Integrated Stewardship Strategy for the Invermere TSA

Tactical Plan

Version 1.1

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Project 419-38

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Executive Summary

The tactical plan document is the fifth in a series of documents developed through the Integrated Stewardship Strategy (ISS) for the Invermere TSA initiated by the British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development. The Tactical Plan integrates three plans generated by the Combined Scenario analysis for the Invermere ISS: reserve, harvest, and silviculture plans. Ultimately, it provides operational direction and bridges strategic, forest-level analyses, and operational planning processes.

This document describes the approach used to develop the tactical plan and summarizes the key results for the first 20 years of the planning horizon – 2 ten-year periods. In addition to this document, spatial datasets were prepared for scheduled and eligible activities, along with detailed statistics in an accompanying MS Excel file that includes detailed statistics of the key indicators that can be monitored over time.

These results are intended to guide planners towards stands where more detailed fieldwork can be done to assess potential treatment opportunities. Documenting the assumed operational criteria now and tracking how these are implemented over the next few years will assist in improving future modelling exercises that explore strategies to improve timber and non-timber values throughout the Invermere TSA.

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Document Revision History

Version	Date	Notes/Revisions
0.1	October 6, 2019	First version of the document distributed to project team for review and comment.
1.0	October 22, 2019	Adjusted harvest system summaries.
1.1	November 25, 2019	Included notes regarding cable harvest systems profile (section 4).

1 Introduction

The British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) initiated an Integrated Stewardship Strategy (ISS) – sustainable forest management analysis – in the Invermere Timber Supply Area (TSA). This document is the fifth in a series of seven documents prepared through the ISS process and describes the tactical plan developed over the first 20 years of the planning horizon. The Tactical Plan integrates three plans generated by the Combined Scenario analysis for the Invermere ISS: reserve, harvest, and silviculture plans. Ultimately, it provides operational direction and bridges strategic, forest-level analyses, and operational planning processes. In addition to this document, spatial datasets were prepared for scheduled and eligible activities, along with detailed statistics in an accompanying MS Excel file that includes detailed statistics of the key indicators that can be monitored over time.

2 Data Gathering and Preparations

Data used for this project were derived from modelling outputs of the Combined Scenario analysis. Detailed descriptions of the modelling approaches, assumptions, and results are available from separate ISS documents: the Data Package[1] and the Analysis Report[2]. Results were queried and linked to generate spatial data for the first 2 periods of the planning horizon (i.e., total of 20 years grouped into two 10-year periods; labelled in all tables as the last year of each period). These results included treatment availability, as well as, the full extent of treatment areas scheduled. In most cases, the spatial datasets were summarized according to 43 landscape units (Figure 1), while scheduled blocks can be further analyzed on additional operational criteria (e.g., potential benefits to non-timber values, the amount of remaining green volume, site productivity, distance from communities, access difficulties, and proximity to appropriate seed sources). Detailed statistics were also provided in a separate MS Excel workbook.

[1] Forsite 2019. Integrated Stewardship Strategy for the Invermere TSA – Data Package. Version 1.0. September 2019. Prepared for the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

[2] Forsite 2019. Integrated Stewardship Strategy for the Invermere TSA – Analysis Report. Version 1.0. September 2019. Prepared for the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

