

Integrated Resource Management Plan

Management Area 1

Woodlot License 0020

Vancouver Forest Region
South Island District
Nanaimo

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1. Introduction

1.1 Scope of The Plan

This management plan details the scope of the intended management for Area 1 of the Woodlot License Plan 0020.

The purpose of this plan is to describe inventory and outline the objectives and strategies that govern the management of the land base.

The plan was developed in accordance with objectives outlined in the Vancouver Island Land Use Plan and adheres to Ken and Bill's Management Plan Requirements.

The plan includes an annual allowable cut AAC calculation for the area and addresses a new co-management agreement with the Snuneymuxw First Nation that, following the guidance of a new Government program is designed to enhance non-timber forest products in the area and increase revenue from the sale of these products.

1.2 Plan Area

The area encompasses an 82 ha section of the schedule A portion of Woodlot 0020 on Southeastern Vancouver Island, located 10 km north of Nanaimo city centre. The area is in the Coastal Western Hemlock Biogeoclimatic Zone although portions of it may reside in transition zones between that and the Coastal Douglas-fir Zone. The land base borders on a number of residential neighborhoods and is a popular area for local recreationists and foragers. The management area is accessible from the Jinglepot area through both Galloway and Jameson roads. The area falls within the E&N South General Management Zone of the Vancouver Island Land Use Plan and is included in the area considered to be traditional Snuneymuxw and Snaw'naw'as territory

1.3 Broad Goals, Objectives and Strategies

The guiding objectives for the management and use of this area are to carry out activities in accordance with the Forest and Range Practices act, demonstrating good forest stewardship and sustainable forest practices.

The broad objectives for the management of this area are to maintain a long-term supply of harvestable timber to support the woodlot operations and provide revenue to Vancouver Island University. The woodlot provides an irreplaceable educational and training resource for the Forestry Program at VIU, and its continued operation is vital to the existence of this program.

A more recent objective has been to work with the Snuneymuxw First Nations Band to implement practices that enhance non-timber forest products in the area and provide revenue to the woodlot and the band from the sale of these products. The objective will be to increase non-timber forest product production and accessibility, without severely impacting timber production. Practices will include implementing new silviculture systems that reduces cutblock size and intensity and helps to support a constant supply of suitable habitat for forage

plants such as salal and dull Oregon grape. Sensitive ecosystems and other areas will be removed from the timber harvesting land base (THLB) and set up as long term reserves in order to support the growth of other NTFPs such as mushrooms, berries and cedar. Reserves will also foster the conservation of biodiversity on the landscape, including promoting stand structures and a variety of age classes and retaining suitable wildlife features especially the ecologically sensitive riparian corridors.

The licensee will also continue to accommodate recreational activities within the woodlot including maintaining access to surrounding parks.

2. Resource Inventory

2.1 Timber

Timber inventory data comes from a combination of the most recent forest cover data and field verification of the inventory labels. Forest information came from the Vancouver Island Database last updated in 2000. For the purpose of this plan the ages and volumes were projected ahead 14 years and then modified to accommodate recently harvested areas. Data collected during the field recce indicates that the majority of the established timber typing within the database is correct. Some minor discrepancies were detected in a few of the polygons yielding a higher proportion of Douglas-fir dominated stands on the ground than in the original inventory. Alterations to the forest cover maps have been made to rectify this inconsistency.

Douglas fir is the dominant species on the landscape followed by red alder, western red cedar and then western hemlock. There are two dominant age classes on the landscape, stands are either between 70- 85 years of age, or else they have been recently harvested. Total volume of the management area is 27778m³ and volume is further broken down by species in Appendix 1.

2.2 Soils and Topography

Soils and topography do not vary considerably over the management area. Basal till is the typical parent material, although a number of glacial fluvial deposits are present in both the northern and southern sections of the block. Soil types are typically deep, well drained, coarse textured Brunisols with some more sensitive silty loams in the depressions and around streams. Shallow soiled rocky outcrops were not observed in the management block, but are known to occur in surrounding areas.

Elevation does not change much within the block. The center of the area is dominated by two plateaus, while slopes of around 30-40% occur on the northern edge of the block and around below Jameson Main.

2.3 Water

The management area does not occur within a community watershed but some water features do connect downstream to others with known water licenses on them. (1) As well fish habitat is a consideration for some water features within the block.

A stream inventory was done using the Vancouver Island University Woodlot database, and confirmed in the field. Two streams and 4 wetlands were identified in the management area. Stream 1 is in the north-eastern section has no fish bearing connectivity and is considered an S6, but the gully like banks of the stream limits harvesting activity around this riparian area anyways. Stream 2 is in the southeast portion of the block and the lower portion is connected to fisheries sensitive habitat and therefore classified as an S3 and subject to a riparian reserve. The upper section of stream 2 is intermittent and remains dry for a portion of the year, classifying it as an S6 instead of an S3, but the sensitivity of the soil around this portion of the stream determines that harvesting actions will be restricted in this area. Around all streams both riparian reserve zones and riparian management zones will be withdrawn from the harvestable land base in order to preserve sensitive riparian ecosystems and provide a long term source of NTFPs.

