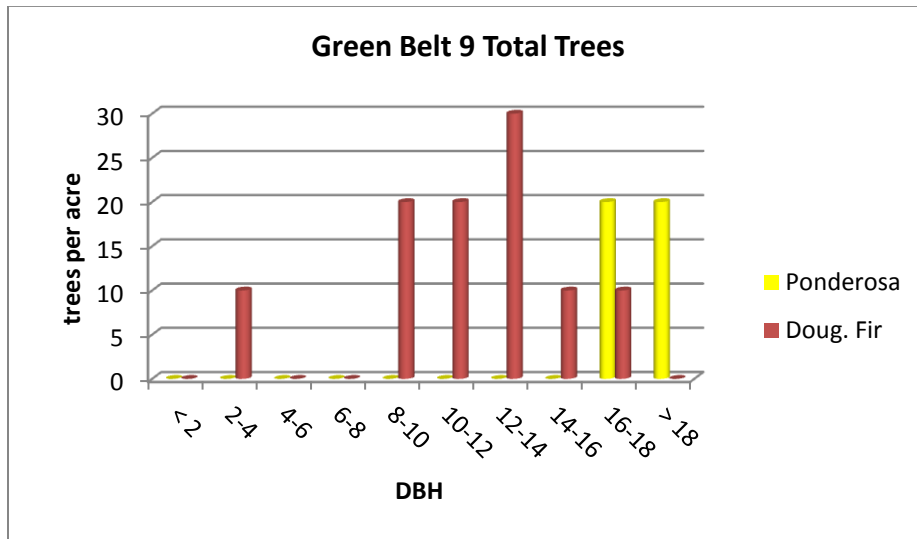
Resource conditions

This is a very narrow strip around the entire property. Some areas are forested and some are open grass or brush.

Management practices

Thin any patches of overstocked trees that run into private properties. These trees should be thinned on a wide spacing (approximately 30'), pruned to 16' and brush removed. This will act as a fuel break around the property. Small isolated patches that do not pose a fire threat may be left for wildlife cover.

Green Belt 9

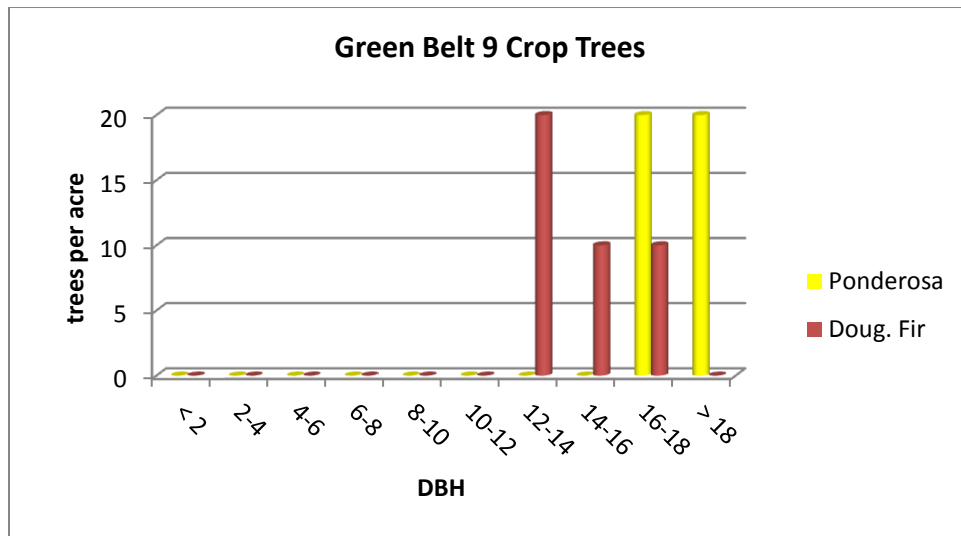


DBH	Ponderosa	Doug. Fir	Total
< 2	0	0	0
2-4	0	10	10
4-6	0	0	0
6-8	0	0	0
8-10	0	20	20
10-12	0	20	20
12-14	0	30	30
14-16	0	10	10
16-18	20	10	10
> 18	20	0	0
Total	40	100	140

Resource conditions

This area is at the northern end of the property with a mix of forest and grassy openings. The narrow forested area off the end of Blackjack Rd N. is overstocked.