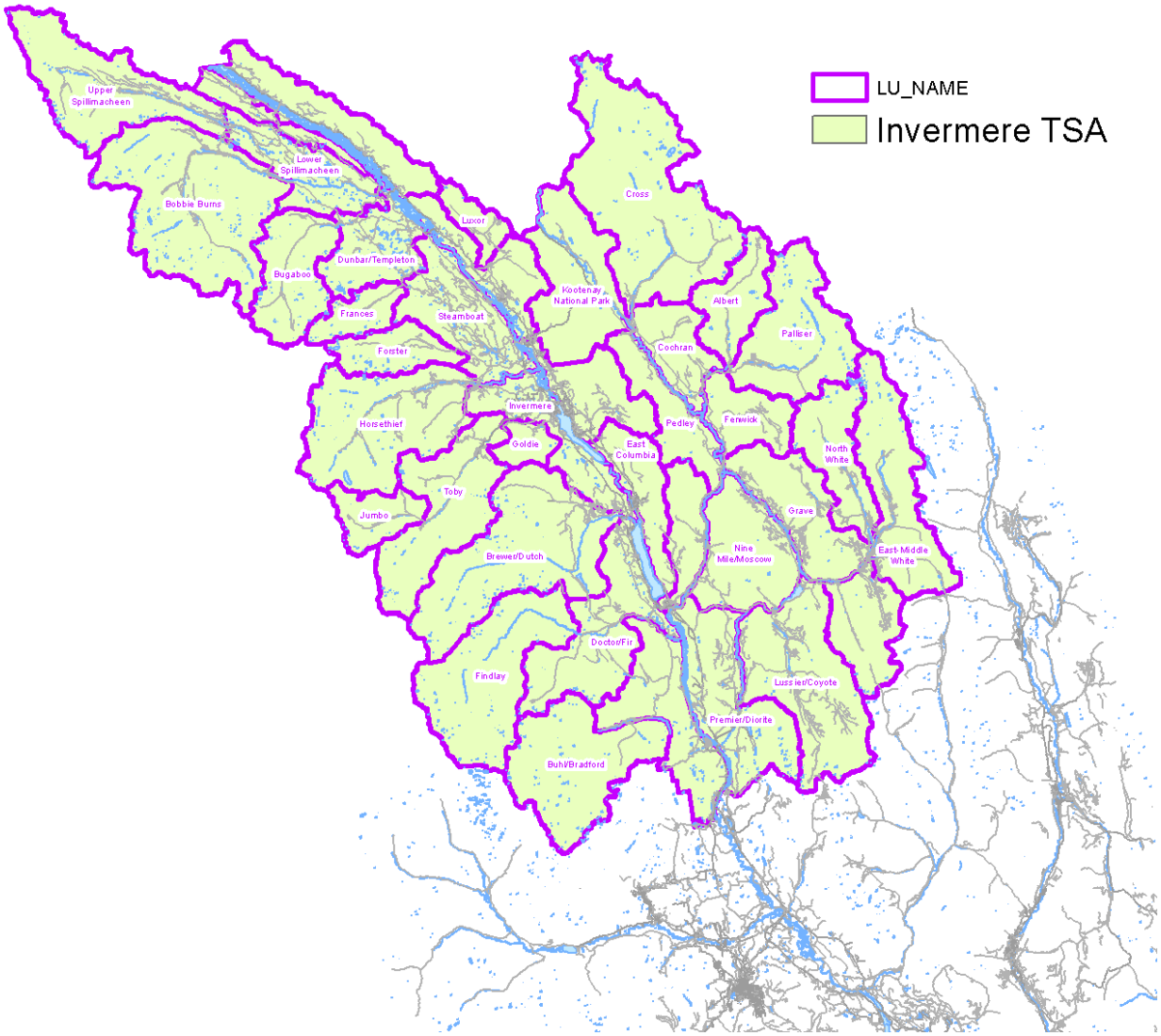


Figure 1 Landscape Units within the Invermere TSA

3 Reserve Plan

The Reserve Plan spatially identified where and how we should reserve forested stands to address landscape-level biodiversity and where possible, non-timber values, while minimizing impacts to the working forest. In the Combined Scenario and this Tactical Plan, we locked these reserves from being harvested over the first 20 years of the planning period. Since seral stage for some stands may change over the 20-year tactical plan period, the Reserve Plan reports areas associated with current (2019) seral stage classification (Table 1 and Appendix 1). Spatial reserves were included in the accompanying GIS layers for this Tactical Plan.

Table 1 Reserved Areas by NDT/BEC Variant, Seral Stage, and Landbase Type

Natural Disturbance Type	BEC Variant	NHLB				
		Old	Mature	Mid	Early	Total
NDT1	ESSFwm 2	1,511	450	36	26	2,023
	ESSFwmw	730	118	5	9	862
NDT2	ESSFwh 2	65	41	32	1	139
	ESSFmm 3	292	29	7		328
	ESSFmmw	151				151
NDT3	ESSFdk 1	9,159	205	613	14	9,991
	ESSFdk 2	29,487	788	1,384	178	31,837
	ESSFdkw	15,760	225	204	16	16,205
	MS dk	17,103	4,198	2,659	1,023	24,984
	MS dw	4,396	890	1,426	148	6,860
	ICH mk 5	3,588	465	249	101	4,404
NDT4	IDF dm 2	14	2,717	791	126	3,649
	IDF xx 2		554	189	0	743
	IDF dk 5	41	2,300	331	102	2,775
	IDF xk		203	17	36	257
	ESSFdkp	2,524				2,524
	ESSFwmp	64				64
NDT5	ESSFmmp	44				44
	Totals	**84,930**	**13,184**	**7,945**	**1,782**	**107,841**

These figures are further summarized by LU in Appendix 1.

4 Harvest Plan

The Harvest Plan aimed to prioritize stands for harvest over the short-term that align with mid- and long-term strategy developed in this ISS project. While no harvest partitions were formally implemented to influence harvest performance, this Harvest Plan incorporated harvest profiles for harvest system and haul time, as well as, opening size criteria to reduce the amount of small (<5 ha) openings.

The Harvest Plan includes the following indicators:

- Harvested area by harvest system (Table 2). Harvest systems were assigned according to slope classification (Ground <40%; Cable 40 to 70%), and wildfire management tactic (stands in the NDT4 designated for Fire Maintained Ecosystem Restoration (FMER) as Open Forest and Open Range).

Note that we based the Cable Harvest Systems profile on the THLB defined in TSR4, which was reduced by half in the AAC determination. These percentages should be increased to demonstrate performance for a potential AAC increase in future TSRs.

Harvested area by one-way haul time (Note that we based the Cable Harvest Systems profile on the THLB defined in TSR4, which was reduced by half in the AAC determination. These percentages should be increased to demonstrate performance for a potential AAC increase in future TSRs.*

- Table 4). Haul times were calculated using the consolidated road network. These roads were segmented and a travel time was calculated for each segment from the closest (by time) mill location, based on an average haul speed assigned to the road classification.

- Percentage of harvested area by species group (Table 6). Stands were classified into the following four tree species groups based on their individual tree species volumes: SxPl, PyCw, HwBl, and FdLw.

We summarized harvested areas by Landscape Unit (Figure 1) in Appendix 2, and in a separate MS Excel workbook. Spatial layers for the Harvest Plan were also included in the accompanying GIS layers for this Tactical Plan.

Table 2 Harvested Area (ha) by Harvest System and 10-Year Planning Period

Harvest System	Years 1-10		Years 11-20		Total
	Ground	Cable	Ground	Cable	
Clearcut	16,299	5,587	12,265	4,337	38,488
Partial Cut – Open Forest	1,314	51	1,627	33	3,025
Clearcut – Open Range	386	2	69		457
Total	**17,999**	**5,640**	**13,961**	**4,371**	**41,970**

These figures are further summarized by LU in Appendix 2.

