INGEBRIGHT

FOREST STEWARDSHIP MANAGEMENT PLAN

Landowner: David Ingebright
15819 Jordan Rd.
Arlington, Washington 98223
Phone: (425) 220-5331

Property Location: 102 Acres; 97 Forested Acres
SW1/4 SE1/4; part of SE1/4 SE1/4 in Section 27, Township 31 North, Range 6 East in Snohomish County

Plan Preparer: David Ingebright
15819 Jordan Rd.
Arlington, Washington 98223
Phone: (360) 435-0848

Assisted by: John Keller, Forest Stewardship Coordinator
Department of Natural Resources 919 North Township Street
Sedro Woolley, WA 98284 Phone: (360) 856-3500

Date Prepared: February 2018

LANDOWNER OBJECTIVES

We have several objectives for our forested property. All of these objectives can be classified as both short and long term. Of greatest importance are:

X Keeping the forest healthy and productive to grow trees for future harvest and subsequent periodic income, as well as providing habitat for wildlife, and maintaining the aesthetic appeal of the property.

X We think the property is unusual, interesting and beautiful. We want to share it with family and friends for years to come.

X Being able to pass along the property, in good shape to our children.

GENERAL PROPERTY DESCRIPTION

Earl Ingebright purchased the original 63 acres in 1959. Then in 1993 another adjoining 5 acres was traded for adjacent easement rights. In 2000, he deeded 14 acres to his son David who built a house but otherwise has the same objectives. Another 7.5 acres was acquired in 2007 from another easement trade. In 2010 he purchased an additional 28 acres from Twin Falls Estates. This 28 acres adjoins our back forty and is a part of the Twin Falls development. It is known as "Lot 16". Earl passed away in 2017 at age 99. David inherited the free farm minus Earl's house and he and his sisters own the 28 acre Lot16.

This property is located about 5 miles northeast of the town of Granite Falls. From the west, it is accessed from the paved Jordan Road, and the paved 155th Ave NE meet at the west apex of the property line.

Topography is varied with two ridges, a creek (Jordan Creek) which flows through 2 small beaver ponds and one ~4-acre beaver pond. Backing the property is a fairly spectacular 1000 ft vertical rock cliff. About 100 yds east of the cliff, another vertical cliff of about 400 ft provides a visually exciting backdrop to the entire property.

The exposed vertical rocks are visible from Interstate 5 in several places. Several small drainages that contain surface water were noted. The region, including the property, is primarily glacial till plains, with some modification by water drainage patterns

The property was homesteaded and approximately 80 acres were clear cut and steam-logged around the turn of the 20th century. The forest had naturally reseeded itself with nice stands of mature Western Red Cedar, Douglas Fir, Hemlock and mixed hardwoods. Large stumps remain today as signs of the extensive clear-cut. Another selective cut occurred in approximately 1940 but it appears sporadic and the extent is unclear.

In 1985, he obtained the services of a Professional Forester and with his help, wrote a management plan. The initial part of the plan called for a clear-cut of portions of the front twenty acres (Stand 2) and a replant of Douglas Fir about 400 trees/acre. This was performed in 1986. By 1992 we were overwhelmed with a brush invasion in this stand and despite a huge effort; about 5-8 acres succumbed to fast-growing Red Alder, Cherry, Black Cottonwood, Blackberry and Salmonberry. The back 40 acres (Stand 3) was left undisturbed and today remains a healthy and mature stand of Western Red Cedar and Douglas Fir.

In 1997, a parcel adjacent to our southeast corner was sold and the new owner began a clear-cut. We negotiated with the landowner and logging company to also clear-cut about 7.5 acres of Stand 4 since it was mature and inaccessible from any of our roads. This was replanted in 1998 with Western Red Cedar on the hillsides and Douglas Fir in the flat areas.

This has survived a brush invasion but is in need of some clearing of fast growing alder and other invasive species.

Surrounding tracts have been clear cut and harvested several times, first before the 20th century, followed by more recent harvests in the last ten to twenty years. Much of the area has been converted to dispersed residences and some agricultural uses.

RESOURCE DESCRIPTIONS AND RECOMMENDATIONS

FOREST HEALTH

Insects and Diseases

No major forest health problems associated with insects or diseases were observed. Low-level activity of insects and diseases on this property should be accepted as normal with an annual reconnaissance anticipated to discover any problems.