There are a number of wetlands are present, most are dominated by *spirea douglasii* and classified as fens. Most likely fed by groundwater or surface runoff the smaller ones remain dry for a portion of the year. None of the wetlands are greater than a quarter hectare and will not require any retention unless decided in the harvest plan.

2.4 Forest Health

Two forest health pathogens were discovered on the field reconnaissance and a number that were not observed in the management area but are known to occur in the area.

2.4.1 Laminated Root Rot (*Phellinus weirri*)

In isolated patches, *Phellinus weirri* (laminated root rot) is present. Presently, the degree of laminated root rot infection is relatively low, with a small patches infected across the management area. Unfortunately given the dominance of Douglas-fir on the land-base this infection has the potential to spread to much larger areas if not properly managed.

2.4.2 Hemlock Dwarf Mistletoe (*Arceuthobium tsugense*)

A small, concentrated area is lightly infected by hemlock dwarf mistletoe within a riparian area. At this time, the degree of infection is not an issue, and the infected stand is isolated by harvested area on either side, further reducing the risk for future problems.

2.4.3 Deer Browse

The harvested areas contained within the management area were found to contain evidence of deer browse, which was found on Douglas-fir seedlings. Currently the severity of damage is not high, as Sino cones are protecting

most of the seedlings; however without proper management deer browse could become a significant problem.

2.4.4 White Pine Blister Rust

White pine blister rust has been observed in other areas of the woodlot and is a common problem throughout much the province. Caution must be taken when considering western white pine for use in stand regeneration.

2.5 Wildlife

There is no specific wildlife inventory for the woodlot, but species such as black tailed deer, Roosevelt elk, pileated woodpecker, crows and ravens have been observed on a regular basis. The area also has the potential to be part of the habitat of black bears, cougars, bald eagles and great blue herons.

2.6 Red and Blue Listed Species

No rare plant species or communities were observed during the field recce of the area, but given the geographic location of the block and the ecosystems present there is potential that some may exist in the area. Table 1 identifies the ecosystem types found in the area and the potential Conservation Data Centre red and blue listed species that they may support.

Table 1: Potential Red and Blue Listed Species

Ecosystem Type	Potential Red and Blue Listed Plants	Potential Red or Blue Listed Species
Wet to Moist Sites	Streambank Lupin- <i>Lupinus rivularis</i> Cup Clover- <i>Trifolium cyanthiferum</i>	Northern Red-legged Frog – <i>Rana aurora</i>
Old Forest	Old Growth Specklebelly Lichen- <i>Pseudocyphellaria rainierensis</i>	Northern Goshawk – <i>accipiter gentilis laingii</i>
Moist to Mesic Sites	Phantom Orchid- <i>Cephalanthera austiniae</i> Pine Broomrape- <i>Orobanche pinorum</i> White Lip Rain Orchid- <i>Piperia candida</i>	
All Forest Types		Northern Pygmy-owl – <i>glauclidium gnoma swartha</i>

2.7 Recreation

A portion of the management area borders Benson Creek Falls Regional Park. A popular hiking trail to Ammonite Falls, with high recreational value, passes through the management area as do a number of mountain bike trails. A disc golf course has been set up by the local disc golf club in the northern section of the block below Jameson Main.

2.8 Visual Quality

There are currently no identified visual concerns within the land base. The lower portion of the management area touches the Visual Landscape Inventory Units designated by the Ministry of Forests Land and Natural Resource Operations.

From a recent assessment of the area it does not appear this small area below Jameson Main is visually sensitive, the main concern is hill above Jameson Main. There may be possible future concerns surrounding the increasing numbers of residential homes being built along the Woodlot boundary. Any future harvesting will include public consultation with adjacent property owners. Benson Creek Falls Regional Park, located in close proximity to the northwest corner of the management area, will be considered in future harvesting plans, in regards to visual quality concerns.

2.9 Cultural Inventory

The entire Mt Benson area including the Woodlot falls into the traditional territories of the Snuneymuxw and Snaw-naw-as First Nations bands. However, no evidence of cultural use of the area has been found to date but management objectives have been set out for culturally significant features in case any are discovered at a later date.

