



# **Integrated Silviculture Strategy: Arrowsmith TSA**

**Paul Rehsler  
Resource Practices Branch, FLNR**

**Coastal Silviculture Committee  
Feb 23, 2016**

# Presentation Outline

- History of the Silviculture Strategy
- The Why, What, Who, Where, When & How
- Arrowsmith TSA IS Silviculture Strategy (IRMP)
- A Case for Enhanced Forestry Zones
- Integrated Silviculture Strategy Mapping Tool

# Why?

- Forest Practices Board Reports
- 2009 Silviculture Discussion Paper
- MLA Morris Report



GETTING THE BALANCE RIGHT:  
IMPROVING WILDLIFE HABITAT  
MANAGEMENT IN BRITISH  
COLUMBIA

STRATEGIC  
ADVICE TO  
THE  
MINISTER  
OF FORESTS  
LANDS AND  
NATURAL  
RESOURCE  
OPERATIONS

Mike Morris  
Parliamentary  
Secretary to the  
Minister of  
Forests, Lands and  
Natural Resource  
Operations

August,  
2015

“The ministry’s new integrated silviculture strategies are “landscape-level” plans that manage forest harvesting, reforestation, wildlife habitat and ecosystem needs”  
Hon. S. Thomson, Minister of FLNRO

# What are Integrated Silviculture Strategies?

**Integrated**, allows for incorporation of the varied objectives and inherent site and landscape attributes within the planning unit.

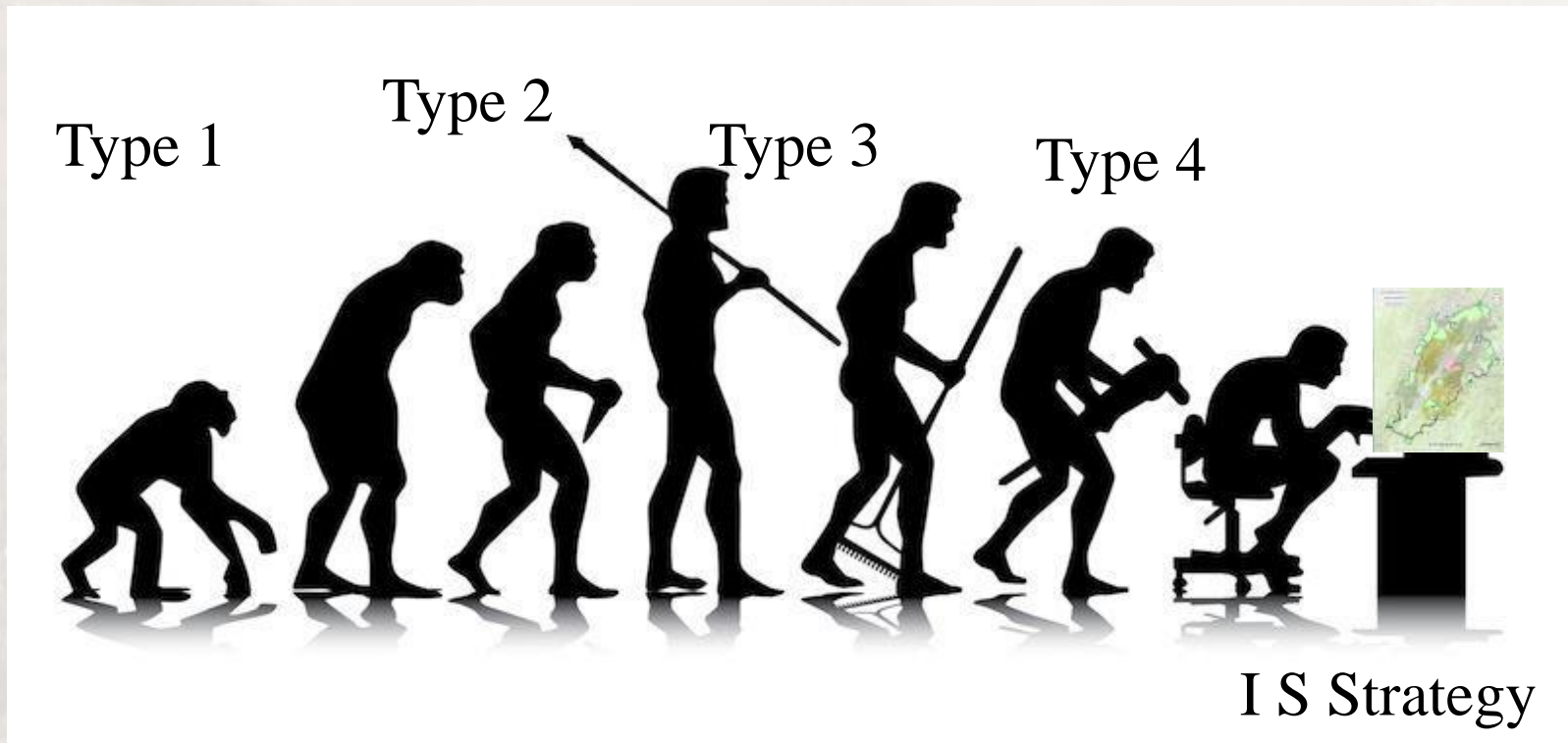
**Silviculture** is the **art** and **science** of controlling the **harvest, establishment, growth, composition, and the quality off forest vegetation for the full range off forest resource objectives.**

Successful silviculture depends on clearly defined management objectives. However, silviculture is often confused with managing stands and forests purely for timber. **Remember that silviculture is also used to manage forests for wildlife, water, recreation aesthetics, or any combination of these or other forest uses.**

**Strategies** provide the opportunity to look into the future with various scenarios to create options or strategies from which to guide management.

