

Forest Management Plan
Grandpa's Ranch, LLC
Kittitas County, Washington

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MARSHA WEYAND
KITTTITAS COUNTY ASSESSOR

Summary of Salient Facts:

Landowner: Grandpa's Ranch, LLC
PO Box 996
Snoqualmie, WA 98033

(425) 785-1633

Property Location: Kittitas County, Washington

Tax Parcel: 952256, 952257, 775434, 952254, 952259, 835434,
685434

Legal description: Portion of Sections 2 & 3, Township. 19 N., Range.
14 E., W.M.

Property Size: 115.1 Acres (Legal acres)

Forested Acres: 88.01 Acres (Acres used are GIS acres adjusted to
Legal acres.

Power Line ROW Acres: 27.09 Acres

Non-Forest Acres: 2.72

Zoning: Rural 3

Taxation: Rural

Fire Protection Assessment: Fire District 7 (Cle Elum)

Lease Agreements: None

Plan Prepared by: Matt Rourke
International Forestry Consultants, Inc.
A subsidiary of American Forest Management, Inc.
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(425) 820-3420 Fax (425) 820-3437

Date of Report: February 8, 2013

Introduction

This plan is prepared to outline ownership objectives and provide summary guidelines for short and long-term management of a tract of rural forestland in Kittitas County. The plan will satisfy requirements for classification as Forestland in Kittitas County.

The Forestland classification program is intended to encourage enhancement and protection of water, air, and soil resources as well to provide a continuous supply of forest products. This program encourages practice of good forest management by taxing the property for forestry use as opposed to other possible uses.

This program is designed for privately held forestlands over 20 acres in size, the only stipulations being owner participation in conservation practices which include resource enhancement and use over a period of time.

If the property is taken out of the Forestland Classification in the future, there will be tax consequences for the landowner. The landowner should consult with the County Assessor's office before removing it from the timberlands classification.

Land Owners Objectives:

The properties included in this plan include seven tax lots. The primary objective of the landowner is to manage these parcels for natural resource protection, including sustainable forest management with periodic economic returns. Long-term timber management must support itself and be economically viable, incorporating maintenance of forest health to promote timber value and provide forest habitat for a diversity of wildlife species. It is the owners' vision to pursue cost share for timber stand improvement projects and other non-commercial vegetation management projects, and utilize commercial operation to generate revenue while maintaining and improving forest health.

Property Description

General

The subject property is located approximately 5.5 miles east southeast of Cle Elum, Washington. The site is accessed by traveling south on Golf Course Road from I-90 approximately 0.9 miles, then South on Westside Road for approximately 0.9 miles, continuing onto Fowler Creek Road for 1.3 miles to the gate to the property.

The topography is variable across the property, but generally consists of gentle to moderately steep terrain with an average slope of 35 percent. The property is located on both sides of Fowler Creek. Slopes to 60% are found along Fowler Creek. A large agricultural field that produces hay is located in the middle of the property, surrounded by the forested portion of the property. There is a house and barn located in the field. Elevation ranges from approximately 2,300 feet in the northwest corner of the property to

about 2,600 feet in the southwest and northeast corners. The aspect is highly variable with primarily north and south facing slopes.

Type N (non-fish) and F (fish bearing) streams are found on the property as shown on the FMP Map attached. There are also two small ponds. There is one wetland area noted to be associated with one of the N streams. The drainages flow to Fowler Creek.

Soils

Seven soil units are found on the property according to the USDA Natural Resource Conservation Service (NRCS), as described below. See report from NRCS Web Soil Survey attached.

93 – Bertolotti ashy sandy loam (5-30%) is a well drained soil found on mountain slopes formed of colluvium and residuum from gneiss and granite with a mantle of volcanic ash. Restrictive layers are found at least eighty inches below the surface. The hazard of erosion is high.

201 – Roslyn ashy sandy loam (1-5%) is a well drained soil found on terraces formed of glacial drift with a mantle of loess and volcanic ash. Restrictive layers are found at least eighty inches below the surface. The hazard of erosion is moderate.

207 – Quicksell loam (0-5%) is a somewhat poorly drained soil found on terraces formed of alluvium. Restrictive layers are found as an abrupt textural change at twenty to forty inches. The hazard of erosion is moderate.

213 – Roslyn ashy sandy loam (3-25%) is a well drained soil found on kame terraces, terraces and valley sides formed of glacial drift with a mantle of loess and volcanic ash. Restrictive layers are found at least eighty inches below the surface. The hazard of erosion is high.

214 – Haplosaprists (0-2%) is a very poorly drained soil found on basin floors formed of herbaceous organic material over alluvium. Restrictive layers are found at least eighty inches below the surface. The hazard of erosion is high.

264 – Volperie very paragravelly ashy sandy loam (30-60%) is a well drained soil found on mountain slopes formed of residuum from phyllite and schist with a mantle of volcanic ash. Restrictive layers are found more than eighty inches below the surface. The hazard of erosion is high.

265 – Volperie very paragravelly ashy sandy loam, warm (30-60%) is a well drained soil found on mountain slopes formed of residuum from phyllite and schist with a mantle of volcanic ash. Restrictive layers are found as paralithic bedrock thirty to forty inches below the surface. The hazard of erosion is high.

Forest practices involving heavy equipment should be planned for periods when the ground is firm, utilizing erosion control measures as necessary to prevent activities on erosive soils from contributing sediment to streams.

Timber Resource

The descriptions and discussions of forest resources and property conditions in this plan are based on a walkthrough of the property in November 2013. The forest management area is fully stocked (with the exception of 3 acres scheduled to be afforested) with a mixture of primarily coniferous tree species of varying ages and sizes. Age ranges from under 10 year old to 90+ years old. Conifer tree species include grand fir, Douglas-fir, western red cedar, lodgepole pine, ponderosa pine, western larch, western white pine, western hemlock, and black cottonwood. Commercially sized timber is found in low to high concentrations across the forested portion of the property, with younger sapling and smaller regeneration found in openings to varying degrees depending on light conditions and past disturbance regimes.

The site's productivity is primarily Site Class III, with some Site Class II, according to Washington DNR. Compared to the range of productivity of soils found in the region, this site has moderate to high productivity for growing timber. Most of the site will grow 85' tall Douglas-fir in 50 years, and soils are reported to produce 50-95 cubic feet of Douglas-fir timber per acre per year at biological maturity in fully stocked stands under even-aged management.