Table 3 Harvested Percentage by Harvest System and 10-Year Planning Period

Harvest System	Years 1-10		Years 11-20	
	Ground	Cable*	Ground	Cable*
Clearcut	69%	24%	67%	24%
Partial Cut – Open Forest	6%	0%	9%	0%
Clearcut – Open Range	2%	0%	0%	0%
Total	**76%**	**24%**	**76%**	**24%**

** Note that we based the Cable Harvest Systems profile on the THLB defined in TSR4, which was reduced by half in the AAC determination. These percentages should be increased to demonstrate performance for a potential AAC increase in future TSRs.*

Table 4 Harvested Area (ha) by One-Way Haul Time and 10-Year Planning Period

Haul Time	Years 1-10	Years 11-20	Total
< 0.5 hrs	13,077	9,905	22,982
0.5 to 1.0 hrs	8,588	7,189	15,777
1.0 to 1.5 hrs	1,893	1,207	3,100
>1.5 hrs	81	31	111
Total	**23,638**	**18,332**	**41,970**

These figures are further summarized by LU in Appendix 2.
Note: Average one-way haul time from nearest processing facility.

Table 5 Harvested Percentage by One-Way Haul Time and 10-Year Planning Period

Haul Time	Years 1-10	Years 11-20
< 0.5 hrs	54%	52%
0.5 to 1.0 hrs	37%	41%
1.0 to 1.5 hrs	9%	7%
>1.5 hrs	0%	0%
Total	**100%**	**100%**

Note: Average one-way haul time from nearest processing facility.

Table 6 Percentage of Harvested Volume by Species Group and 10-Year Planning Period

Species Group	Years 1-10	Years 11-20
FdLw	39%	46%
HwBl	9%	6%
PyCw	1%	2%
SxPl	52%	46%
Total	**100%**	**100%**

These figures are further summarized by LU in Appendix 2.

5 Silviculture Plan

The Silviculture Plan to enhance timber quantity and quality over the mid- and long-term, as well as, improve biodiversity, wildlife habitat, and cultural interests Three tactics were included: enhanced basic silviculture (ENH), commercial thinning (CT), and fertilization (FERT). To develop the Silviculture Plan, we implemented ENH and FERT treatments over the first 20 years but extended CT to 60 years and limited the area treated for ENH and CT and annual budget for CT and FERT according to Table 7.

Table 7 Unit costs and limits applied for silviculture tactics

Treatment	Unit Cost	Limits
Enhanced Basic Silviculture	$385/ha	10% of the eligible area over each period
Commercial Thinning	50% of $1,200/ha	5% of the eligible area over each period and within annual budget of $300,000.
Fertilization (1 or 2 treatments)	$450/ha each application	Within annual budget of $300,000.

The Silviculture Plan includes the following indicators:

- Annual area treated and budget spent to support silviculture investments.
- Area treated by LU and BEC variant for each silvicultural tactic: ENH, CT, and FERT.

We summarized the treated areas by Landscape Unit (Figure 1) in Appendix 3, and in a separate MS Excel workbook. Spatial layers for the Silviculture Plan were also included in the accompanying GIS layers for this Tactical Plan.

The subsections below briefly describe elements considered for modelling and subsequent mapping of treatment opportunities and priorities for each of the three tactics modelled.

5.1 Enhanced Basic Silviculture

Enhanced basic silviculture activities are most attractive on stands where we expect incremental volumes will contribute – directly or indirectly – to the harvest when the merchantable growing stock is lowest (i.e., in 50 to 70 years). The Combined Scenario showed that this tactic contributes significantly to the harvest rates at the end of the mid-term (decades 7 and 8), as well as, the start of the long-term (decades 9 and 10), allowing other stands to be harvested in the mid-term. In addition to the timber supply benefits, we expect the higher density stands developed through these treatments to improve timber quality through lower knot size, reduced risk of damage from agents and climate change, and increased opportunities for future stand management.

Objective

Key objectives of enhanced silviculture activities include faster growth and increased volume from planting stands with improved seed at higher densities.

Eligibility, Costs, and Responses

Table 8 describes the criteria applied to identify and prioritize eligible stands, apply costs, and implement responses.

Table 8 Enhanced Silviculture Eligibility, Costs, and Responses

Element	Description	Criteria
Eligible Stands	Existing natural and managed stands (approx. 131,538 ha THLB – 22,498 ha productive, 76,833 ha health risk, and 32,207 ha productive/health risk).	○ Productive stands: all stands (except CH-, OT- leading) outside FMER and SI managed ≥18 m ○ Health risk stands (if not included above) and SI managed ≥15 m ● Root-rot: non-ESSF and Fd- and Pl-leading ● Rust: Pl-leading within spatially identified pine rust risk area (MSdk 101 and 105; MSdw 101 and 104)
Timing	As stands that are harvested/regenerated in the model	First 20 years of the planning horizon
Treatment Response	Regeneration method	
	Density	Increase planting to 1,700 stems/ha
	Species Composition	No changes from the Base Case
	Genetic gains	No changes from the Base Case
	Regeneration delay	From 2 yrs to 1 yr
Costs	Incremental planting of trees sown with select seed	$385/ha

Challenges

While there is currently no direct funding allocated for the enhanced basic silviculture activities, other regions have developed processes to utilize operational cost allowances through the stumpage appraisal system. Implementing a similar approach here may take up to 5 years to develop.

5.2 Commercial Thinning

Commercial thinning activities aim to make more merchantable volume available in the mid-term by developing bigger stems and thereby lowering MHA. This is accomplished by managing light available to crop trees to shift growth onto fewer stems and species selection/management. In some instances, commercial thinning can improve wildlife habitat and mitigate the risk of wildfire.