2.10 Road Access

The block can be accessed through Galloway Road at the end of Galloway Gulch, or through Jameson Main accessed at the end of Jameson Rd off of Jinglepot. Both access points are gated and due to the high instances of garbage dumping and vandalism in the area, both will continue to restrict access to motorized vehicles. Most of the harvestable area is accessible through the network of roads already in place, a new road will need to be constructed to access the most northern portion of the block. Roads are not currently maintained, but will be assessed prior to harvest to determine any upgrades that need to be made in order to support harvesting.

3. Resource Management

3.1 Timber Harvesting

3.1.1 Timber Harvesting Land Base

After reserves, roads and non-productive areas have been removed from harvesting land base, a total of 64 ha of the 82 ha area remains harvestable.

3.1.2 Yield Calculation and Annual Allowable Cut

Table 1 shows the AAC calculation for the Management Area. The AAC was over 4000m³ so for the management plan the AAC level will default to 2500m³, as per the instructions. Harvest units were established by determining an average volume per hectare for the entire management area and extrapolating that to the number of ha needed to be harvested each year in order to meet the AAC. The average m³ for the area was 307m³/ha and the area of the land base was 64 ha once all long-term reserves were removed; therefore, blocks of around 9 ha in size will yield an average of 2700m³ per hectare per year with stand level retention of 20% per block.

Table 2: AAC Calculation

AAC Calculation	
	Volume (m3)
Old Volume	27778.49
Reserves	7937.00
Roads	178.00
New Total Volume	19663.49
MIA	5.82
AAC for Area 1	333.54
AAC/h	4.70
Total AAC for the Woodlot	7986.28

3.1.3 Timber Development Plan

Cutblock units have been laid out so that the older timber is harvested first and the newer plantations have sufficient time to mature to rotation age. Units are also laid out so that adjacent blocks are given time to visually green up before those beside them are harvested. The main objective of the harvest plan though is to ensure that there is always a stand in the appropriate structural stage to provide suitable growing conditions for forage plants such as salal, dull Oregon grape swordfern and huckleberry. Site units will be harvested at 5 year intervals so that when the last one is harvested the first one will be 30 years old and sufficiently able to produce quality NTFPs. In order to meet AAC levels, units from other parts of the woodlot will be harvested in the in between years. Appendix 5 describes the volume area and silviculture system for each harvest unit, while the timber development plan map in Appendix 4 shows the sequence of the harvesting regime and location of each cutblock.

3.1.4 Harvesting Methods

Topography is gentle enough that ground based harvesting methods can be applied to throughout the land base. Sensitive soils have been removed from the THLB and will not require special considerations. Harvesting will be done primarily with a combination of hand felling or feller buncher and hoe forwarding. Hand felling will be done in areas of larger diameter trees such as Unit # 3 while other areas may employ a feller processor. All logs will then be forwarded to the nearest roadside for loading.

3.2 Non Timber Forest Products

Non-timber forest product enhancement will be done by incorporating a number of different strategies, some of which will be mentioned again in the plan under their subsequent headings.

Under the timber development plan one or more harvesting units will support the growth and harvesting of NTFPs at all times, whether it be an area that

supplies high levels of forage plants or is known for good mushroom growing conditions.

Silviculture systems that promote the growth of the understory, such as seed tree, shelterwood and patch cut may be considered ONLY where they will also support the growth of the preferred and acceptable species for that site. In general, due to the high percentage of shade intolerant Douglas-fir on the landscape the focus will be on clearcutting with reserves.

During planting, mixed species are preferable to maintain habitat for mushrooms and forage plants, as well percentage of Western red cedar must be made up the landscape in order to provide opportunities for barks stripping and monumental cedar growth.

3.3 Silviculture Systems

The silviculture systems used over the land base have been chosen for their ability to provide for both timber production and enhancement of non-forest timber products as well as biodiversity and recreation values. Salal cover increases with increasing light intensity, but height growth is subsequently reduced (2). Clearcut systems will be utilized to provide salal and blackberry forage opportunities post harvest. However, in order to maintain a supply of NTFPs that do not respond as well to site disturbance, such as huckleberries, stand level retention will be required in a number of the harvest units. This retention is differentiated from the long term reserves by the fact that it is only required to remain in place for one rotation length.

Although none are prescribed for the current THLB shelterwood, patch cuts or seed tree systems may be considered for future harvesting areas, but only where they are appropriate as they are not always conducive to the efficient regeneration of Douglas-fir stands.

3.4 Silviculture

An increased emphasis will be placed on the application of commercial thinning, both as a way to improve stand quality, but also to promote the growth of salal and dull Oregon-grape in stands large enough to withstand them as competition. Rotation ages will be extended somewhat and commercial thinning will take place in between ages 40 and 60 depending on the condition of the stand.