The following 7 forest cover types are found on the property, which can be used as general timber management units for the property.

Timber Type 1 (Unit 1) – This type is a mature mixed species stand containing trees from 5 to 95 years old, but is considered a 75 year old uneven age stand. It has an overstory of mostly grand fir, red cedar, and Douglas-fir, with minor components of lodgepole pine, western hemlock, and black cottonwood. The overstory is variably dense, averaging about 160 trees per acre. These are generally 8 to 40 inches in diameter at breast height (Dbh – 4.5' above ground level). Timber quality is moderate to good, and generally contains low amounts of defect. The understory contains regeneration throughout to varying degrees, consisting primarily of grand fir and western red cedar, but also Douglas-fir. Diameters of understory trees are under 1 inch up to 6 inches. There are few understory species besides tree species, however the plant association is grand fir/pine grass and grand fir/vine maple. The stand is overall a well stocked stand that can support sustainable timber harvesting practices over the next ten years and beyond.

Timber Type 2 (Unit 2) – This type is a mature/semi mature mixed species stand containing trees approximately 45 years old, but contains scattered younger regeneration as well. The stand is more even aged in structure as it has a narrower diameter range compared to unit 1. It has an overstory of grand fir,

Douglas-fir, western white pine, and red cedar. A few black cottonwood and western larch trees are mixed in. The overstory relatively dense, averaging about 180 trees per acre between 6 and 22 inches Dbh, with some residual red cedar to 28 inches. Timber quality is moderate based on age, but is on a trajectory to have good timber quality over time as the stand continues to grow. The understory contains regeneration throughout to varying degrees, consisting primarily of grand fir and western red cedar. There are few understory species besides tree species, however the plant association is grand fir/vanilla leaf. The stand is overall a well stocked stand that can support sustainable timber harvesting practices over the next ten years and beyond.

Timber Type 3 – This type is a mature mixed species stand containing trees from 5 to 90 years old and has the structure of an uneven aged stand. This structure is influenced by recent mortality of grand fir, possibly due to root rot (*armillaria* or laminated root rot, and or bark beetles), primarily confined to the west half of the unit. It has an overstory of mostly grand fir and Douglas fir, with a mixture of red cedar, western larch, and white pine. The overstory is variably dense to open, with regeneration in the openings, averaging about 160 trees per acre across the type. Trees are generally 8 to 20 inches in Dbh. Timber quality is highly variable from poor to good. The understory contains regeneration throughout to varying degrees, consisting primarily of grand fir, but also Douglas-fir. Diameters of understory trees is under 1 inch up to 6 inches. There are few understory species besides trees, however the plant association is grand fir/vanilla leaf. The stand is overall low to moderately stocked, that may support commercial harvest entries in the near term depending on markets.

Timber Type 4 (Unit 4) – This type is a mature mixed species stand containing trees up to about 80 years old. It has an overstory of mostly grand fir, lodgepole pine, and red cedar, with a light component of Douglas-fir and a few ponderosa pines. The overstory is dense, averaging about 160 trees per acre. These are generally 10 to 26 inches in Dbh, with younger and suppressed trees having smaller diameters down to 6 inches and less. Timber quality is good, and generally contains low amounts of defect. The lodgepole pine is overmature and is in decline, with some stems dying over the course of the last few years. The understory contains some regeneration throughout to varying degrees, consisting primarily of grand fir and western red cedar. There are few understory species besides tree species and ceanothus species, however the plant association is grand fir/common snowberry/pinegrass. The stand is overall a well stocked stand that can support sustainable timber harvesting practices over the next ten years and beyond.

Timber Type 5 (Unit 5) – This type is dominated by a wetland, that appears to get water seasonally from an adjacent non-fish stream. The type contains primarily cottonwood and red cedar, and the red cedar is mostly dead due to the high water table here. Sedges are a predominant understory cover. This stand will likely not

support harvesting, but will serve well as wildlife habitat and as leave areas for timber harvesting in adjacent units.

Timber Type 6 (Unit 6) – This type is a mature mixed species stand containing trees up to about 80 years old. It has an overstory of mostly lodgepole pine, Douglas-fir, grand fir, and western larch. The overstory is variably dense but well distributed, averaging about 180 trees per acre. These are generally 8 to 22 inches in diameter at Dbh, with occasional residual Douglas-fir with diameters to 32 inches. Timber quality is moderate to good. There is a significant component of lodgepole pine in the 8 to 15 inch diameter range. The understory contains regeneration throughout to varying degrees, consisting primarily of grand fir and Douglas-fir. There are few understory species besides trees, however the plant association is grand fir/pine grass. The stand is overall a well stocked stand that can support sustainable timber harvesting practices over the next ten years and beyond.

Timber Type 7 (Unit 7) – This type is probably a root rot pocket from infection with annosus root disease, as there are several snags and downed logs found in the area. Western white pine, ponderosa pine, western larch, and grand fir are found scattered lightly in the oversory. The understory is primarily willow species. The age of the oldest trees is approximately 80 years old. The remaining older trees have diameters to 28 inches, and make up overall low timber volume to the acre. The plant association is grand fir/pine grass. The stand is overall a poorly stocked stand that will not support sustainable timber harvesting practices over the next ten years.

Past Timber Management

There has been no apparent timber management over the last 40 years or more on the property. The old growth stands that likely once occupied the site were harvested between approximately 45 and 100 years ago.

Grazing

The property was once a dairy farm. Grazing throughout the area may have once been a common practice, but has not occurred on the site in several decades, and there is no evidence of this practice.

Water Resources

- According to stream type maps produced by DNR, the property includes undefined (U) and Non-fish bearing streams (N) that contribute flow to fish (F) stream Fowler Creek, which bisects the forest cover and flows along Fowler Creek Road. The field reconnaissance and landowners' knowledge of the property revealed that several streams mapped do not occur, while others occur in different locations or where no stream was mapped. The maps included in this plan roughly identify stream types for future

consideration. Type N streams will be evaluated prior to any forest practices to determine presence of perennial flow, and buffered as prescribed by the Forest Practice Rules. Type F stream reaches will be confirmed to meet characteristics of fish bearing streams.