Objectives

Key objectives of commercial thinning are to reduce minimum harvest age of stands harvested over the next 60 years by increasing piece size of crop trees while recovering volume from the thinning process. Lower merchantable volume at rotation is considered acceptable under this tactic for increasing harvest rates over the mid-term.

Eligibility, Costs, and Responses

Table 9 describes the criteria applied to identify and prioritize eligible stands, apply costs, and implement responses.

Table 9 Commercial Thinning Eligibility, Costs, and Responses

Element	Description	Criteria
Eligible Stands	Existing natural and managed stands (Approx. 2,435 ha THLB)	○ Leading Species: Fd, Lw, Sx ○ Age: 20yrs before and 10 years after age of treatment ○ BEC: all ○ SI (managed or natural): ≥18 m ○ Slope: ≤40% ○ Haul Time: 1.5 hr one-way ○ FMER: outside FMER only
Timing	Yield/Age criteria	○ Age of treatment: at minimum 100 m^3/ha

		○ Intensity: 40% of standing volume ○ Time window: maximum 10 yrs ○ Lock for 20 yrs following treatment
Treatment Response	Yield increase following commercial thinning	○ Treatment response developed for each yield in TASS. The response factor applied then to the corresponding yield developed in VDYP/TIPSY to be aligned with the Base Case.
	Transition of thinned stand	○ Final harvest MHA: 20yrs after commercial thinning (or same as un-thinned MHA). If combined with fertilization application, stand is locked from harvest for 10 yrs after each fertilization application.
Costs	Net cost (cost of treatment less revenue from sales of thinned wood)	○ Total Cost: $1,200/ha ○ Net Cost: 50% of Total Cost = $600/ha

Challenges

Operational plans for commercial thinning treatments should carefully consider potential issues related to harvest systems, season and local markets. Planners must also understand trade-offs between damage to remaining trees and the redistributed volume growth.

5.3 Fertilization

Fertilization directly increases volume of crop trees after several years. Despite the limited number of stands currently available to treat, fertilization treatments play an important role in the overall strategy. The Combined Scenario analysis showed that fertilized stands contribute to the harvest flow in the mid-term (i.e., second to fourth decades).

Objectives

Key objectives of fertilization activities include accelerating the rate of stand development, and increasing merchantable yield and value of stands harvested within the mid-term.

Eligibility, Costs, and Responses

Table 10 describes the criteria applied to identify and prioritize eligible stands, apply costs, and implement responses. Within this 20-year tactical plan, eligible stands can undergo one or two consecutive applications 7 years apart. To maximize return on investment, harvesting fertilized stands we avoided for 7 years following application.

Table 10 Fertilization Eligibility, Costs, and Responses

Element	Description	Criteria
Eligible Stands	Young natural and existing managed stands (approx. 23,663 ha THLB – 5,859 ha for 1 application only, 17,804 ha for 1-2 applications)	○ Fd + Lw + Sx + Pl ≥80%; Sx-leading ≥70% ○ BEC: MS, ICH, and ESSF below 1,650 m ○ FMER: outside FMER only ○ SI managed: >15 ○ Slope ≤ 40%
Timing	Minimum and maximum age defining opportunity window, for up to 2 applications, every 7 years	7 years before MHA for 1 application, 14 years before MHA for 2 applications
Treatment Response	Growth increase 7 years after application (entire stand) – existing natural stands	10 m³/ha for each application.
	Growth increase after application (entire stand) – existing managed stands	

Applications (every 7 yrs)	Fd/Lw (m³/ha)	Pl (m³/ha)	Sx (m³/ha
1	15	12	16

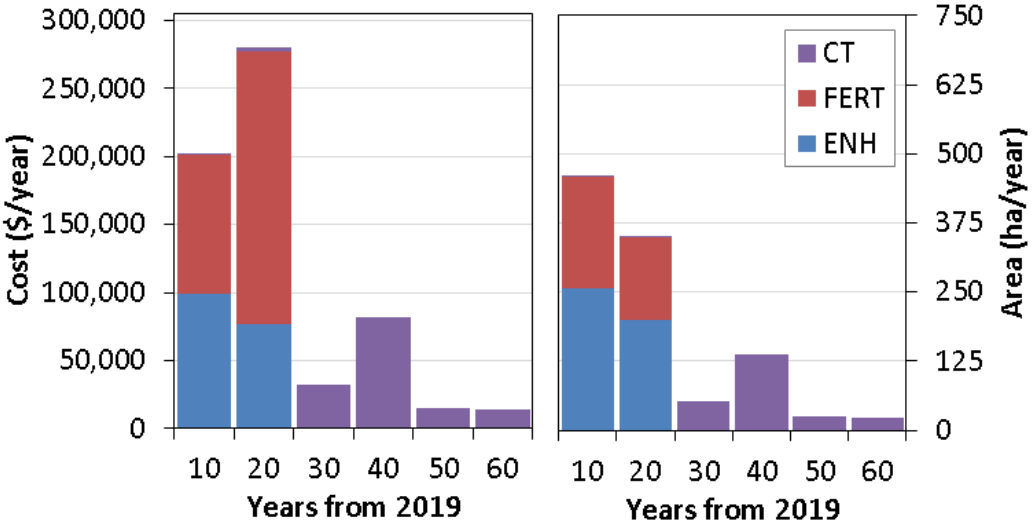
		2	30	24	32
	Transitions to future stands	Locked from harvesting, 10 years after last application.			
Costs	Fertilization costs for all stands	$450/ha for each application.			