3.4.1 Planting

Artificial regeneration through planting will allow seedlings to rapidly develop before salal and other vegetation has the opportunity to re-establish themselves on a site post disturbance. All cutblocks will therefore be planted with a sturdy stock of PSB 315B or bigger in order to ensure a crop of desired trees. When reforesting a mixture of ecologically suitable species will be maintained on the landscape. Western red cedar will make up 1/3 of all species planted in order to provide First Nations with an available supply of cedar bark for basket weaving and other cultural uses.

3.4.2 Stocking

Minimum stocking standards (MSS) have been reduced on approval of the Ministry of Lands Resources and Natural Resource Operations in order to promote and support the production of NTFPs. The current MSS for the management area is now 600 stems per hectare of preferred and acceptable species.

3.4.3 Free Growing

Free Growing criteria must continue to be met within the appropriate time frames, so in the early years of stand growth the licensee will focus efforts on plantation health (which may include brushing) rather than on forage availability. Required free growing heights and characteristics are outlined in the woodlot stocking standards.

3.4.5 Intermediate Treatments

Once a healthy commercial crop has been established then efforts will be made to enhance non-timber forest characteristics. If pruning or juvenile spacing is required to meet density requirements or improve stand quality, removed boughs will be made available to any foragers or purchaser of non-timber forest products for a fee.

Commercial thinning will be prescribed on a number of harvest units in order to decrease canopy cover and increase light levels in order to promote salal height growth and vigor. Appendix 6 shows the location of areas best suited for commercial thinning.

3.5 Forest Health Management

3.5.1 Laminated Root Rot

Phellinus has been observed in the area mostly in small infection centers, but the dominance of Douglas-fir on the landscape means that there is risk of spread. Root rot areas will be targeted for harvesting first and if root rot surveys determine the hazard of reoccurrence to be high then stumping will be prescribed as treatment.

3.5.2. Hemlock Dwarf Mistletoe

Hemlock dwarf mistletoe also occurs in low levels on the woodlot and is not of great concern due to its slow rate of spread and the presence of western hemlock as a secondary species within the woodlot.

3.5.3 Ungulates

Deer browse is a major issue for seedling survival on the woodlot, for this reason some form of deer browse protection must be applied to all seedlings especially Douglas-fir and Western red cedar.

3.5.4 White Pine Blister Rust

Western white pine (DSB) is a commercial alternative to Douglas-fir especially on laminated root rot infected areas. Unfortunately the high risk of DSB has limited white pine as a commercial alternative. If white pine are to be planted on the woodlot they must be of a DSB resistant strain and must undergo pruning when at 2 m of height.

3.5.5 Balsam Woolly Adelgid

Woodlot 0020 falls within the Balsam Woolly Adelgid Quarantine Zone and therefore any planting of balsam requires a permit that must be obtained from the Entomologist with the British Columbia Ministry of Agriculture in Abbotsford. (4)

3.6 Biodiversity and Wildlife Tree Retention

In accordance with the General Biodiversity Conservation Management strategies applicable to this area (5) the management strategy involves creating and maintaining old seral forest elements and wildlife habitat structures over the landscape. Long term old seral forest recruitment is important to enhance the features and structures that these forests provide for biodiversity. Any existing old growth attributes will try to be preserved as well as second growth with a high proportion of old veteran trees. Some second growth, especially within riparian and other reserves will be recruited to become climax forest adding to the overall percentage of mature wood on the landscape. Wildlife tree retention will be included in the 20% stand level retention and may include both individual wildlife trees and patches that have wildlife potential. Stand level retention will also be based around ecological anchors may help to maintain some sensitive ecosystems and preserve rare plants.

3.7 Riparian Management

In to allow for greater amounts of long-term access to NTFPs greater extents long-term retention will be maintained over the landscape. These riparian reserve zones must be strategically located within areas with the maximum of NTFP habitat is located. Riparian areas are excellent sources of salmon berry habitat, red osier dogwood, sword fern, and cedar, not to mention wildlife habitat and sources of biodiversity as well as potential red and blue listed species habitat. For these reasons long-term retention around all classified streams will incorporate both the management zones and the reserve zone and in these areas all harvesting activity will be restricted.

The riparian retention prescribed is also sufficient to meet the legislative requirements for reserves around fish streams and water licenses. The retained forest will both protect fish habitat and maintain water quality for both fish and downstream water licenses.

3.8 Cultural Features

Both the Snuneymuxw and Snaw-naw-as First Nations bands consider the Mt. Benson area to be part of their traditional territory. No culturally modified trees (CMT) monumental cedars or spiritual sites were identified in the recce but in the case that they are discovered during planning management strategies have

been established to accommodate them. Table 3 describes the type of features that may be discovered and the management considerations that they are subject to.

First Nations will also be given access to cedar for bark stripping within the reserved stands as well as opportunities to harvest bark in areas scheduled for harvest. The licensee will also continue to ensure a percentage of cedar is planted on the landbase to ensure long-term western red cedar supply.