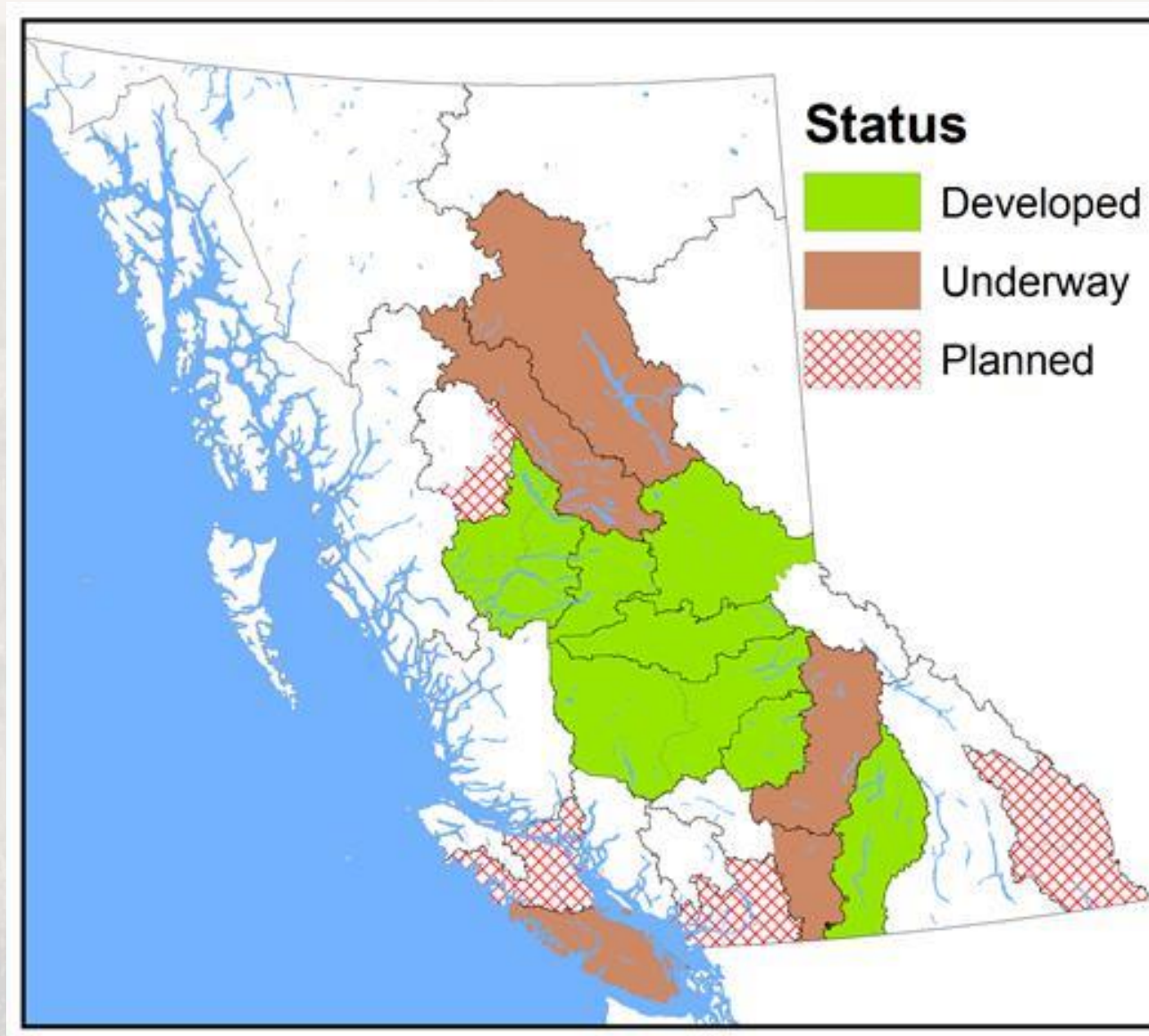






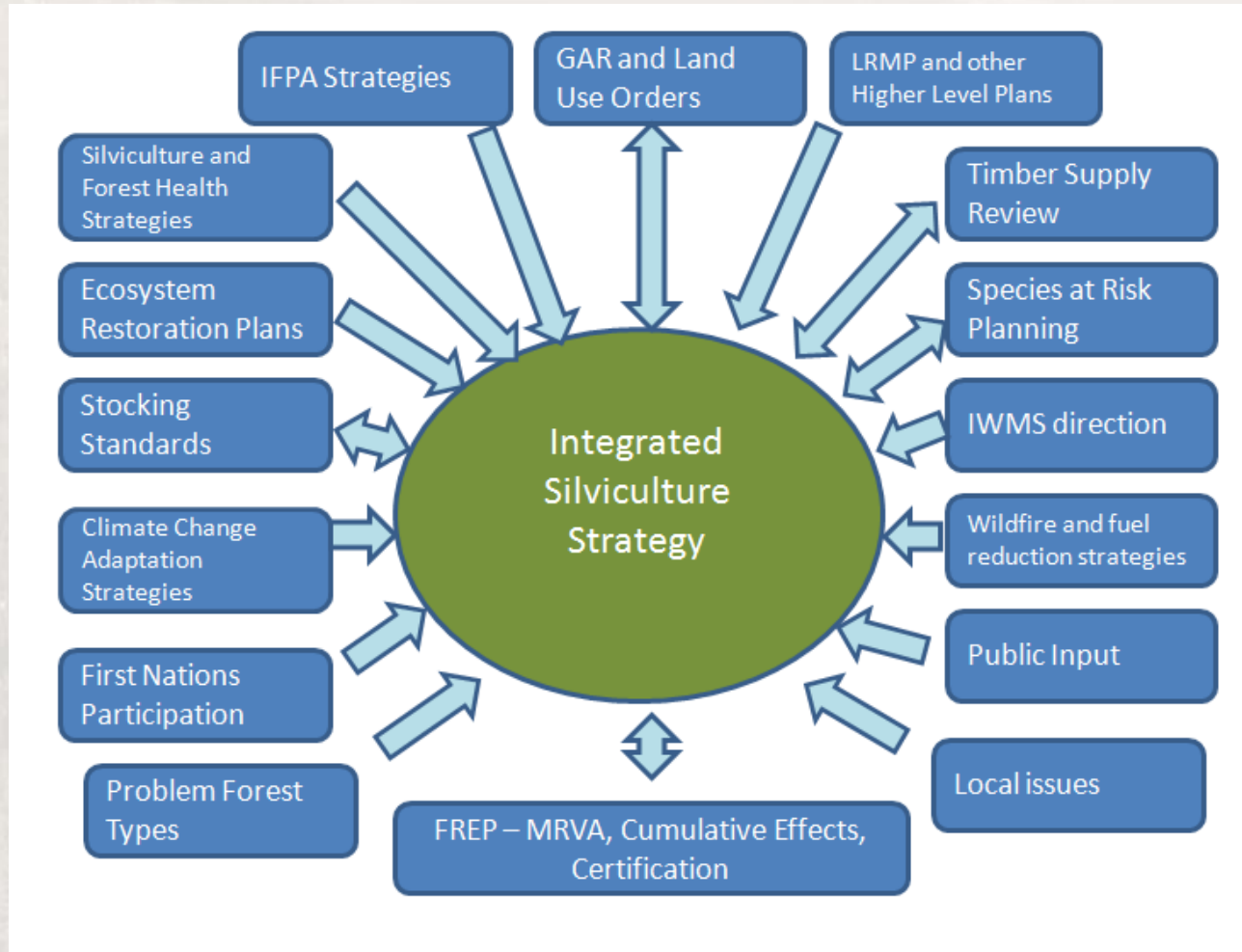
Where has this come from? – Type 1,2,3,4 ....

# Similar Silviculture Strategies



## MOVING FORWARD:

# Integrated Silviculture Strategy - bringing it all together



# Timber Supply Review / ISS

## TSR

- Reflects past and current practices