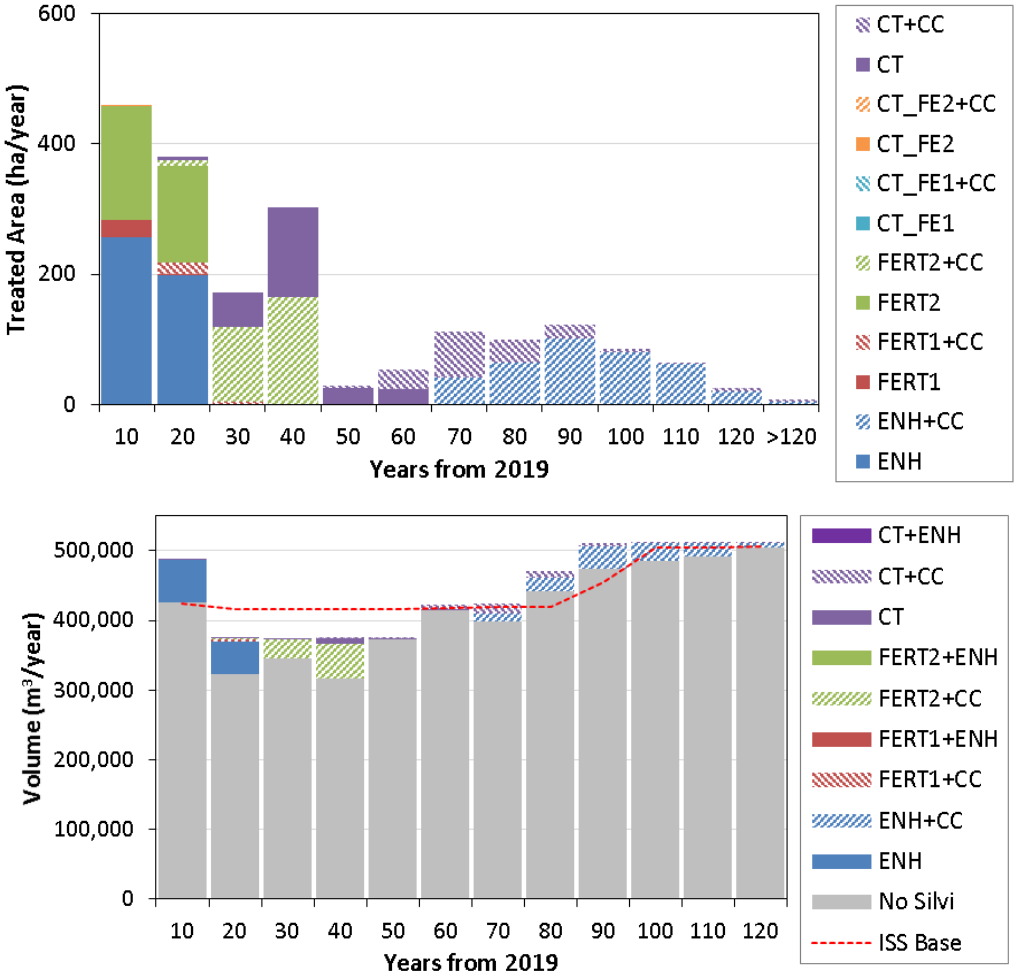
Challenges

Operational plans for fertilization treatments should carefully consider potential issues related to non-timber values such as fish and water quality where riparian buffers are required to prevent fertilizer from entering streams and lakes. Additional buffers from other features and other measures may be required to address First Nations' concerns with applying fertilizer to stands within their traditional territories.