Table 3: First Nations cultural values

Cultural Feature	Management Considerations
Culturally Modified Trees	<ul style="list-style-type: none"> • No CMTs will be harvested, unless they pose a safety risk and are classified as a danger tree. • CMTs identified on the landbase will have a quarter hectare reserve placed around them, that cannot be removed until the feature has decayed beyond all recognition
Traditionally Used Plants	<ul style="list-style-type: none"> • First Nations will be contacted prior to the harvest of any site allowing them the opportunity to collect traditional medicinal plants from the harvest area
Spiritual Sites	<ul style="list-style-type: none"> • Allow First Nations an opportunity to identify spiritual sites within the management area. • If Sites are discovered they and the area they inhabit will be removed from the THLB permanently

3.10 Recreation

The accessibility of the area, combined with the proximity of a number of parks gives this area high recreation value. A number of stakeholders such as local mountain biking, hiking and disc golf clubs have vested interest in this area and efforts will be made to work with all of these groups to ensure that their concerns are heard and their needs met to the best of the woodlot’s ability. Efforts will be made to maintain trails during harvesting, and if not possible alternate routes will be recreated in other areas. While trails are allowed to be maintained within the area improvements are not permitted (other than the disc golf course) and the woodlot is not liable. The disc golf course is the exception to this, and the disc golf club has agreed to the conditions that they may create and maintain structures on woodlot land, providing that when the area is scheduled for harvest they will remove their structures.

Permanent retention buffers of 15m will be left around high use trails such as the one to Benson Falls Regional Park, unless it is unsafe to do so, and then harvesting in this buffer zone will be modified.

3.11 Wildlife

The lack evidence of any species at risk actually residing within the block has meant that no specific wildlife habitat areas have been set up for them. Current

management practices will ensure that suitable wildlife habitat for both at risk and other species will be maintained on the landscape. This habitat will be in the form of riparian retention, wildlife trees, wildlife tree patches and non-invasive harvesting patterns. If species at risk are identified within the woodlot, their habitat areas will be managed according to the recommendations of the Ministry of Environment.

3.12 Visual Quality Objectives

Although the management mostly falls outside of the Visual Quality Units established by the MOF the area below Jameson Rd has been assessed and determined to be not of a major visual concern, especially with the large retention area around the stream at the bottom of the hill.

The area bordering on Benson Creek Falls Park is of concern and for this reason a patch of long-term retention has been removed from the THLB bordering the park. Retention should help to act as a screen and break up the harvesting area to make the cutblock look less intrusive.

3.13 Education

The woodlot has high value as an educational tool for Vancouver Island University. In order to maintain this resource it is necessary the woodlot must ensure that it continues to operate as a fully functioning