The forest area between the grassy open areas has had some commercial thinning leaving 140 trees per acre (70% Douglas-fir, 30% ponderosa pine) with some nice, widely spaced ponderosa pine and Douglas-fir in the 16” to 18” diameter class.



DBH	Ponderosa	Doug. Fir	Total
<2	0	0	0
2-4	0	0	0
4-6	0	0	0
6-8	0	0	0
8-10	0	0	0
10-12	0	0	0
12-14	0	20	20
14-16	0	10	10
16-18	20	10	30
>18	20	0	20
Total	40	40	80

Management practices

Thin out all trees less than 8” DBH in the narrow strip off the end of Blackjack Rd. N. Prune remaining trees to 16 feet.

Private Lots Within the Pine Forest Perimeter

Resource conditions

Many of these private lots are developed with permanent or recreational homes. Some remaining lots are yet to be developed.

Many homeowners have made efforts to develop defensible space by thinning and pruning the overstocked trees.



There are some lots that have not had any defensible space or forest health management activities implemented and may pose a threat to neighboring homes.



Management practices

All landowners should be encouraged to help reduce wildfire risks and possible loss of homes and life within the community area by reducing fuels and improving forest health. Actively managing their property by thinning overstocked trees, then pruning to keep limbs above vegetation and disposing of slash or the cut materials will significantly reduce the threat of catastrophic fire. This is particularly true for parcels adjacent to other forested land.

All private lots will need continual forest and vegetation maintenance. Even the lot owners who have met good defensible space objectives will need to consider future thinning as the trees get larger and crowns (live limbs) spread and close in on each other. Keeping most tree crowns spaced at least five feet apart will help lower the risk of catastrophic crown fires. If adjacent lots are in need of thinning, this may help attract loggers to commercially thin these properties, or private landowners might tie in with commercial thinning when it occurs in the greenbelts.

The Washington Farm Forestry Association and WSU Forestry Extension Agents regularly host field trips for private landowners for education on techniques for lowering fire risks. Check with local WSU Extension foresters, WA DNR, or the local WFFA chapter for more information. They may choose to use your site for an educational training area. Also check with the DNR on their Firewise program for assisting landowners and developed communities to reduce fire risks.

Schedule community meetings to discuss risks and options or plan a series of newsletter articles.

Category V: Property Access, Roads, Trails

This is a developed planned management area with greenbelts throughout private properties. There are many maintained roads throughout the property. The main cross road into the property is Elbow Coulee Rd.

Category VI: Wildlife

As with most eastern Washington forests, these parcels are visited by an abundance of different animal species, including birds, reptiles, small and large mammals.

These parcels are within western gray squirrel habitat. Western gray squirrels are listed as “threatened” by the state of Washington and a “species of concern” by the U.S. Fish and Wildlife. Their range is considered priority habitat.

Although highly developed areas such as Pine Forest are not conducive to premier western gray squirrel habitat, the management of this area has been in keeping with good habitat requirements. Carefully thinning the stands, leaving large diameter trees in a contiguous network closely follows the habitat recommendations for this small mammal. Some patches of mistletoe which are not a threat to the remaining stand make good nest structure. The main food for squirrels is pine and other conifer cones. They also eat mushrooms, truffles and larger seed from wildflowers.

Variability within these stands will be created to enhance continued use by deer and other large mammals. Scattered small thickets will not be thinned on a wide spacing to leave hiding and thermal cover for big game animals. Management activities should occur after mid June to avoid lambing season for the bighorn sheep.

Vegetation responses in areas where thinning has opened up the stand will create more heterogeneity allowing more grazing and browsing opportunities for a variety of small and large mammals. Pruning can help maintain forest in the “stand initiation” structure providing greater wildlife habitat diversity (Oliver 1994). Manage for structural stratification and diversity in these stands by leaving different size trees on a variable spacing scattered throughout the stand (uneven aged management). Leave younger regeneration trees along with openings to create more heterogeneity or patchiness. Planning for different stand structural layers will help create distinct plant communities attracting different types of birds and other wildlife.