Some evidence of Laminated Root Rot was observed and where we identify downed trees with this disease, we are replanting with WRC. Some Hemlock Mistletoe has been observed, but these trees are in the riparian zone and will not be touched due to environmental regulations. The clear-cut of 1987 removed most of the Hemlock infested with Mistletoe.

Fire

Weather, topography, and/or heavy fuel loading contribute the greatest problems to control of the spread of any wildfire. The biggest source of fire danger anticipated is from outdoor burning escapes from burning activities by adjacent residences.

Fire protection is provided by the Washington State Department of Natural Resources for the forested portions of the property. We pay a forest patrol assessment to cover fire protection costs.

If a wildfire did occur on or near the property, fire control access is very good. To help contain any wildfire starts, pruning trees and removing or treating fuels under 3 inches in diameter which are within 25 feet of existing roads and old skid trails would help widen those already existing fuel breaks.

Water sources for sustained fire fighting on the property include a nearby lake, King Lake and several nearby ponds, as well as the South Fork of the Stillaguamish River (for helicopter dipping). Snohomish County water hydrants are along the western boundaries of the property, on Jordan Road.

Measures for protecting the house and other improvements have been taken as described in the brochure Defensible Space.

Environmental Factors
Rooting depth of trees may be restricted by the existing hardpan, formed from past glacial activity. This can more readily subject trees to wind throw in those areas where soils are too shallow or saturated from these conditions.

Field observations seem to indicate that this hardpan may generally be deep enough to limit most adverse affects on trees, though scattered blow down is present.

Animal Damage Potential

No serious damage by animals was noted on the property.

TIMBER AND WOOD PRODUCTS

STAND 1 (about 3 acres)

This stand was logged in 2008 and replanted in Western Red Cedar. The stand straddles a boggy area and a well-drained hillside. A drainage ditch in the SW corner of this stand has been declared a fish-bearing stream, which we disagree.
Understory species noted were sword fern, salmonberry, vine maple, red elderberry, blackberry, and red huckleberry.
Forbs include trillium bleeding heart, along with other numerous unidentified forbs and some grasses. It is generally well stocked with approximately 50 trees per acre. Current WRC tree growth and health of this stand is good. Some nursery grown WRC were planted in this area.

STAND 2 (20 acres)

This stand was logged in 1986 and replanted with a "Weyerhauser fast growing thirty year sawlog" Douglas Fir. Except for a northern strip of large trees the rest of the forest consists of 32 yr old Douglas Fir planted in 1987. We see three good, healthy trees out of every ten due to lack of good thinning practice by ourselves. We have begun thinning over the past seven years. We have learned our lesson by seeing the results of not managing this stand. It is in distress. Crown lock is prevalent and our plan is to cut 25% of the stems in 2018 and hope for the stand to restore itself. Jordan Creek runs S to N across this stand and so we need to consider riparian restrictions in any future harvest.

Certain areas of this stand and stand # 3 contained mature Red Alder in 2008 and we harvested those trees, some in the riparian zone. An alternate plan was accepted. Nursery WRC trees were replanted in the riparian zones.

In 2008, it was determined that a culvert providing drainage under our fire road must be replaced with a larger 4' diameter culvert. We applied to the D of A EQIP Program for this replacement and received 2009 funds. We are very pleased with the culvert, its installation and the positive effect on a tributary to Jordan Creek.

Understory plants include Vine Maple, Salmonberry, Bracken and Sword Fern, Deer Fern, Trillium, Red Elderberry, Red Huckleberry, trailing and Himalayan Blackberry, Hemlock and Western Red Cedar saplings. Stand 2 is providing good wildlife habitat, but is not approaching its timber productivity capabilities.

STAND 3 (~40 Acres)

This stand consists of 40-100 yr old mature Western Red Cedar, Douglas Fir, Silver Fir, Hemlock and misc hardwoods including Black Cottonwood and Maple. A fringe of mature Red Alder lines the large beaver pond inside and outside the riparian zone. Where the overstory is open, the understory consists largely of Vine Maple, Salmonberry, Bracken and Sword Fern, Deer Fern, Trillium, Red Elderberry, Red Huckleberry, trailing and Himalayan Blackberry, Hemlock and Western Red Cedar saplings. Jordan Creek runs through this stand and we'd like to install a permanent bridge to cross the creek, possibly a RR flatcar.