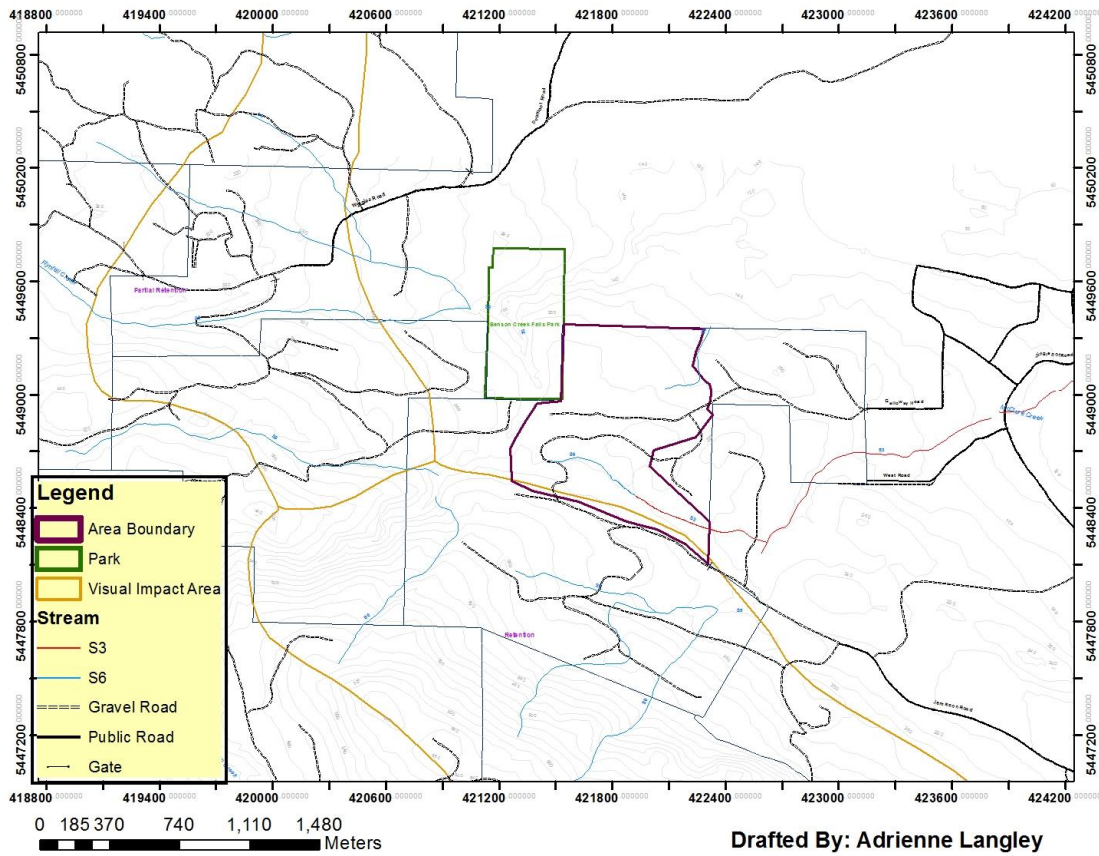
3.14 Revenue from NTFPs

The licensee has appealed under section 168 (1) of the Forest and Range Practices Act for the introduction of regulations relating to the management of NTFPS. The licensee is working with the government to create new legislature that allows small woodlot holders to establish a system of licensing and collecting fees for the harvest of NTFPs. This would allow non-Native harvesters access to the woodlot as well, provide revenue for the woodlot and allow the licensee greater control over where and what get harvested thus reducing overharvesting and depletion of the resource

4. Appendices

Appendix 1 Plan Area

Management Area



Appendix 2
Timber Inventory Tables

Polygon ID	Area (ha)	Old Vol(m3)/ha	Cut Block Area (ha)	Forested Area (ha)	Old Total Vol(m3)	Old Age	Current Age (Growing Seasons)	MAI (m3)/ha/yr	Current Vol(m3)/Ha	Current Total Vol(m3)
961	5.71	416.00	0.00	5.71	2376.19	70	83	5.94	493.26	2817.48
960	11.53	400.00	0.00	11.53	4612.00	65	78	6.15	480.00	5534.40
963	1.83	304.00	0.00	1.83	556.02	58	71	5.24	372.14	680.64
957	8.83	303.00	4.02	4.81	1457.73	58	71	5.22	370.91	1784.47
959	1.46	653.00	0.09	1.36	890.69	109	122	5.99	730.88	996.92
958	2.24	597.00	1.05	1.19	708.04	65	78	9.18	716.40	849.65
212	9.50	0.00	7.68	1.82	0.00	4	17	5.30	68.90	125.19
947	7.72	321.00	0.13	7.59	2435.75	70	83	4.59	380.61	2888.10
956	1.80	668.00	1.36	0.44	295.92	72	85	9.28	788.61	349.35
954	1.34	259.00	1.34	0.00	0.00	60	73	4.32	315.12	0.00
208	3.98	626.00	2.23	1.76	1099.26	72	85	8.69	739.03	1297.73
955	6.16	330.00	0.00	6.16	2032.80	76	89	4.34	386.45	2380.52
950	4.12	209.00	0.00	4.12	861.29	50	63	4.18	263.34	1085.22
228	6.23	452.00	0.00	6.23	2815.06	78	91	4.40	509.20	3171.30
230	1.17	0.00	0.00	1.17	0.00	0	13	4.40	57.20	66.70
951	3.71	460.00	0.00	3.71	1705.68	74	87	6.22	540.81	2005.33
1016	3.14	472.00	0.00	3.14	1483.97	78	91	6.05	550.67	1731.30
1017	1.47	0.00	1.26	0.21	0.00	9	22	5.20	67.60	14.20
Total	81.92		19.15	62.77	23330.40					27778.49