5.4 Results

The silviculture plan results are summarized in Table 11, shown in





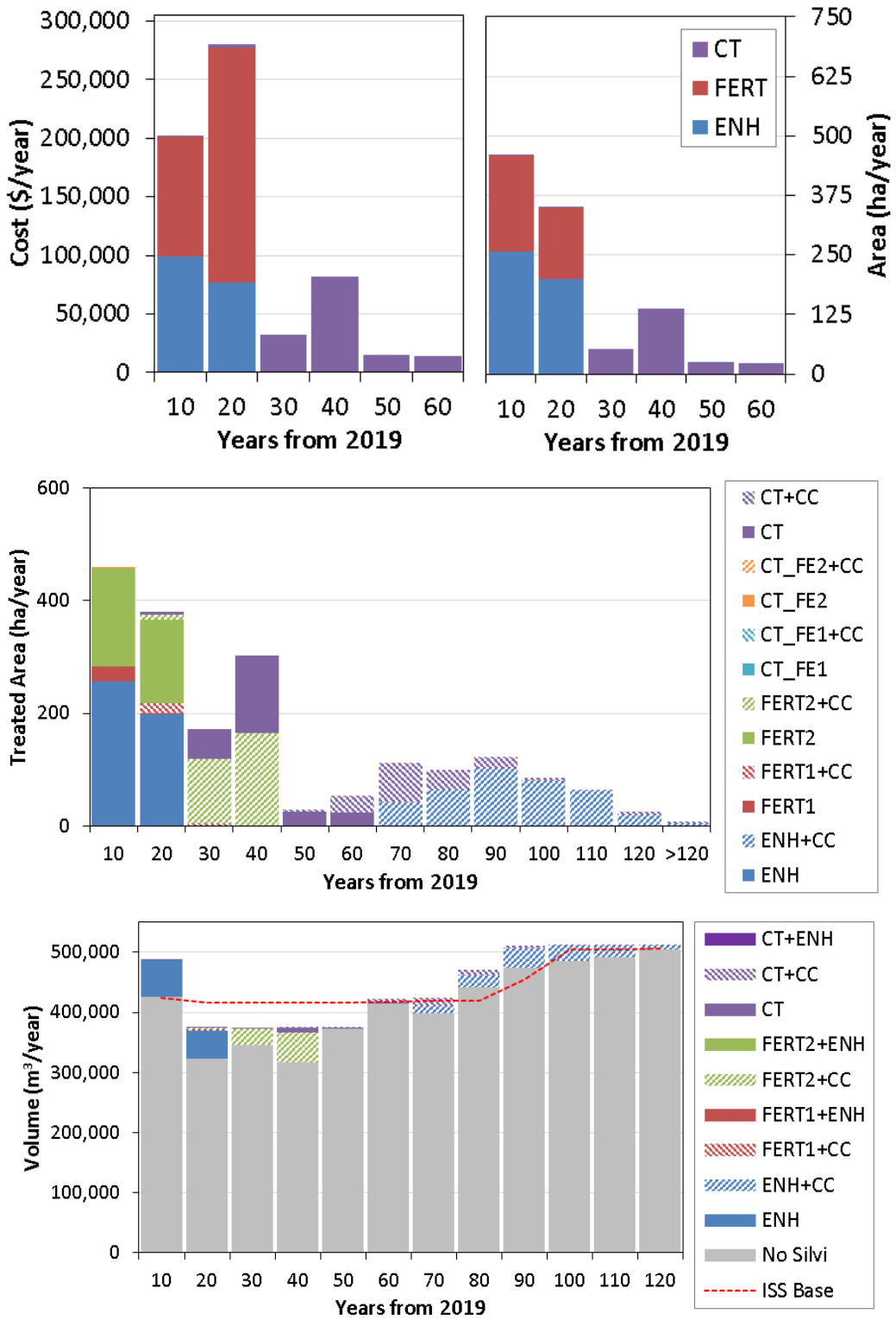
(Note: hatched symbology depicts the timber harvest for each tactic)

Figure 2, and detailed in Appendix 3

Table 11 Treated Area (ha) by Silvicultural Tactic and 10-Year Planning Period

Treatment	Years 1-10	Years 11-20	Years 21-60	Total
Enhanced Basic Silviculture	2,565	1,987		4,552
Commercial Thinning		43	238	281
Commercial Thinning + Fertilization (single treatment)	6			6
Fertilization (single treatment)	246	6		252
Fertilization (two treatments)	1,749	1,484		3,233
Total	**4,566**	**3,521**	**282**	**8,325**

These figures are further summarized by LU in Appendix 3.



(Note: hatched symbology depicts the timber harvest for each tactic)

Figure 2 Silviculture Plan – Treated Area and Budget Spent

6 Discussion

This tactical plan provides guidance to forest professionals developing operational plans by identifying specific stands scheduled for potential treatment opportunities. It was developed using modelling outputs from the ISS Combined Scenario. It must be stressed that the spatial data used to develop this tactical plan were typically forest-level inventories so direct applications for operational and stand-level planning are limited. These data are appropriate for guiding planners to areas where more detailed fieldwork is required to assess actual treatment opportunities. Moreover, this tactical plan provides guidance towards achieving the future forest condition presented in the Combined Scenario.

The exercise of incorporating operational criteria into the tactical plan could highlight new constraints to include with future stewardship strategies. Ideally, documenting the assumed operational criteria now and tracking results on how these are implemented over the next few years will assist in improving future modelling exercises that explore strategies to improve timber and non-timber values throughout the Invermere TSA.

In addition to this document, this tactical plan includes spatial datasets prepared for scheduled and eligible activities, along with detailed statistics in a separate MS Excel workbook.

Appendix 1 ***Reserve Plan***

Reserved Area (ha) by LU and Seral Stage

	NHLB				
Landscape Unit	**Old**	**Mature**	**Mid**	**Early**	**Total**
Albert	2,633	76	510	87	3,306
Blackfoot/Thunder	1,657	23	57	22	1,759
Bobbie Burns					
Brewer/Dutch	4,748	197	239	17	5,200
Bugaboo	1,407	30	126	2	1,564
Buhl/Bradford	11,182	957	548	31	12,719
Cochran	1,944	75	57	67	2,143
Cross	7,849	24	95	18	7,986
Doctor/Fir	2,460	286	384	124	3,254
Dunbar/Templeton	1,364	109	410	58	1,942
East Columbia	794	57	240	7	1,099
East-Middle White	2,335	18	27	197	2,578
Fenwick	2,034	157	676	36	2,903
Findlay	6,361	1,914	438		8,713
Forster	972	18	31	30	1,051
Frances	591	24	29	9	653
Goldie	801	99	360	15	1,276
Grave	3,132	24	84	18	3,258
Horsethief	2,405	45	71	11	2,531
Invermere	386	40	207	60	694
Jumbo	1,356	266	563	49	2,234
Kindersley/Macauley	1,089	25	160	3	1,277
Kootenay	3,006	159	522	24	3,710
Kootenay National Park					
Lower Spillimacheen					
Lussier/Coyote	5,044	178	324	21	5,567
Luxor	819	16	51	22	908
McMurdo/Fraling	1,244	63	151	30	1,488
Nine Mile/Moscow	3,070	95	494	167	3,827
North White	1,912	126	28	109	2,175
Palliser	2,551	118	1,008	115	3,793
Pedley	2,360	874	710	269	4,212
Premier/Diorite	1,030	364	1,553	50	2,996
Shuswap/Windermere	1,632	48	129	10	1,818
Skookumchuck/Torrent	1,454	1,086	1,004	47	3,590
Steamboat	1,183	183	1,496	41	2,904
Toby	2,123	172	401	16	2,711
Twelve Mile	1				1
Upper Spillimacheen					
Grand Total	**84,930**	**7,945**	**13,184**	**1,782**	**107,841**