We harvested the mature Red Alder on the edges of this stand in 2008 and replanted a mix of WRC seedlings and nursery stock WRC. We would like to harvest 25% of the trees in this stand. Operability for ground-based heavy equipment is possible in much of the stand during the dry season.

STAND 4 (7.5 Acres)

Stand 4 has the most interesting terrain. A steep to sheer cliff rises from the NE side of Jordan Creek about 200 ft. The NE corner of the cliff top is relatively flat and consists of 7 acres, which was clear cut in 1996 and was replanted with Douglas Fir. Known areas of root rot on this site were planted with Western Red Cedar. In the intervening years brush, Black Cottonwood, Cherry and Red Alder have permeated the stand. We have spent some time in 2016 cutting the cherry and red alder to leave only the best trees.

One house is adjacent to the SE boundary line. Harvesting when the trees are mature may be a problem. The western portion of this stand slopes downward to the level of the pond (about 200' in elevation). The trees are mostly conifer, Western Red Cedar, Douglas Fir and Hemlock 40-50 yrs old. The only access to this area is by

trail after crossing Jordan Creek via footbridge. Understory plants are mostly Sword Fern, Deer Fern, Trillium, Salmonberry, Red Huckleberry.

STAND 5 (~1 Acre)

This is a small understudy consisting of 20-30 Norway Spruce planted in 1962 by Earl. This stand is beginning to show signs of crowding and crownlock. We have no plans for harvest.

STAND 6 (~4 Acres)

Western Red Cedar 10 yrs old. This stand originally consisted of 20-40 yr old mature Red Alder that was harvested in 2008. Understory plants are mostly Sword Fern, Deer Fern, Salmonberry, Blackberry. The Western Red Cedars are doing well after ten years. We've been diligent reducing the brush invasion.

STAND 7 (~28 Acres)

This stand was purchased from Twin Falls Estates in 2010. It adjoins our stands 3 and 4 and is accessible by road through the Twin Falls development. This parcel is known as "Lot 16" from the Twin Falls platting. About 8 acres were clear-cut and DF planted in 1997. The rest of the stand is 50-100 yr old DF and WRC on a fairly steep slope. Ownership in this development gives us legal access over the twin falls roads to access this stand and stand 4. It also gives us access to King Lake for recreational opportunities. Understory plants are mostly Sword Fern, Deer Fern, Blackberry, Salmonberry, Red Huckleberry. Operability for ground-based heavy equipment is possible in much of the stand during the dry season. Where slopes are greater than 25%, ground- based heavy equipment is not recommended.

WATER QUALITY, RIPARIAN, AND WETLAND AREAS

Jordan Creek, a Type F stream, runs from the southeast corner of Valhalla Tree Farm and leaves the property crossing the north boundary about 800 feet from its northwest corner.
Two Type F tributaries enter Jordan Creek on the property, one from the south through Stand 2, and another from the north, through Stand 3.
Two Type Np waters have been identified on property, one that is a drainage ditch in at the southwest corner of the property, and another that runs through Stands 3 and 4 on the north side of Jordan Creek on the east portion of the property.
Several active beaver ponds exist on the property, one which is a Type A wetland, all with accompanying riparian areas. Several draws may have water running under the surface.

A few limited scattered forested wetlands are present on the property. In the southeast corner of Stand 1, some limited standing water was found. We will try to avoid operating ground-based equipment across them.

Most of the riparian areas adjacent to the streams and wetlands are in good condition, with large second growth trees of Stand 3 providing good stream bank stability protection, protection from sedimentation, and shade to keep water temperatures cool and favorable for fish along Jordan Creek.

No chemical applications are planned that would effect water quality, and no groundwater contamination potential has been recognized.

In Stand 2, limiting the use of equipment or recreational vehicles in or near the edges of wet areas will help preserve their integrity and function.

SOILS

Two soil types have been mapped on the property. The table below indicates their name, slope, and estimated acres present on the property.

Soils #	Soil Name	Slope	Acres
8112	Tokul gravelly loam	0 to 20 percent	20
7586	Sultan	8-15%	26

The soil on the flat area above the cliff in stand 4 doesn't fit either of the above soil types. It is very permeable, gravelly soil. Rock Falls below the cliffs contain some trees.