There is a single forested wetland on the property corresponding with Type 5. It is associated with a non-fish stream, and the water level and soil saturation level likely fluctuates seasonally. Wetlands will be protected as directed in the State Forest Practice rules governing Wetland Management Zones (WMZ) during any forest practice activities, and may receive greater protection if the adjacent stream is determined to be perennial.

Forest Health

Insects

Western spruce budworm (WSBW) does not appear to be contributing to a decline in the vigor of susceptible trees on site, such as grand fir and Douglas-fir. WSBW is a native defoliating insect that consumes old and new foliage. It may be playing a role in tree mortality and decline in unit 3 along with previously identified root rot or bark beetle interactions. Occasional single trees and clumps of over-mature grand fir have died as noted.

There is no significant evidence of tree decline or mortality associated with bark beetles, but it is possible that bark beetles are present in grand fir in stand 3 where it appears some root rot is present.

Unit 3, particularly the western half, should receive a follow up visit by a by a professional forester or DNR stewardship forester or forest entomologist to further investigate the insect and disease presence and progression within the first 2 years of this plan. Additionally, the forest stands should be monitored for significant number of trees that show rapid decline (loss of needles, heavy cone crops, thin or deformed crowns, beetle boring holes, etc.). Monitoring site visits should occur at least every 5 years, but the landowners are on the site annually, which will afford opportunity for general ongoing monitoring of forest health. If problems are noted, or if there are any reported insect infestations in the vicinity, the Washington Department of Natural Resources (WADNR) forest entomologist should be contacted for advice on the most appropriate course of action considering the ownership objective and the potential impacts to the resources on site and in the surrounding vicinity; including impacts to water quality and wildlife, and also fire hazard.

Disease

A number of root and foliar diseases are common to the intermountain region of the Cascade Range in Washington. It appears there are two root disease infection centers on the property: the west half of stand 3 and all of stand 7. The most likely root pathogen is annosus root disease (*Heterobasidion annosum*) as most of the decline is noted in grand fir in these areas, frequently infected and often killed in eastern Washington. Other root diseases could be present however as identifying annosus can be difficult. Other potential root diseases that could be affecting these areas include armillaria root rot (*Armillaria ostoyae*) and laminated root rot (*Phellinus weirii*). A forester should inspect the site at least every 10 years, although 5-year increments would be preferable to monitor any development of root rot pockets as the stands grow. As root or other diseases are noted during those inspections at levels threatening forest health, appropriate silvicultural methods should be implemented to limit the occurrence and spread of the disease. The use of chemicals is not a recommended or viable course of action to treat root diseases.

The areas identified as likely containing root disease should be fully inspected by a private professional forester or DNR stewardship forester.

Invasive Species

Invasives typically become introduced to sites via the road system or streams. Reed canary grass is found within portions of the hay field, particularly at the margin with the forest cover. The extent of this grass should be monitored, and prevented from encroaching into forest types on the property. Control of this grass will be necessary when planting trees in areas identified later in this plan under Reforestation. For information pertaining to invasive species and to become more familiar with invasives in Kittitas County visit the County's noxious weeds web site at: <http://www.co.kittitas.wa.us/noxiousweeds/quarantine.asp>. Follow recommended control to ensure management goals are achieved.

Fire Control

The property is subject to Cle Elum Fire District protection.

The ongoing management, including the implementation of silvicultural activities discussed in this plan, will reduce the hazard of fire spread and intensity. Slash created by forest operations will be treated so as not to promote fire hazard (spreading, lopping, crushing, chipping, piling, piling and burning). Check with local fire authority for burning regulations and permits.

The risk of fire ignition is higher any time equipment and chainsaws are used in the woods. This is mitigated during operations by complying with Washington Department of Natural Resources hazard reduction and fire suppression standards. Rules related to

days and hours of operation, fire tools, reserve water, etc. exist to reduce risk to property and the environment.

Reducing fuel levels and vertical and horizontal connectivity adjacent to roads is an important consideration. Consider fuel treatments in conjunction with WA DNR and cost share programs along Fowler Creek Road and interior roads.

Roads

Directions to the site are described in the introduction of this plan. The property itself contains a gated access road that provides access to the northern half of the property's forest cover, along with access directly off of Fowler Creek Road. These roads are gravel surfaced and stable. The additional units in the south half of the property are accessible via power line roads having native surfacing suitable for summer use. A checklist Road Maintenance and Abandonment Plan (RMAP) is required at the time a forest practice permit is submitted to the state. There is very little connectivity of the road system to typed water. The only location where a road crosses a stream is where Fowler creek crosses under Fowler creek road at the intersection with the gated private access into the property. Log haul is likely to occur during the dry season, so routine road maintenance to current standards being employed should meet state BMPs for road maintenance practices.

Wildlife

The forested landscape of the property provides valuable wildlife habitat. Forested landscapes in this region provide valuable habitat for large mammals, such as elk, deer, black bear, cougars, bobcats, as well as other smaller mammals. A number of small songbird species also likely utilize the property.

Snags and large downed logs are important habitat components for various bird species. Snags should be retained unless they pose a danger to human life or a structure, or must be removed as part of a program to treat insect or disease infestations, or where fire hazard abatement is required.

There are no known rare, threatened, or endangered species or their habitats found on the property. A formal review, to identify these resources, if any, and their potential protection requirements, will be conducted by WA DNR when the landowner proposes to conduct significant forestry activities with require a DNR approved Forest Practice Application.

Aesthetics and Recreation

The property is closed to the general public. The family enjoys recreating on the property by having family gatherings participating in nature viewing and hiking. Retaining healthy forest cover for aesthetics is important to the owners.

Cultural Resources

There are no known historic or pre-historic cultural resources on the property. A formal review, to identify these resources, if any, and their potential protection requirements, will be conducted by WA DNR when the landowner proposes to conduct significant forestry activities with require a DNR approved Forest Practice Application.

Timber Management

Overall timber management objectives are to produce periodic economic returns while managing for good forest vigor, various wildlife habitats, and overall good forest health. Even and uneven-aged management strategies are appropriate tools in achieving the stated objectives.