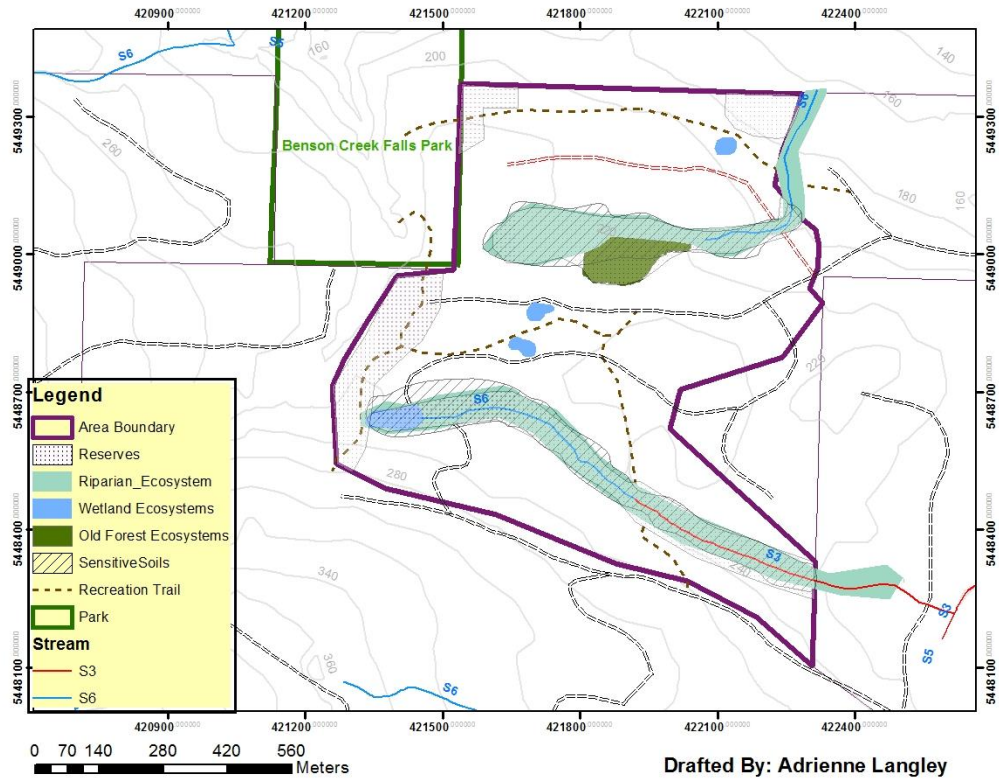
Polygon ID	Total Species Volume(m3)							
	Forested Area/ha	Fd	Hw	Dr	Cw	Pw	Pl	Total
961	5.71	2676.61	140.87					2817.48
960	11.53	4704.24	276.72	276.72	276.72			5534.40
963	1.83		34.03	578.54	68.06			680.64
957	4.81	178.45	89.22	1427.57	89.22			1784.47
959	1.36	797.54		99.69	99.69			996.92
958	1.19	764.69		42.48	42.48			849.65
212	1.82	103.91		5.01	13.77	2.50		125.19
947	7.59	2888.10						2888.10
956	0.44	349.35						349.35
954	0.00							0.00
208	1.76	1297.73						1297.73

955	6.16	2142.46			238.05			2380.52
950	4.12	217.04		759.66	54.26		54.26	1085.22
228	6.23	3171.30						3171.30
230	1.17	66.70						66.70
951	3.71	2005.33						2005.33
1016	3.14	1731.30						1731.30
1017	0.21			6.96	5.54	1.70		14.20
Total Vol/ Area	62.77	23094.74	540.85	3196.63	887.80	4.21	54.26	27778.49

Species Volume(m3)/Ha								
Polygon ID	Forested Area (ha)	Fd	Hw	Dr	Cw	Pw	Pl	Total
961	5.71	468.59	24.66					493.26
960	11.53	408.00	24.00	24.00	24.00			480.00
963	1.83		18.61	316.32	37.21			372.14
957	4.81	37.09	18.55	296.73	18.55			370.91
959	1.36	584.70		73.09	73.09			730.88
958	1.19	644.76		35.82	35.82			716.40
212	1.82	57.19		2.76	7.58	1.38		68.90
947	7.59	380.61						380.61
956	0.44	788.61						788.61
954	0.00	0.00						0.00
208	1.76	739.03						739.03
955	6.16	347.80			38.64			386.45
950	4.12	52.67		184.34	13.17		13.17	263.34
228	6.23	509.20						509.20
230	1.17			57.20				57.20
951	3.71	540.81						540.81
1016	3.14	550.67						550.67
1017	0.21			33.12	26.36	8.11		67.60
	62.77	6109.74	85.82	1023.37	274.42	9.49	13.17	