These Tokul gravelly loam soils of the property are moderately deep, moderately well drained soil formed in glacial till and volcanic ash. Soil depths range from 20 to 40 inches, with rock fragment components of hard gravels making up about 20% of the medium. Below this soil depth, a hardpan is found which typically causes a perched water table, effectively limiting rooting depth.

When disturbed, Tokul gravelly loams are stable on slopes under 25%. They have a high potential to compact when wet, which can reduce the productivity and alter drainage patterns. Use of wheeled and tracked equipment when the soil is wet produces ruts, compacts the soil, and damages the roots of trees.

Tokul gravelly loam soils can grow Douglas-fir up to 135 feet tall in fifty year. At age 60, Douglas-fir may annual produce 364 cubic feet per acre. Western hemlock averages 117 feet tall in a similar time frame. At age 50, western hemlock may annual produce 266 cubic feet per acre. The map unit is in capability subclasses IIIe and IVe.

Because the site is already very high in productivity, nitrogen fertilization is usually not recommended. However, some field tests have indicated an increase of 45 cubic feet per year for eight years following a single application of 200 lbs per acre of nitrogen urea.

Depending on markets, harvest activities could be anticipated within the next fifteen years. Therefore, we need to consider the impacts of inappropriate heavy machinery on forest soils. Caution needs to be taken when considering the kinds of equipment and seasons of operations. Exceedingly complex interactions and processes are involved in sustaining long-term site productivity. The potential for impact as to how these soils will support trees, understory plants, and maintain natural water movements should be a major consideration when selecting harvest equipment.

We can avoid soil compaction and tree growth loss by limiting logging on steep slopes to cable systems, and using low pressure ground equipment, like tracked bulldozers or processors during harvest. Keeping ample coarse woody debris, duff, and organic soil matter scattered over the surface instead of windrow or piling it will also help. We also will avoid ground-based timber harvesting when the soils are wet.

FISH AND WILDLIFE HABITAT

Resource Inventory/Condition

Introduction

There are over 400 species of forest-related wildlife in western Washington. These species utilize all different layers of forest, all tree and plant types, healthy as well as dead and dying vegetation, and mixtures of habitat types. Therefore, the more diversity within and between forest stands, the more species of wildlife the area can support.

Diversity includes different mixes of tree species, age and size classes, understory mixes and densities, different tree and canopy densities, relationship to aquatic areas, and different groupings of forest stand.

Wildlife Species and Habitat Inventory

Our property can be broadly characterized as containing three types of wildlife habitat, based on the various successional stages of Douglas-fir type forests: stands (1, 2,3, & 4) Some riparian habitat also exists in limited portions of both stands 1,2 & 3. Wildlife habitats on adjacent properties are similar.

Using the Coastal Douglas-Fir Forests and Wildlife, it is possible to get some indication of what amphibians, reptiles, birds, and mammals that may be found on the property.

Fish bearing streams, which include anadramous salmon stocks exist on the property we will take care that no harvest activity would affect fish habitat.

Inventory of Wildlife Habitat Components

Snags

We have scattered snags and defective trees throughout all stands on our property, although additional snags would be beneficial for wildlife.

When it comes time to harvest timber, we will try to save as many of the snags and defective trees as operationally possible.

Coarse Woody Debris

There is an ample supply of coarse woody debris present on the property, including a good distribution of both hard and soft logs in the larger sizes. Leaving occasional blowdown trees will help to maintain this important wildlife habitat component in our forest.

Understory Vegetation

A very important wildlife habitat component includes hardwood trees and shrubs that produce mast (berries and nuts), as well as grasses and forbs. These vegetative components often require increased amounts of sunlight to survive and produce fruits and seeds (such as alder and red elderberry). However, several understory species such as Pacific dogwood and salal are quite tolerant of low sunlight levels common to closed- canopy forest stands.

Almost all native hardwoods and understory shrubs produce fruits, seeds, or nuts, and thus, are quite valuable. In addition, the branches, twigs, leaves, and bark of most of these species are eaten by some wildlife species and all supply cover, shelter, and nesting habitat.

All of the stands have some limited presence of these species. Any commercial thinning or patch cuts would help our forest experience a renaissance of many of them.

Stand 2 in particular has a great deal of understory vegetation as a result of the previous harvesting practices, which opened up the forest floor to more light, and also may stimulated previously dormant seed to germinate.