- Legally defined process
- AAC determination



## ISS

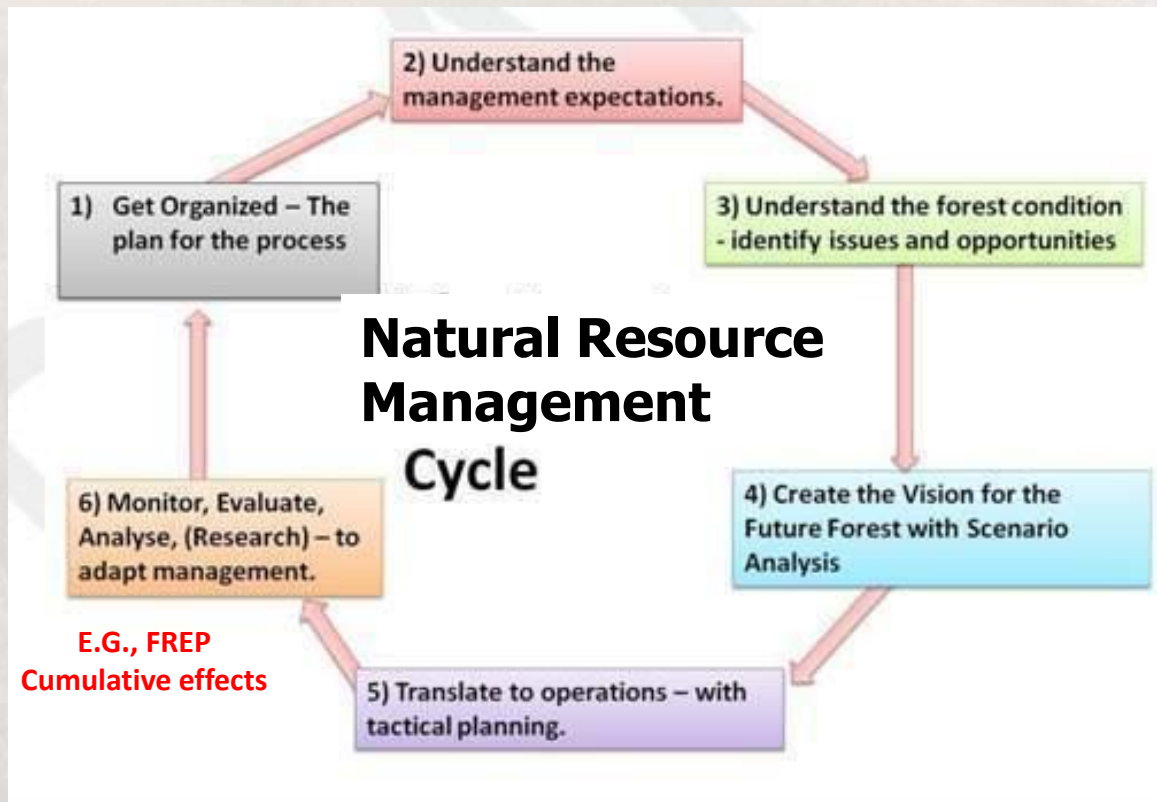
- Captures relevant plans and data for the unit (Situation Analysis)
- Promotes critical thinking on issues and options
- Creates harvest, retention and investment strategies