Pre-Commercial Recommendations

There are currently no pre-commercial stands on the property. Once disease resistant trees are established in unit 7 to regenerate the root rot pocket here, thinning of the young trees may be necessary to maintain vigor and growth as the stand develops. This should be evaluated once the stand is established and is approximately 10-15 years old.

Commercial Recommendations

Timber on this property is considered economically mature between 60 and 85 years old, depending on site class. All management units, except 7 and 5, contain commercially sized trees that may be managed soundly for timber production, and may utilize a range of harvesting techniques and intensities.

Unit 1 – This stand will support commercial timber harvesting. Timber in this unit will be managed generally through uneven-aged practices, including group selection, single tree selection, and commercial thinning. Group selection would tend to target a clump or area of mature to over-mature trees in areas ready to be regenerated. Single tree selection would seek to remove large mature trees where there are smaller, yet healthy and vigorous, trees to rapidly capture the newly available growing space. Commercial thinning would occur where dominant trees require additional time to achieve biological or economic maturity, such that smaller and co-dominant trees are removed to encourage continued good growth and vigor of future crop trees. The single tree selection method appears most appropriate for this stand of all the options at this time, and would seek to remove mature grand fir, Douglas-fir, and western red cedar in that order so as to maintain a healthy disease resistant and diverse stand. The unit is primarily accessible with ground based equipment, but some cable or line pulling may be necessary to reach slopes above Fowler Creek due to slopes exceeding 40 percent. This will be evaluated fully prior to harvest.

Unit 2 – This stand is a candidate for commercial thinning at this time or in the near future. Thinning would occur from below, which in general seeks to remove the smaller and less vigorous trees from the stand to allow the larger dominant and co-dominant trees to expand crowns and maintain or increase growth rate. A commercial thinning to approximately 120 trees per acre is recommended, targeting grand fir, and dense Douglas-fir. Sizes of timber harvested would be in the 8 to 12 inch Dbh range. The unit is accessible with ground based equipment

Unit 3 – This area should be considered for regeneration through removal of most of the merchantable timber, retention of advanced regeneration, and augmentation with planting. Many of the trees appear over mature and some are noticeably in decline. Harvesting would likely yield approximately 2-3 loads per acre of saw logs across the unit. The west half of the unit should be re-evaluated for root rot and insects/disease prior to making a final decision on harvest design and regeneration. This site would likely be logged using tractors on relatively steep ground utilizing constructed trails and some line pulling. The unit is too small and spread out to make cable logging economical to harvest.

Unit 4 – This unit contains over mature logdpole pine, which should be targeted for harvest during a selection, group selection, shelterwood/seed tree, or even-age harvests. Additional timber volume is available in other species, primarily well stocked grand fir that are of good commercial size and quality. The site supports use of ground based logging equipment.

Unit 6 - This unit contains mature logdpole pine and grand fir which can be targeted for harvest along with Douglas-fir under evenaged or uneven-aged harvest. Selection harvests should seek to retain healthy Douglas-fir, larch, and pine species for disease and insect resistance, as should be the general practice for the property. Thinning, group selection, shelterwood/seed tree, or even-age harvests will all produce moderate to good quality saw timber. The site supports use of ground based logging equipment. Removal of trees along the margin of unit 7 may work in conjunction with a unit 6 harvest, and in an effort to rejuvenate unit 7.

Reforestation

Following group selection harvests and harvests which otherwise create large openings, trees should be replanted as soon as possible or within one year. Preferred tree sizes are small plug or plug+1, a foot or less in height, with well balanced green crown and root mass. Seedlings are anticipated to have little competition from brush when planted, except in unit 7, which contains a high level of willow species. Planted seedlings may need some care after planting by way of netting to protect from elk and deer browse, as well as herbicide or manual release from brush competition should it develop.

Units P1 and P2 are established to establish trees in un-stocked areas to increase the forest cover of parcel 775434. Fall or spring planting should be preceded by manual or herbicide treatments of grasses to limit moisture stress and rodent damage. Grass can be

removed all together or treated in strips that create approximately 1-2 feet of bare soil on both sides of the planted tree. Recommended trees to plant (in order of preference) are ponderosa pine, Douglas-fir, western larch, and western white pine. Planting densities can vary between 250 and 400 trees per acre. Trees should be monitored for survival at 6 months, 12 months, and two years after planting, with follow up no later than 5 years after that to gauge competition from grasses and competing vegetation. These may require control with mechanical or chemical treatments to maintain growth and vigor to a point where the trees are free to grow.

With control of the willow in unit 7, disease resistant conifers such as western larch or western white pine can be planted at densities identified above to re-capture available growing space lost to apparent root disease infection. As of now unit 7 does serve a wildlife habitat function. Reforestation efforts following harvest in unit 6 should recognize the presence of root rot in unit 7 and plan plantings accordingly by selecting tree resistant to root rot.

Ten Year Management Timetable

Annually, as needed 2013 - 2022

- Monitor forest health
- Monitor site for non-native invasive species
- Monitor for trespass and maintain gates
- Monitor road system
- Monitor summer flow in N streams to determine if it is seasonal or perennial.
- Evaluate cost share programs to determine availability of funds to help support forest health improvement projects

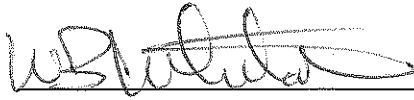
2013 - 2017

- Revisit the west half of unit 3 to further evaluate forest health issues and develop a plan to improve timber productivity. Harvest timber and employ regeneration practices as determined necessary to prevent further losses, but with economic considerations in mind. May need to postpone, if no immediate threat to surrounding stands, until commercial thinning in unit 2.
- Harvest declining lodgepole pine in unit 4, expanding harvest to other species as desired for income generation.
- Consider commercial thinning in unit 6
- Consider selective harvest in unit 1

2018 - 2022

- Consider commercial thinning in unit 2. Possibly accelerate schedule to accommodate logging and restoration in unit 3.
- Consider selective harvest in unit 1

Signature Page

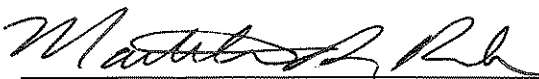
Landowner: 