Openings

Small openings within the forest enhance most wildlife. As the young plantations mature, and the amount of brush becomes reduced, creating limited openings by removing overstory vegetation and allowing native grasses, forbs, and shrubs to reinvade. A number of bird species require grass-forb and shrub stands for feeding.

THREATENED AND ENDANGERED SPECIES AND CULTURAL RESOURCES

A DNR TRAX analysis was completed on the property, and no threatened or endangered species, or cultural resources are known to exist on the property. Some evidence of the skid roads used in the original logging still exist.

INTEGRATED PEST MANAGEMENT AND INVASIVE SPECIES

There are several invasive species on the property: English Ivy, Japanese Knotweed, Himalayan Blackberry and Holly. We have an active eradication program to rid the property of these invasive species.
Knotweed: Spray poison in late August. We now have two small areas to deal with.
English Ivy: Cut the runners where they go up the trees and rip out the plants.
Himalayan Blackberry: Cut where found and when they interfere with roads and trails and new trees.
Holly: Cut the trees where they are found.
We perform a monthly walk-through of the property looking for outbreaks or new growth. We are not aware of any unusual pests.

AESTHETICS AND RECREATION

No substantial negative aesthetic impacts to the property are anticipated as a result of any of the proposed practices. The practices proposed above will probably serve to enhance the long term aesthetics and recreational value.

Conifer pruning may be found desirable from an aesthetic and recreational point of view, and also provide some defense against wildfires.

Recommended plantings for wildlife and any efforts which can be made to remove and/or control invasive species such as Reed Canary Grass, Japanese Knotweed and Himalayan blackberries will also move the forest to a more natural state.

We recognize that some minor disturbances in the stand, such as scattered blow down or a few dying trees are a part of the normal processes of disturbance in the forest which may not be immediately pleasing to the eye, but are important in keeping the forest ecosystem functioning naturally and provide fire access.

Proper construction and maintenance of trails (or old logging roads) throughout the property will allow easy access and better opportunity to monitor the forest.

AGRO-FORESTRY/SPECIAL FOREST PRODUCTS

Special forest products are generally known as non-timber products that are found or are growing wild on forestland. More simply, anything that is not a log, pole, or bolt is usually considered a special forest product (SFP).

The SFP industry is extremely diverse. Major elements include Western Greens, a term used to describe fresh and dried floral greens such as salal, sword fern, evergreen huckleberry, and Oregon grape, including Cascara all of which may be found on the Ingebright property.

Edible products such as mushrooms, berries, truffles, nuts and honey are harvested and processed by an entirely different industry. While some were observed during the field time spent by the plan preparers, certain conifer stands, especially as they grow older, have been seen to contain chanterelle as well as other marketable mushrooms.

It is our goal to keep this property is as natural state as possible for future harvest, and to pass on to our children and grandchildren.

MANAGEMENT TIMETABLE

Stand 1 3 Acre 10 yr old WRC planted 2009	Nurture WRC and undergrowth control
Stand 2 20 Acre DF planted 1986	Thin 2010-2017 to 150 TPA. Thin 25% of all stems 2018
Stand 3 40 acre 50-100 Yr DF/WRC/Hem	Thin 20-25% 2018
Stand 4 7.5 acres DF, WRC planted 1998	Thin alder and Black Cottonwood 2010-17
Stand 5 1 acre 50 Yr Norway Spruce	Do Nothing
Stand 6 4 acres 10yr old WRC Planted 2009	Nurture WRC and undergrowth control control
Stand 7 28 acres 20yr DF, 50-100 yr DF	Do nothing

FOREST STEWARDSHIP PLAN SIGNATURE PAGE

PLAN PREPARED BY:

David Ingebright
15819 Jordan Rd.
Arlington, Washington 98223
Phone: (425) 220-5331

LANDOWNER SIGNATURES:

The contents of this plan are acceptable to me. I intend to manage this property in a manner consistent with the objectives of the Forest Stewardship Program and, although under no obligation, intend to implement this plan to the best of my ability.

Signature on file

_____
David Ingebright 2/25/2018

APPROVAL SIGNATURE:

I have reviewed this plan and approve it as meeting the standards for a Forest Stewardship Plan.

Signature Date

John Keller
Forest Stewardship Coordinator - Northwest Region Washington State Department of Natural Resources 919 North Township Street
Sedro Woolley, Washington 98284 (360) 856-3500