Appendix 2 ***Harvest Plan***

Harvested Area (ha) by Landscape Unit, Harvest System, and 10-Year Planning Period

	Years 1-10						Years 11-20					
	Ground			Cable			Ground			Cable		
Operating Area	**CC**	**PC-OF**	**CC-OR**	**CC**	**PC-OF**	**CC-OR**	**CC**	**PC-OF**	**CC-OR**	**CC**	**PC-OF**	**CC-OR**
Albert	285			208			100			63	10	
Blackfoot/Thunder	436	13		330	2		167	6		97		
Brewer/Dutch	705			171			678			276		
Bugaboo	256			71			220			206		
Buhl/Bradford	216			100			190			114		
Cochran	699			327	13		725			283		
Cross	330			215			199			82		
Doctor/Fir	1,297	110	29	197			595	215	3	72	3	
Dunbar/Templeton	770			51			1,189			96		
East Columbia	84			35			86			22		
East-Middle White	192			50			34			49		
Fenwick	580			158			844			162		
Findlay	418			91			187			86		
Forster	48			41			10			6		
Frances	11			29			6			1		
Goldie	80			14			53			9		
Grave	522			420			540			279		
Horsethief	353	24		311	2		181			64		
Invermere	98			13			206			86		
Jumbo	22						30			51		
Kindersley/Macauley	267			167			126			123		
Kootenay	524	21		223			131	14		101		
Lussier/Coyote	1,263	37		377	21		294			132		
Luxor	302			394			64			81		
McMurdo/Fraling	329			84			341			150		
Nine Mile/Moscow	1,674	12		445			1,253	68		611	5	
North White	146			22			66			10		
Palliser	234			130	3		158	32		177		
Pedley	173			166			326			137		
Premier/Diorite	1,044	876	72	68	10		516	1,086	33	5	13	
Shuswap/Windermere	370		22	345			36			8		
Skookumchuck/Torrent	1,129	180	263	206		2	1,050	179	33	430	2	
Steamboat	1,300	40		44			1,412	28		125		
Toby	142			85			251			142		
Totals	**16,299**	**1,314**	**386**	**5,587**	**51**	**2**	**12,265**	**1,627**	**69**	**4,337**	**33**	

CC = Clearcut; PC-OF = Partial Cut, Open Forest; CC-OR = Clearcut, Open Range

Harvested Area by Landscape Unit, One-Way Haul Time (hours), and 10-Year Planning Period

	Years 1-10				Years 11-20			
Landscape Unit	**< 0.5**	**0.5-1.0**	**1.0-1.5**	**>1.5**	**< 0.5**	**0.5-1.0**	**1.0-1.5**	**>1.5**
Albert			492	2			155	18
Blackfoot/Thunder		411	370			82	187	
Brewer/Dutch	389	487			497	457		
Bugaboo	147	180			95	329	2	
Buhl/Bradford	122	125	69		21	246	37	
Cochran		1,034	5			992	16	
Cross		311	234			155	126	
Doctor/Fir	1,067	566			646	242		
Dunbar/Templeton	821				1,276	9		
East Columbia	69	50			93	15		
East-Middle White		119	113	10		28	54	1
Fenwick		666	72			908	98	
Findlay	119	389			18	256		
Forster	43	45			15	1		
Frances	39	2			7			
Goldie	94				62			
Grave		864	78			721	99	
Horsethief	220	470			5	240		
Invermere	111				291			
Jumbo		22				81		
Kindersley/Macauley	434				249			
Kootenay	668	90	10		170	76		
Lussier/Coyote	657	1,040			153	273		
Luxor	685	11			145			
McMurdo/Fraling	174	238			173	319		
Nine Mile/Moscow	1,451	679			800	1,137		
North White			99	69			65	11
Palliser		16	351				368	
Pedley	9	331				464		
Premier/Diorite	2,070				1,653			
Shuswap/Windermere	699	38			44			
Skookumchuck/Torrent	1,510	271			1,564	130		
Steamboat	1,383	1			1,565			
Toby	95	132			364	29		
Total	**13,077**	**8,588**	**1,893**	**81**	**9,905**	**7,189**	**1,207**	**31**