Date 2/10/13

Approval: _____
Service Representative

Agency

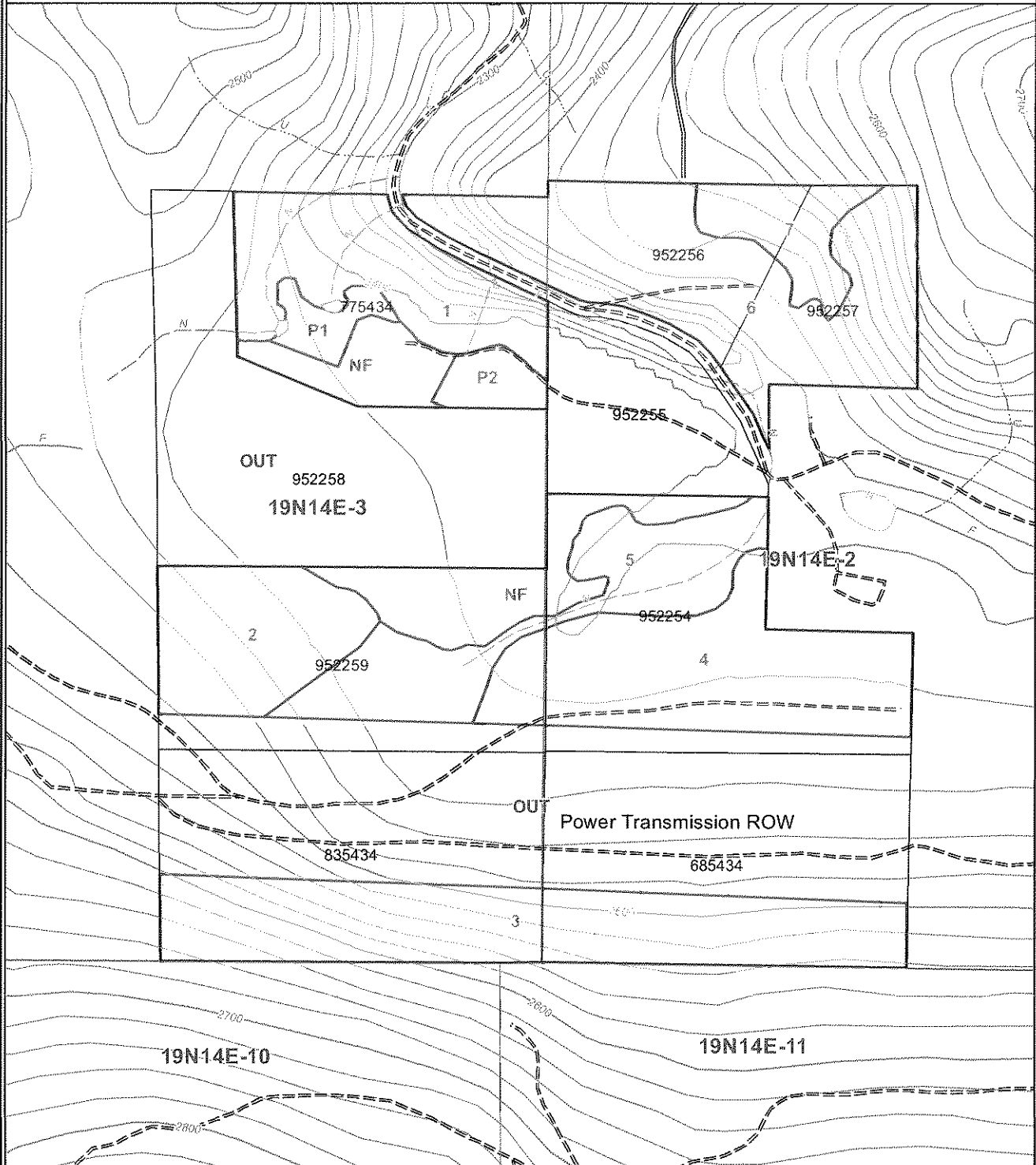
Date

Plan Prepared by: 
Matt Rourke – Forester, International Forestry Consultants, Inc.
A subsidiary of American Forest Management Inc.

Date: February 8, 2013

Grandpa's Ranch, LLC Forest Management Plan
 Secs 2 & 3 - T 19 N, R 14 E, Kittitas County