# The Approach

**FIRST ITERATION** – note it is a continuous process/cycle.



- It integrates present goals and strategies.
- Works toward ideal SFM.
- But is realistic in expectations for first iteration of the cycle.
- As it builds on past accomplishments and direction.

# Terms of Reference

## Mackenzie Stewardship Initiative- Project Charter v 2.1 DRAFT

Last Updated: June 9, 2015

**Purpose:** This project will produce a spatial product with written supporting information summarizing identified environmental, economic and social values of significance to key contributors stakeholders and First Nations of the THLB within the Mackenzie TSA. This will provide support and informed guidance for forest planning decisions that will facilitate forest stewardship and maintain forest yield.

**Background:** The ADM for the North Area set an Omineca Region priority of "Advance engagement with First Nations to address forest stewardship issues arising from an increase in AAC in the Mackenzie Timber Supply Area". The 2014 AAC rationale specified a need for government, First Nations and industry to work collaboratively to ensure that designated habitat areas are collocated to minimize the impact on other forest resources values. These priorities along with recent collaborative agreements with First Nations and concurrent stewardship initiatives and local stakeholder input has led to the need for this project.

### Objectives

- Objective 1-Develop a decision support product to facilitate comprehensive & durable decisions based on scientific and traditional knowledge.
- Objective 2-Collaborate with First Nations, industry and stakeholders to seek, understand and record information on location and extent of resource values
- Objective 3-Identify opportunities to build on monitoring and cumulative effects work.
- Objective 4- Provide desired options based on scenario analysis and outputs

### Critical Success Factors

- CSF 1- Meaningful and productive engagement with First Nations and stakeholders
- CSF 2- Adequate resourcing from the Province.
- CSF 3-Product must be accepted by statutory decision makers as an accurate representation of values and utilized as a planning and development tool.

### In Scope

- Information sharing between First Nations, FLNRO licencees and stakeholders within the Mackenzie TSA
- Compilation of known information on environmental, economic and social values in the Mackenzie TSA
- Creation of a robust report for the SDM's which includes spatial and temporal protection/ conservation/ mitigation
- Periodic communication & info sharing across government agencies

### Links & Dependencies

- Link -Concurrent projects: ESI, Spatial Old Growth, Moose Management, Watershed Health, Caribou and Grizzly LNG Programs
- Dependency-CSTC Collaboration Agreements, Treaty 8 agreements and Kaska SEA
- Link-Muskwa-Kechika Advisory Board/ UNBC research
- Dependency: Completion of the RFP and execution of contract by LBI
- Dependency-First Nation involvement
- Dependency-Int. Silv. Strategies Com.

### Out of Scope

- Representation by mining, oil and gas industry & other gov. agencies
- Decisions and legal orders resulting from land use report recommendations.
- Negotiations and agreements with First Nations and stakeholders.
- Influence on COSEWIC related decisions

### Budget

Item	Cost
Workshops	\$25,000
FLRN Travel for First Nations engagement	\$25,000
Spatial Analysis and Reports	\$100,000
<b>Total</b>	<b>\$150,000</b>

### Project Team

Name/Project Role	Duration	% FTE
Greg Rawling Project Sponsor		
Yvonne Parkinson/Mike McLachlan PM		
James Jacklin/Sect. Head LBS		
Heather Wiebe/ Resource Mng.		
FLNR staff District, Region		
Paul Rehsler/Res. Pract. Branch		