To ensure opportunities are available for both feeding and cavity-excavating birds, two snags at least 10’ height and ≥ 10 inch diameter per acre will be left on site where available. Also, leave two logs per acre 20 feet in length with 12” diameter tops. Leave two green recruitment trees 30 feet high and 10” diameter with 1/3 live crown (Forest Practices Illustrated 2007). Some of the tall snags can be cut off at a height of 20 foot to help ensure snag longevity for cavity nesting animals and woodpeckers. Consider seeding several burn-piles with native forage so as to improve wildlife habitat.

Some slash piles will be left on site for small mammal habitat, especially snowshoe hare (*Lepus americanus*), squirrels and chipmunks. A healthy small mammal population will support a variety of predators. Some of the pre-commercial thinning poles can be stacked to simulate large logs. This provides good habitat for squirrels, rabbits and bobcats. (Note the evidence of cone caches in this pole pile.)



The management activities planned for this parcel are intended to protect and enhance as many natural habitats as possible. By carefully removing some of the overstocked trees, re-vegetating with native grass species and returning the landscape to a state more closely resembling historic conditions, we hope to improve habitat for all wildlife species.

Category VII: Protection of Special Resources

There are no recorded sensitive, threatened or endangered species on this property (Hofmann).

Maintain riparian buffer zones for all management activities to minimize sedimentation in the creek.

Preserve trees which have active nesting sites, regardless of species. If any other sensitive species are later discovered on this property, the landowner should immediately contact the Washington Department of Fish and Wildlife and/or Department of Natural Resources for instructions on maintenance of habitat. Care must be taken during any management activities to avoid soil disturbance that would cause erosion and sedimentation into the watershed.

There are no recorded archaeological or historic sites (McLemore).

The State Department of Archaeology and Historic Preservation have these instructions should any artifacts be observed:

Please be advised that should archaeological materials (e.g. bones, shell, stone tools, beads, ceramics, old bottles, hearths, etc.) be observed during project activities, all work in the immediate vicinity will stop. The State Department of Archaeology and Historic Preservation ([360-586-3065](tel:360-586-3065)), the County planning office, and the affected Tribe(s) must be contacted immediately in order to help assess the situation and determine how to preserve the resource(s). Compliance with all applicable laws pertaining to archaeological resources (RCW 27.53, 27.44 and WAC 25-48) is required. Failure to comply with this requirement could result in criminal or civil penalties. If federal funds or permits are involved in the project, notification to the appropriate federal agency and the Advisory Council must occur in addition to the above-listed parties, per 36 CFR Sec. 800.12.

However, if ground disturbing activities encounter human skeletal remains, then all activity will cease that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance. The finding of human skeletal remains will be reported to the county medical examiner/coroner and local law enforcement in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines the remains are non-forensic, then they will report that finding to the Department of Archaeology and Historic Preservation (DAHP) who will then take jurisdiction over the remains. The DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to any appropriate cemeteries and the affected tribes. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains. (RCWs 68.50.645, 27.44.055, and 68.60.055)

Resource Category VIII: Aesthetics and Recreation

Management activities prescribed will increase resource sustainability, lower fire risks and increase scenic activities.

Have a **Defensible Space Plan** (see appendix). Current literature suggests maintaining a “green belt” up to 30 feet around structures, stack firewood uphill and away from any structure, prune overhanging limbs, and clean up tree debris.

Managing for a stand of large trees (>20” DBH) and pruning of trees will open up the forest, adding to the visual character of the site, giving one the feeling of being in an “old growth” forest. Leaving larger crop trees on a wider spacing will make the area more “park like”.

Preserve old snags, logs and stumps, especially ones with fire scars. These are the legacy of this forest and could aid in educating the public of the historical conditions and fire regimes in similar forests. Photo points could be maintained for educational purposes (i.e. school field trips) that would help display forest development over time and the implications and benefits of active forest management.