PC-OF = Partial Cut, Open Forest; CC-OR = Clearcut, Open Range

Harvested Percent by Landscape Unit, Species Group, and 10-Year Planning Period

	Years 1-10				Years 11-20			
Landscape Unit	FdLw	HwBl	PyCw	SxPl	FdLw	HwBl	PyCw	SxPl
Albert	0.3%	0.8%	0.0%	1.5%	0.4%	0.2%	0.5%	0.5%
Blackfoot/Thunder	0.4%	0.9%	0.0%	2.7%	0.2%	0.4%	0.0%	1.3%
Brewer/Dutch	1.0%	0.2%	0.0%	2.5%	1.4%	0.2%	0.0%	3.5%
Bugaboo	0.3%	0.4%	0.0%	1.0%	0.5%	0.8%	0.0%	1.7%
Buhl/Bradford	0.4%	0.1%	0.0%	1.0%	0.6%	0.1%	0.0%	1.3%
Cochran	1.4%	0.5%	0.1%	2.9%	2.5%	0.5%	0.1%	2.8%
Cross	0.6%	0.3%	0.0%	1.8%	0.4%	0.2%	0.0%	1.3%
Doctor/Fir	2.3%	0.4%	0.1%	3.6%	1.6%	0.1%	0.1%	1.9%
Dunbar/Templeton	1.2%	0.1%	0.0%	2.5%	4.0%	0.2%	0.1%	3.4%
East Columbia	0.3%	0.0%	0.0%	0.2%	0.4%	0.0%	0.0%	0.1%
East-Middle White	0.1%	0.3%	0.0%	0.8%	0.1%	0.1%	0.0%	0.5%
Fenwick	1.1%	0.2%	0.0%	2.0%	2.4%	0.2%	0.0%	2.6%
Findlay	0.6%	0.1%	0.0%	1.6%	0.6%	0.0%	0.0%	1.0%
Forster	0.0%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
Frances	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Goldie	0.1%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.1%
Grave	1.8%	0.2%	0.0%	2.2%	2.2%	0.2%	0.0%	2.2%
Horsethief	0.8%	0.7%	0.0%	1.8%	0.8%	0.3%	0.0%	1.0%
Invermere	0.1%	0.0%	0.0%	0.3%	0.6%	0.1%	0.0%	0.9%
Jumbo	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.3%
Kindersley/Macauley	0.7%	0.2%	0.0%	0.9%	0.8%	0.1%	0.0%	0.6%
Kootenay	1.7%	0.1%	0.1%	1.4%	0.8%	0.1%	0.0%	0.5%
Lussier/Coyote	2.6%	1.0%	0.0%	3.7%	0.8%	0.3%	0.0%	1.4%
Luxor	1.6%	0.4%	0.0%	1.4%	0.6%	0.1%	0.0%	0.3%
McMurdo/Fraling	1.3%	0.0%	0.0%	0.8%	2.2%	0.2%	0.0%	1.3%
Nine Mile/Moscow	5.0%	0.5%	0.0%	3.4%	6.2%	0.3%	0.3%	3.5%
North White	0.1%	0.2%	0.0%	0.7%	0.0%	0.1%	0.0%	0.4%
Palliser	0.4%	0.1%	0.0%	1.3%	0.5%	0.2%	0.0%	1.7%
Pedley	0.5%	0.2%	0.0%	0.8%	1.4%	0.1%	0.0%	1.1%
Premier/Diorite	3.7%	0.2%	0.4%	1.5%	2.9%	0.1%	0.6%	1.2%
Shuswap/Windermere	1.5%	0.2%	0.0%	1.3%	0.1%	0.0%	0.0%	0.1%
Skookumchuck/Torrent	3.1%	0.1%	0.2%	3.2%	5.0%	0.1%	0.1%	4.0%
Steamboat	3.1%	0.1%	0.1%	1.5%	5.5%	0.2%	0.1%	2.3%
Toby	0.2%	0.1%	0.0%	0.7%	0.5%	0.1%	0.0%	1.6%
Totals	38.6%	8.7%	1.1%	51.6%	46.0%	5.7%	2.0%	46.3%

Appendix 3 ***Silviculture Plan***

Treated Area by Landscape Unit, Treatment Type, and 10-Year Planning Period

	ENH		CT		CT_FE1		FE1		FE2	
Landscape Unit	Years 1-10	Years 1-10	Years 11-20	Years 11-20	Years 1-10	Years 11-20	Years 1-10	Years 11-20	Years 1-10	Years 11-20
Albert	2	11							6	
Blackfoot/Thunder	25	2							25	11
Brewer/Dutch	87	124					13		13	
Bugaboo	61	13								
Buhl/Bradford	86	34								
Cochran	119	71					4		309	223
Cross	16	12							47	29
Doctor/Fir	92	38					3		79	63
Dunbar/Templeton	356	146			6		100		6	167
East Columbia		1								25
East-Middle White	2	13					13			16
Fenwick	125	94							114	55
Findlay	36	5							29	
Forster		9					9			
Frances	3	1								
Goldie	2	2								12
Grave	146	84							287	92
Horsethief	23	4					3			9
Invermere	7	66							2	5
Jumbo										13
Kindersley/Macauley	25	89							1	
Kootenay	64	33							47	
Lussier/Coyote	93	22							183	60
Luxor	67	31							19	4
McMurdo/Fraling	237	302		3			9	6		17
Nine Mile/Moscow	144	100					10		43	31
North White	4								8	
Palliser	46	6							62	78
Pedley	46	41							186	76
Premier/Diorite	79	32		38					18	
Shuswap/Windermere	40	1					2		33	20
Skookumchuck/Torrent	347	196					82		38	44
Steamboat	176	384		2					191	435
Toby	9	22							3	
Total	**2,565**	**1,987**		**43**	**6**		**246**	**6**	**1,749**	**1,484**

Treated Area by BEC Variant, Treatment Type, and 10-Year Planning Period

	ENH		CT		CT_FE1		FE1		FE2	
BEC Variant	Years 1-10	Years 11-20	Years 1-10	Years 11-20	Years 1-10	Years 11-20	Years 1-10	Years 11-20	Years 1-10	Years 11-20
ESSFdk 1	15	31								
ESSFdk 2	35	29								13
ICH mk 5	513	411		3			18	6	132	252
IDF dk 5	187	316		2						
IDF dm 2	185	83		38						
IDF xk		9								
IDF xx 2	9									
MS dk	1,135	928			6		144		1,387	1,112
MS dw	486	180					84		230	107
Total	**2,565**	**1,987**		**43**	**6**		**246**	**6**	**1,749**	**1,484**