### Stakeholders & First Nations

Nakazdli, Takla Lake, McLeod Lake, West Moberly, Tsay Keh Dene, Kwadacha, Gitksan, Halfway River, Saulteau, and Tahltan First Nations
Community members of Mackenzie, Germansen Land- ing, Manson Creek
FLNRO Licensees in Mackenzie TSA
Muskwa-Kechika Advisory Board
FLNRO staff & Other Gov. Ministries & Agencies

### Workplan Overview

Deliverable/Milestone	Targeted Completion
Finalize Draft & obtain approval of Project charter	June 20, 2015
Hold meeting with district staff in Mackenzie. Complete detailed project work plan.	June 15, 2015
Collection & analysis of existing and proposed spatial and non spatial levels of conservation.	Sept 30, 2015
One on one meetings with First Nations & key stakeholders	Dec 31, 2015
Key contributor workshops	Jan 31, 2015
1st Draft of spatial and supporting product created	March 31, 2016
Internal review. Development and implementation of strategic plan.	March 31, 2017
Monitoring and evaluating progress towards meeting key goals and objectives	March 31, 2018

### Risk Assessment

Risk	Probability	Impact	Response Strategy	Residual Risk
Poor level of First Nations engagement & acceptance to proj.	Med	High	Consult FLNR staff for recommendations. Go forward with best known information.	Med
Low level of acceptance of product by SDM's	Low /Med	High	Communicate and collaborate with stakeholders early and through out project	Low
LBI and contract proposal not successfully completed	Low	Mod	Maintain communications with Branch	Low
High level support for project may shift	Low	High	Report progress and maintain comm.	Low
Key stewardship initiatives not included in project	Low	Mod	Communication plan	Low
CSTC agreement	Mod	Mod	Communication plan	Low
Staff Resources. Understaffing & conflicting priorities (i.e. fires)	Mod	High	Role sharing and potentially timeline delays	Mod

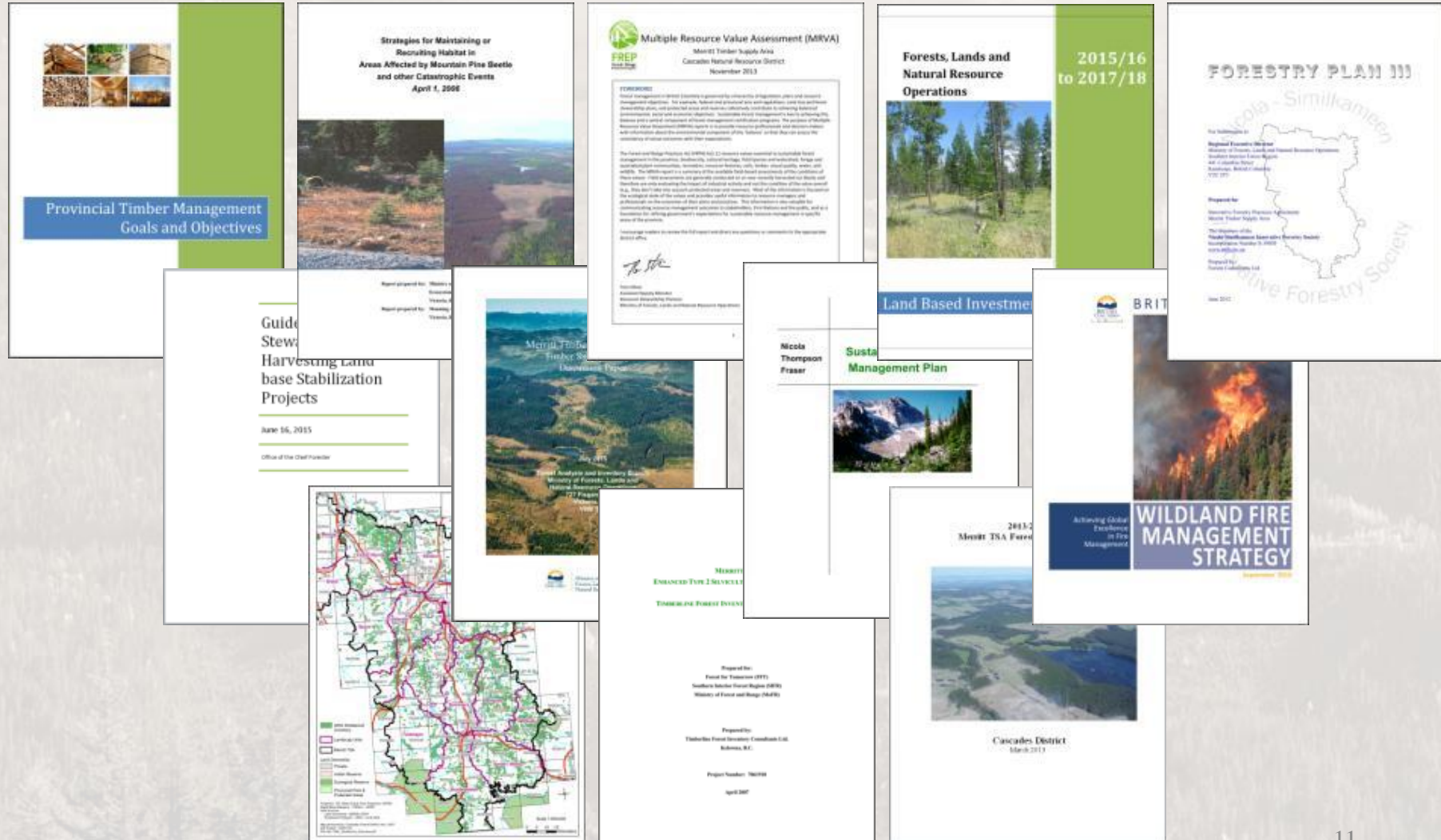
Project Manager Approval:

Date

Sponsor Approval:

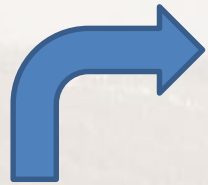
Date

# Gather and Consider Past and Existing Work





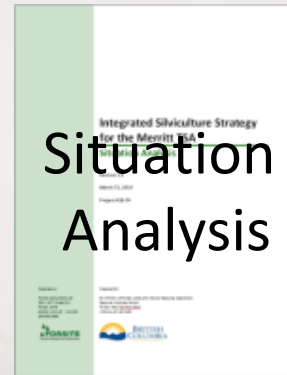
# Products



## Final Report Monitoring Plan



## Situation Analysis



## Integrated Strategies

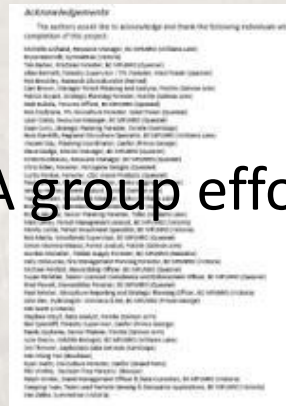
- Reserve
- Harvest
- Silviculture



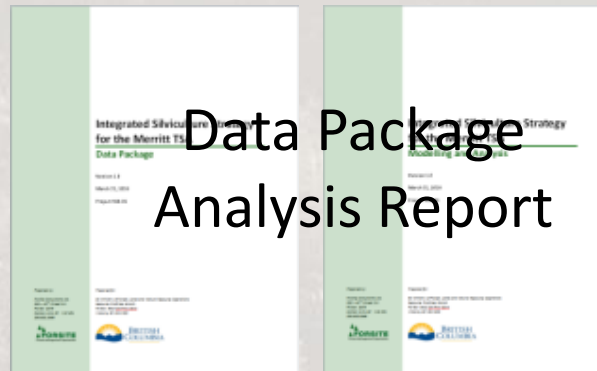
## Tactical Plan



## A group effort



## Data Package Analysis Report



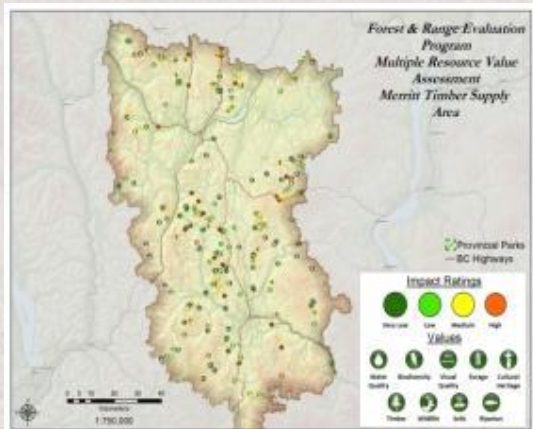
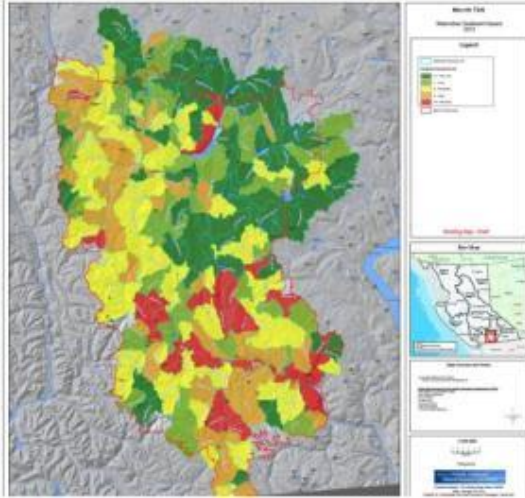


# Resource Values & Objectives

Water Forest Biodiversity Riparian Wildlife Visual Quality Cultural Heritage

## Landscape Level Assessment

- Inventory, Remote Sensing, GIS analysis, modelling



## Site level Monitoring & Evaluation

-Field sampling, data collection

## Cumulative Effects Assessment

- What is the **current condition** of selected values at a landscape level, relative to objectives?
  - What is the potential **future condition**, with foreseeable activities?
- What are the opportunities for mitigating risks?

Identify Priorities for monitoring

Calibrate GIS models, validate assessments

## Forest & Range Evaluation Program

- What is the status & trend in condition of values, at a site level (& rolled up over larger areas)
- How effective are resource practices in maintaining values and achieving objectives (sustainable resource management)?
- What are the opportunities for improving practices, policies and legislation?