VI. Planned Management Activities

- 2014** Submit a water type modification to correct or confirm ponds, streams and draw typing. Encourage private landowners to manage their forest.
- 2014 – 2015** Apply for cost share funding to non-commercially thin GB-6b and overstocked Douglas-fir patches in all green belts. Also prune and carry out slash disposal and brush removal that poses a threat as ladder fuels, especially GB- 3, 4 & 5.
- Develop wildlife habitat (log piles and snags)
- 2020** Maintain brush in GB 3, 4 & 5 and monitor tree growth and forest health in all greenbelts.
- 2025** Commercially thin all greenbelts. Leave the largest, healthiest ponderosa pine and Douglas-fir overstory on a 30' spacing. Remove mistletoe where it threatens the understory. Do not thin on a "grid". To help ensure diversity across the landscape leave small patches, openings and understory for a multi-layered forest. Follow this treatment with pre-commercial thinning, pruning and slash disposal.
- 2040 - 2050** Shelterwood harvest green belts on a 40 to 50' spacing (27' – 17') and reforest with 2-0 or 1-1 plugs on a 14 x 14' spacing at 220 trees per acre with 60% ponderosa pine, 20% Douglas-fir and 20% western larch.
- 2070** Inventory planted acres to determine if they need thinned and pruned, thin on a 16' – 20' spacing.
- 2090** Commercially thin the new stand on a 20 to 25' spacing.

Landowner Signatures

LANDOWNER APPROVAL SIGNATURE (REQUIRED)

I/we approve of the contents of this plan and intend to implement the described management activities to best of my/our ability.

Rynn Leuicki, Designated Representative of
Landowner Signature(s) and Date Signed Pine Forest Board & Community
Plan Approval Signatures (per President David Chantler)

DNR FOREST STEWARDSHIP PLAN APPROVAL (IF APPLICABLE)

This plan meets the requirements for a Forest Stewardship Plan.

[Signature] 1-31-14
WA State Department of Natural Resources Authorized Representative Date
Print Name: Ron Worch
Affiliation: WA Dept of Natural Resources
Address: 225 S. Silke Rd Colville WA 99114
Phone: 509-684-7474
E-mail:

USDA-NRCS CONSERVATION ACTIVITY PLAN APPROVAL (IF APPLICABLE)

This plan meets the requirements for a USDA-NRCS Conservation Activity Plan.

Signature of USDA-NRCS Authorized Representative _____ Date _____
Print Name:
Title:
Affiliation:
Address:
Phone:
E-mail:

CURRENT USE TIMBER MANAGEMENT PLAN APPROVAL (IF APPLICABLE)

This plan meets the requirements for a Timber Management Plan for current use property tax programs.

Signature of Authorized County Government Representative _____ Date _____
Print Name:
Title:
Affiliation:
Address:
Phone:

Forestry Definitions

DBH (dia class)	Diameter of tree at 4.5 feet above ground on uphill side	
Basal Area	The area in square feet of a cross section of a tree bole 4.5 feet above ground	
Site Class	Rating of a site's potential growth ranging from I – V; from very wet fast growing sites (site class I & II) to very dry, slow growing sites (site class V)	
Site Index	A numerical rating of site quality. The average height in feet of dominant and co-dominant trees by age class (50 or 100 years)	
Shade Tolerant	Tree species that regenerate and grow well in shade such as grand fir	
Climax species	Tree species that successionaly dominate a stand due to lack of disturbance such as grand fir	
Seral species	Tree species that are shade intolerant and disturbance dependent such as western larch and ponderosa pine	
Fire regime	Cycles and patterns of fire influence by species composition, topography and climate	
Fire Scar	Area burned at the base of a tree bole that has survived several historic low severity fires.	
Fuel Break	An area of land designated and managed to help slow down the spread and intensity of fire. Also provides safer fire suppression for fire fighters.	
Mixed severity fire	A combination of both low and high severity fires	
Stocking	Number of trees per acre by species and size classes	
Crop Tree	A tree to be grown to maturity for the final harvest, selected for species, quality and growth potential	
Riparian	Pertaining to the area along the banks of a river, stream or lake	
Buffer (RMZ, WMZ)	A protective strip of land or timber adjacent to an area requiring attention or protection	
Tree Size Classes	Seedling	0.1 – 1.9" diameter
	Sapling	2.0 – 4.9"
	Poles	5.0 – 8.9"
	Small Timber	9.0 – 15.9"
	Medium Timber	16.0 – 24.0"
	Large Timber	> 24.0"

(Some trees with small diameters are older, suppressed, unhealthy trees rather than young saplings and should be removed for a healthy forest.)

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