MANAGEMENT UNITS / TOPOGRAPHY



1 inch = 500 feet
 0 500 Feet

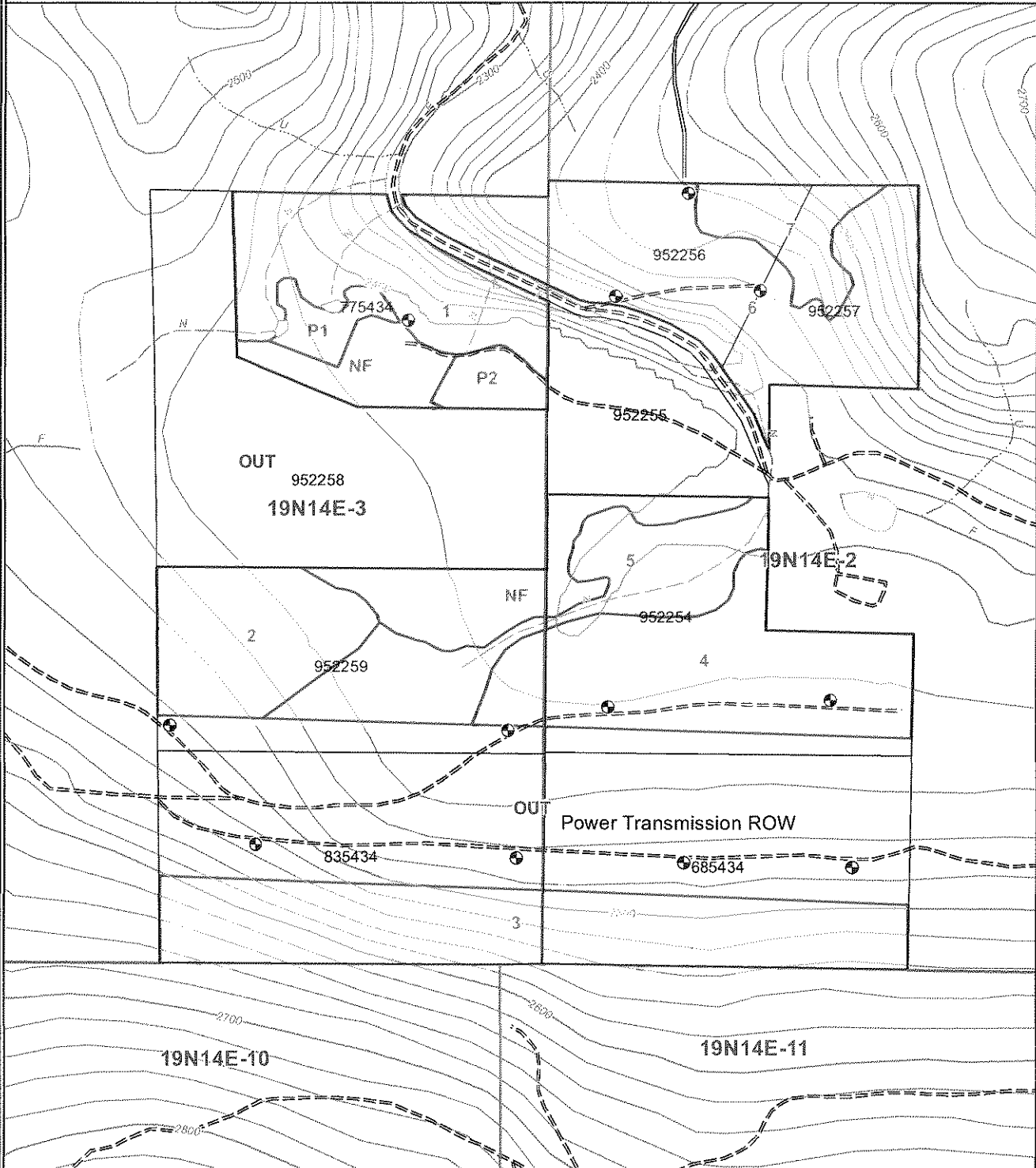
Map date: 2/8/2013



	Management unit	Water Type		20' contour
	Parcels			100' contour
	Section line			
	Wetland			

Grandpa's Ranch, LLC Forest Management Plan
 Secs 2 & 3 - T 19 N, R 14 E, Kittitas County

LOGGING PLAN MAP



1 inch = 500 feet
 0 500 Feet

Map date: 2/8/2013



	Management unit	Water Type		20' contour
	Landing			100' contour
	Parcels			
	Section line			
	Wetland			



United States
Department of
Agriculture

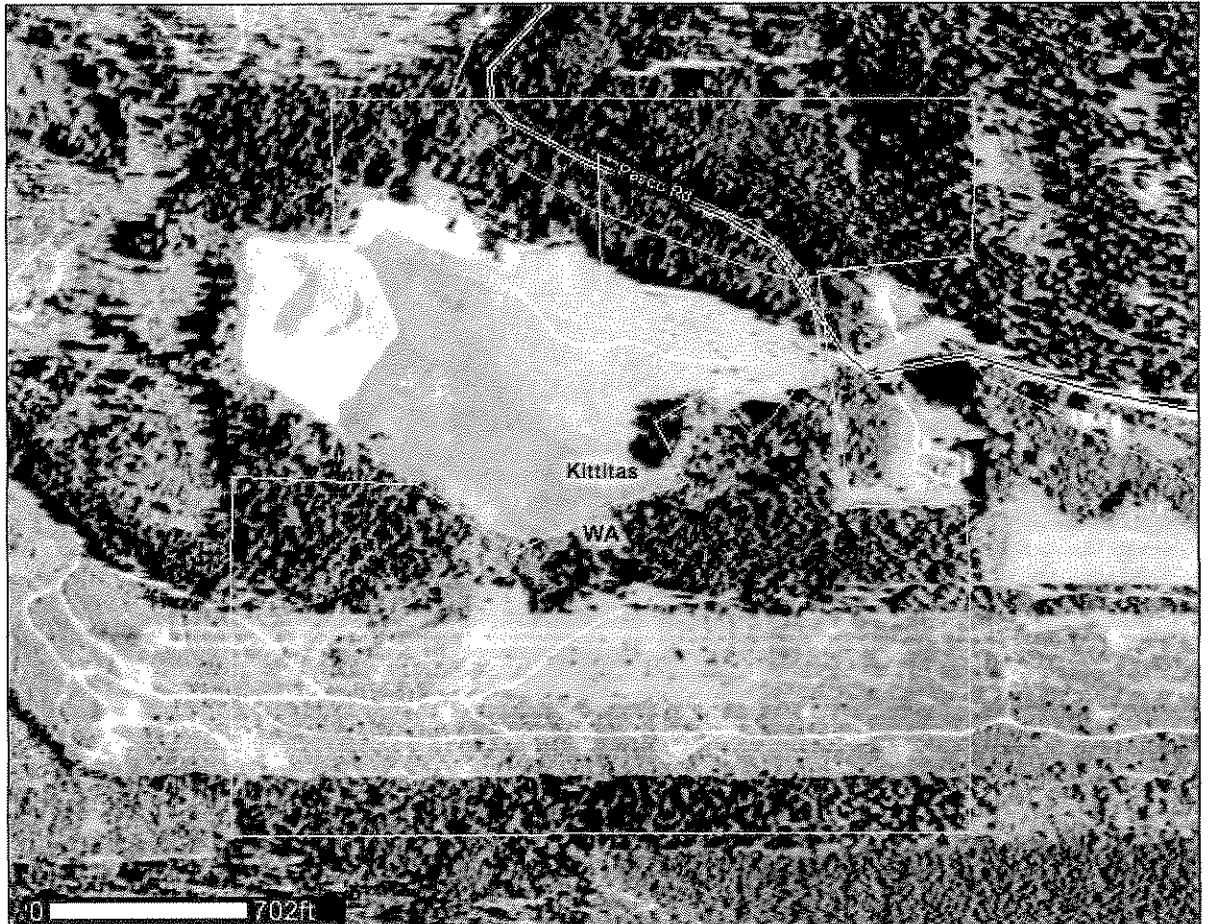


NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Kittitas County Area, Washington



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

Custom Soil Resource Report

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:6,720 if printed on A size (8.5" x 11") sheet



MAP LEGEND

- Area of Interest (AOI)
 - Area of Interest (AOI)
- Soils
 - Soil Map Units
- Special Point Features
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
 - Spot Area
 - Stony Spot
- Special Line Features
 - Gully
 - Short Steep Slope
 - Other
- Political Features
 - Cities
- Water Features
 - Streams and Canals
- Transportation
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Very Stony Spot
- Wet Spot
- Other

MAP INFORMATION

Map Scale: 1:6,720 if printed on A size (8.5" x 11") sheet.
 The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kittitas County Area, Washington
 Survey Area Data: Version 5, Aug 10, 2012

Date(s) aerial images were photographed: 7/27/2006

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.