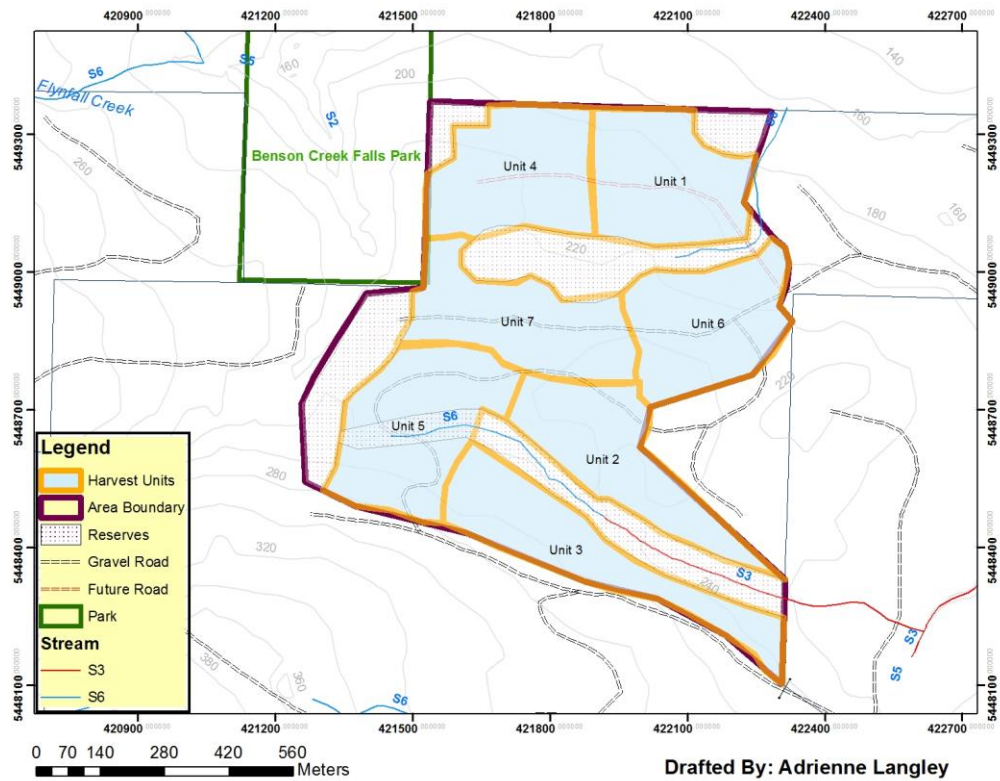
Appendix 3
Reserves and Sensitive Sites Map

Reserves and Sensitive Areas



Appendix 4
Harvest Plan Map

Harvest Plan

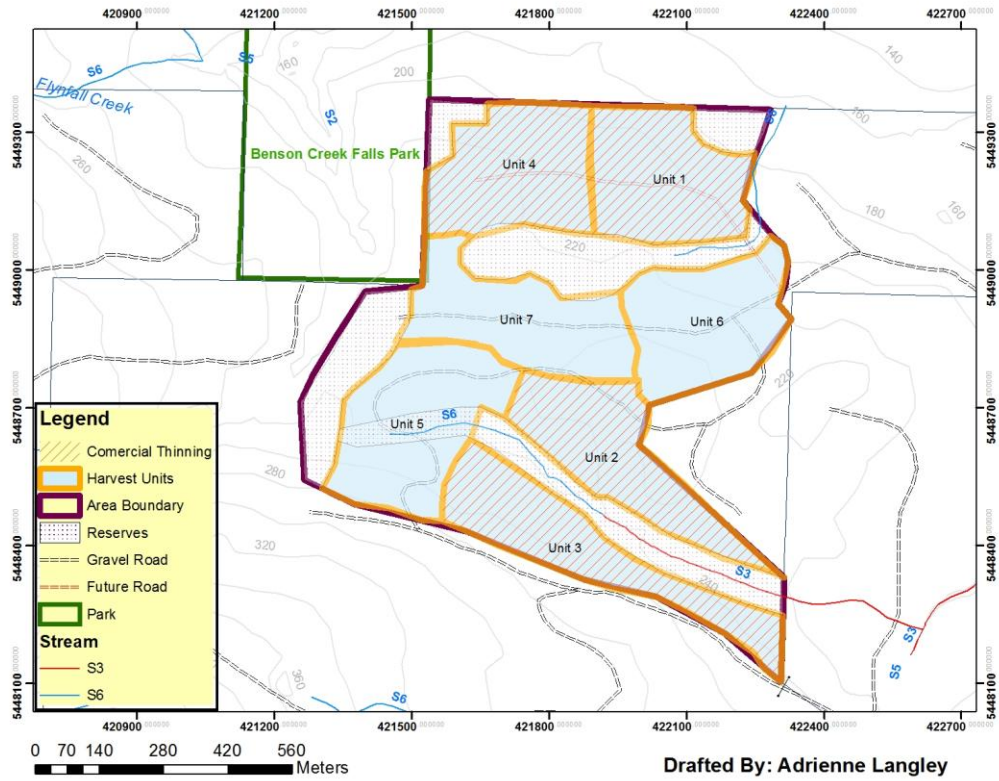


Appendix 5
Harvest Plan Table

Harvest Unit	Area (ha)	Volume (m ³)	Silviculture System	Retention (ha)
1	8.9	2450	CC	1.8
2	8.7	2400	CC	1.7
3	9	2551	CC	1.8
4	8.9	2500	CC	1.8
5	8.8	2500	CC	1.8
6	8.8	2500	CC	1.8
7	9.1	2400	CC	1.8

Appendix 6
Treatment Areas

Treatment Units



5. References

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