Map Unit Legend

Kittitas County Area, Washington (WA637)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
93	Bertolotti ashy sandy loam, 5 to 30 percent slopes	22.3	23.2%
201	Roslyn ashy sandy loam, 0 to 5 percent slopes	47.8	49.5%
207	Quicksell loam, 0 to 5 percent slopes	4.4	4.6%
213	Roslyn ashy sandy loam, moist, 3 to 25 percent slopes	2.2	2.2%
214	Haplosaprists, 0 to 2 percent slopes	0.4	0.4%
264	Volperie very paragravelly ashy sandy loam, 30 to 60 percent slopes	3.7	3.9%
265	Volperie very paragravelly ashy sandy loam, warm, 30 to 60 percent slopes	15.7	16.2%
Totals for Area of Interest		96.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Kittitas County Area, Washington

93—Bertolotti ashy sandy loam, 5 to 30 percent slopes

Map Unit Setting

Landscape: Mountains
Elevation: 2,300 to 3,700 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 100 days

Map Unit Composition

Bertolotti and similar soils: 85 percent
Minor components: 15 percent

Description of Bertolotti

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum from gneiss and granite with a mantle of volcanic ash

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Other vegetative classification: grand fir/vanillaleaf (CWS524)

Typical profile

0 to 1 inches: Slightly decomposed plant material
1 to 3 inches: Ashy sandy loam
3 to 11 inches: Ashy sandy loam
11 to 17 inches: Gravelly loam
17 to 27 inches: Very gravelly loam
27 to 60 inches: Extremely cobbly loam

Minor Components

Roslyn

Percent of map unit: 10 percent

Custom Soil Resource Report

Volperie

Percent of map unit: 5 percent

201—Roslyn ashy sandy loam, 0 to 5 percent slopes

Map Unit Setting

Landscape: Mountains

Elevation: 1,900 to 2,400 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 85 to 115 days

Map Unit Composition

Roslyn and similar soils: 85 percent

Minor components: 15 percent

Description of Roslyn

Setting

Landform: Terraces

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Glacial drift with a mantle of loess and volcanic ash

Properties and qualities

Slope: 0 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Moderate (about 8.0 inches)

Interpretive groups

Farmland classification: All areas are prime farmland

Land capability (nonirrigated): 3c

Hydrologic Soil Group: B

Other vegetative classification: grand fir/common snowberry/pinegrass (CWS336)

Typical profile

0 to 1 inches: Moderately decomposed plant material

1 to 8 inches: Ashy sandy loam

8 to 15 inches: Ashy sandy loam

15 to 37 inches: Loam

37 to 49 inches: Gravelly loam

49 to 60 inches: Gravelly loam

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Minor Components

Nard

Percent of map unit: 10 percent

Volperie

Percent of map unit: 5 percent

207—Quicksell loam, 0 to 5 percent slopes

Map Unit Setting

Landscape: Valleys

Elevation: 1,800 to 3,100 feet

Mean annual precipitation: 25 to 40 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 90 to 120 days

Map Unit Composition

Quicksell and similar soils: 80 percent

Minor components: 20 percent

Description of Quicksell

Setting

Landform: Terraces

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Alluvium

Properties and qualities

Slope: 0 to 5 percent

Depth to restrictive feature: 20 to 40 inches to abrupt textural change

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 5 to 15 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and drained

Land capability classification (irrigated): 4w

Land capability (nonirrigated): 4w

Hydrologic Soil Group: C/D

Other vegetative classification: Douglas-fir/common snowberry/pinegrass (CDS638)

Typical profile

0 to 5 inches: Loam

5 to 20 inches: Clay loam

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20 to 43 inches: Clay
43 to 60 inches: Clay loam

Minor Components

Swauk

Percent of map unit: 10 percent

Teaway

Percent of map unit: 5 percent

Roslyn

Percent of map unit: 5 percent

213—Roslyn ashy sandy loam, moist, 3 to 25 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 1,900 to 2,400 feet
Mean annual precipitation: 30 to 40 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 85 to 115 days

Map Unit Composition

Roslyn, moist, and similar soils: 85 percent
Minor components: 15 percent

Description of Roslyn, Moist

Setting

Landform: Kame terraces, terraces, valley sides
Down-slope shape: Concave, linear
Across-slope shape: Concave, convex
Parent material: Glacial drift with a mantle of loess and volcanic ash

Properties and qualities

Slope: 3 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Other vegetative classification: grand fir/vine maple (CWS551)

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Typical profile

0 to 1 inches: Moderately decomposed plant material

1 to 8 inches: Ashy sandy loam

8 to 15 inches: Ashy sandy loam

15 to 37 inches: Loam

37 to 60 inches: Gravelly loam

Minor Components

Quicksell

Percent of map unit: 5 percent

Bertolotti

Percent of map unit: 5 percent

Nard

Percent of map unit: 5 percent

214—Haplosaprists, 0 to 2 percent slopes

Map Unit Setting

Landscape: Valleys

Elevation: 1,900 to 4,200 feet

Mean annual precipitation: 20 to 90 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 100 to 140 days

Map Unit Composition

Haplosaprists and similar soils: 90 percent

Minor components: 10 percent

Description of Haplosaprists

Setting

Landform: Basin floors

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Herbaceous organic material over alluvium

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)

Depth to water table: About 0 to 8 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very high (about 28.3 inches)

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Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: WET MEADOW 16-24 PZ (R006XY601WA)

Typical profile

0 to 8 inches: Muck
8 to 20 inches: Muck
20 to 43 inches: Muck
43 to 60 inches: Silty clay loam

Minor Components

Thetis

Percent of map unit: 10 percent

264—Volperie very paragravelly ashy sandy loam, 30 to 60 percent slopes

Map Unit Setting

Landscape: Mountains
Elevation: 2,200 to 4,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 80 to 110 days

Map Unit Composition

Volperie and similar soils: 80 percent
Minor components: 20 percent

Description of Volperie

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder, backslope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum from phyllite and schist with a mantle of volcanic ash

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 30 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.8 inches)

Interpretive groups

Farmland classification: Not prime farmland

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Land capability (nonirrigated): 7e

Hydrologic Soil Group: B

Other vegetative classification: grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inches: Slightly decomposed plant material

1 to 8 inches: Very paragravelly ashy sandy loam

8 to 16 inches: Very paragravelly loam

16 to 38 inches: Extremely paragravelly loam

38 to 48 inches: Weathered bedrock

Minor Components

Rock outcrop

Percent of map unit: 5 percent

Nard

Percent of map unit: 5 percent

Yahne

Percent of map unit: 5 percent

Bertolotti

Percent of map unit: 5 percent

265—Volperie very paragravelly ashy sandy loam, warm, 30 to 60 percent slopes

Map Unit Setting

Landscape: Mountains

Elevation: 2,200 to 4,100 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 80 to 110 days

Map Unit Composition

Volperie, warm, and similar soils: 80 percent

Minor components: 20 percent

Description of Volperie, Warm

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum from phyllite and schist with a mantle of volcanic ash

Properties and qualities

Slope: 30 to 60 percent

Depth to restrictive feature: 30 to 40 inches to paralithic bedrock

Drainage class: Well drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.8 inches)

Interpretive groups

Farmland classification: Not prime farmland

Land capability (nonirrigated): 7e

Hydrologic Soil Group: B

Other vegetative classification: grand fir/pinegrass (CWG124)

Typical profile

0 to 1 inches: Slightly decomposed plant material

1 to 8 inches: Very paragravelly ashy sandy loam

8 to 16 inches: Very paragravelly loam

16 to 38 inches: Extremely paragravelly loam

38 to 48 inches: Weathered bedrock

Minor Components

Spexarth

Percent of map unit: 5 percent

Loneridge

Percent of map unit: 5 percent

Jumpe

Percent of map unit: 5 percent

Cliffdell

Percent of map unit: 5 percent

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FIREWISE CONSTRUCTION

To create your FIREWISE structure, remember that the primary goals are fuel and exposure reduction.

Use construction materials that are fire-resistant or non-combustible whenever possible.

Consider using materials such as Class-A asphalt shingles, slate or clay tile, metal, or cement and concrete products for roof construction.

Construct a fire-resistant sub-roof for added protection.

Use fire resistant materials such as stucco or masonry for exterior walls. These products are much better than vinyl which can soften and melt.

Consider both size and materials for windows; smaller panes hold up better in their frames than larger ones; double pane glass and tempered glass are more effective than single pane glass; plastic skylights can melt.

Prevent sparks from entering your home through vents, by covering exterior attic and underfloor vents with wire mesh no larger than 1/8 of an inch.

Keep your gutters, eaves and roof clear of leaves and other debris.

Clear dead wood and dense vegetation within at least 30 feet from your house, and move firewood away from your house or attachments like fences or decks.

Any structure attached to the house, such as decks, porches, fences and sheds should be considered part of the house. These structures can act as fuses or fuel bridges, particularly if constructed from flammable materials. Therefore, consider the following:

If you wish to attach an all-wood fence to your home, use masonry or metal as a protective barrier between the fence and house.

Use non-flammable metal when constructing a trellis and cover with high-moisture, fire-resistant vegetation.

Prevent combustible materials and debris from accumulating beneath patio deck or elevated porches; screen underneath or box in areas below the deck or porch with wire mesh no larger than 1/8 of an inch.

WWW.FIREWISE.ORG

BEWARE & PREPARE

Firefighters need your help. Use these tips to PREPARE your home and PROTECT your family and pets. BEWARE of accidentally starting a wildfire!



www.firewise.org

**FOR MORE INFORMATION,
VISIT THESE HELPFUL WEBSITES:**

USDA FOREST SERVICE

www.fs.fed.us

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

BUREAU OF INDIAN AFFAIRS

FISH & WILDLIFE SERVICE

NATIONAL PARK SERVICE

www.doi.gov/bureaus.html

NATIONAL ASSOCIATION OF STATE FORESTERS

www.stateforesters.org

NATIONAL FIRE PROTECTION ASSOCIATION

www.nfpa.org

U.S. FIRE ADMINISTRATION

www.usfa.fema.gov

FEDERAL EMERGENCY MANAGEMENT AGENCY

www.fema.gov

FOR MORE INFORMATION CONTACT:

FIREWISE COMMUNITIES

1 BATTERY MARCH PARK - QUINCY, MA 02269

DEFENSIBLE SPACE

Do you have at least 30 ft of space surrounding your home that is **Lean, Clean and Green**?

The objective of Defensible Space is to reduce the wildfire threat to your home by changing the characteristics of the surrounding vegetation.

Lean – Prune shrubs and cut back tree branches, especially within 15 feet of your chimney.

Clean – Remove all dead plant material from around your home; this includes dead leaves, dry grass and even stacked firewood

Green – Plant fire-resistant vegetation that is healthy and green throughout the year.

Did You Know? Defensible space allows firefighters room to put out fires.

FIRE-RESISTANT ATTACHMENTS

Attachments include any structure connected to your home, such as decks, porches or fences. If an attachment to a home is *not* fire-resistant, then the home as a whole is *not* firewise.

A DISASTER PLAN

The time to plan for a fire emergency is now. Take a few minutes to discuss with your family what actions you will need to take.

- Post your local firefighting agency's telephone number in a visible place.
- Decide where you will go and how you will get there. With fire, you may only have a moments notice. Two escape routes out of your home and out of your neighborhood are preferable.
- Have tools available: shovel, rake, axe, handsaw or chainsaw, and a 2 gallon bucket
- Maintain an adequate water source
- Have a plan for your pets
- Practice family fire drills

Did You Know? Evacuations for a wildfire can occur without notice; When wildfire conditions exist, BE ALERT.