# An ISS process

## – Key Output

### Lakes Type 4 Tactical Plan

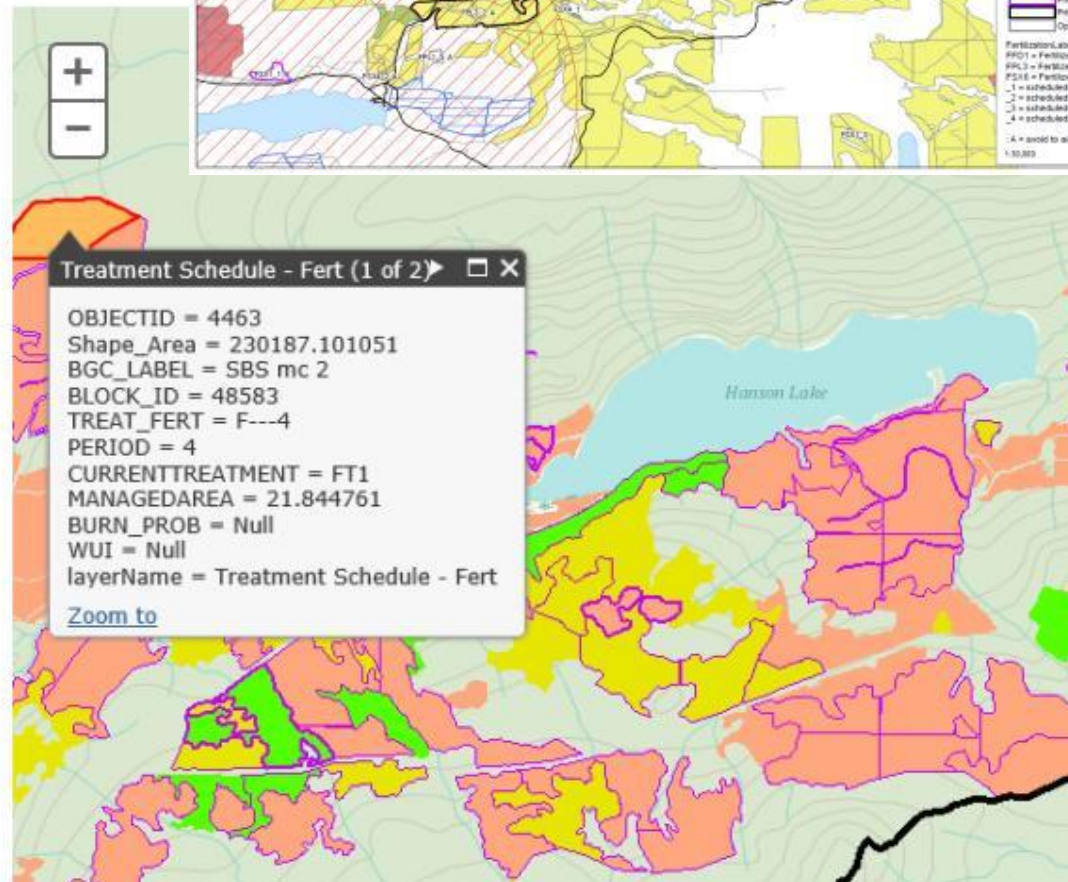
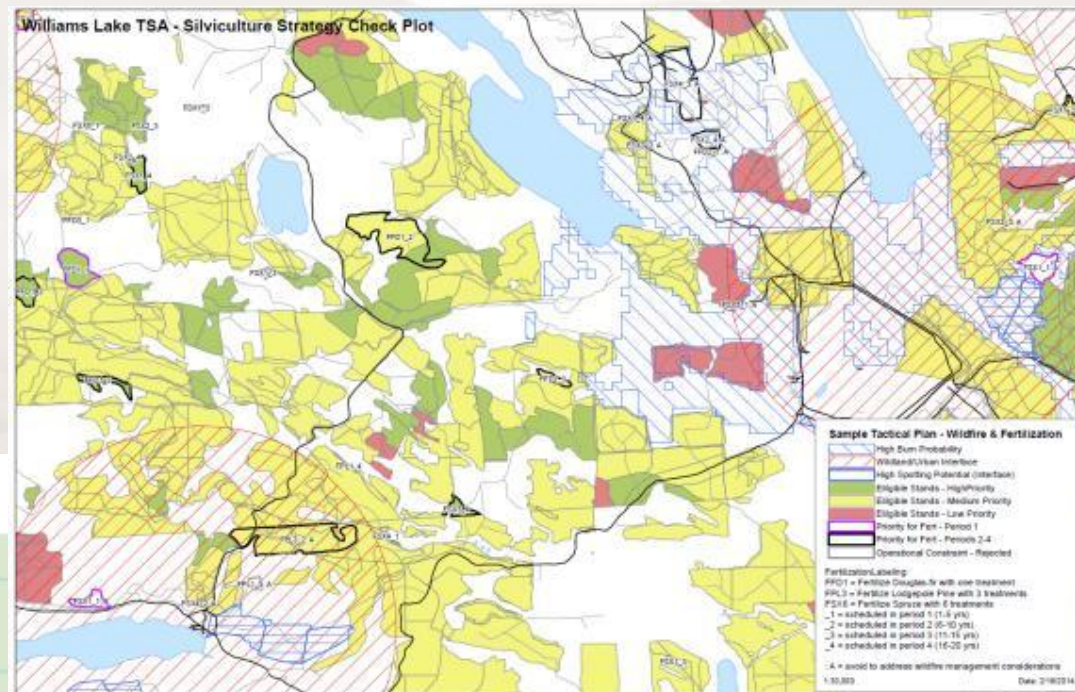
#### Location of Interest:

Latitude: 51 30 30N

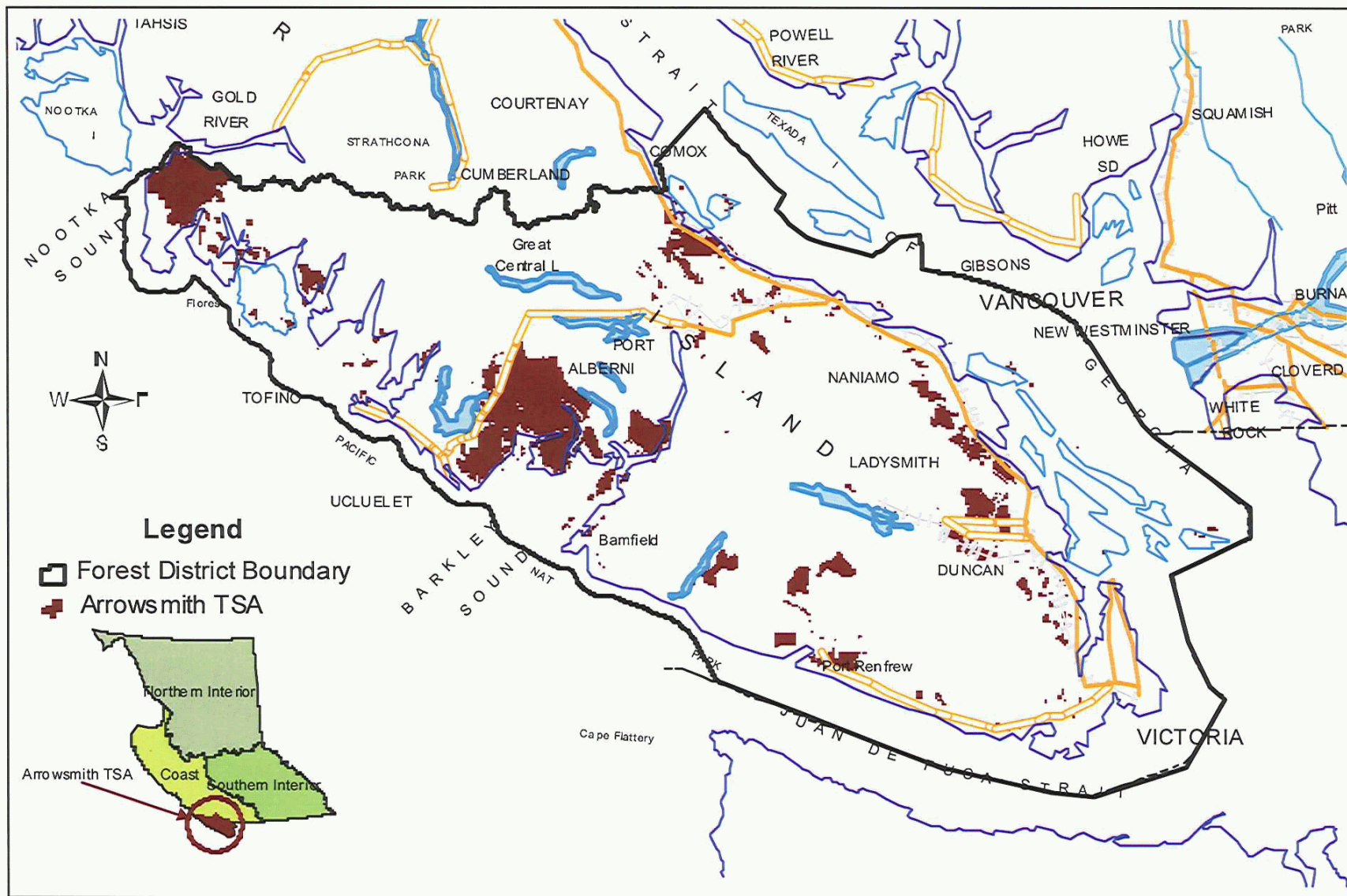
Longitude: 121 30 30W

Zoom To Lat/Long

- ☒ ☐ WLT4
- ☒ ☐ TSA
- ☒ ☐ \*WILDFIRE
- ☒ ☐ \*REHAB
- ☒ ☐ \*PCT
- ☒ ☐ \*FERT
- ☐ ☐ Past Fert
- ☒ ☐ Treatment Schedule - Fert
  - ☐ Fert - Period 1
  - ☐ Fert - Periods 2 - 4
- ☒ ☐ Eligible - Fert
  - ☐ Priority 1
  - ☐ Priority 2
  - ☐ Priority 3
  - ☐ Priority 4







# Arrowsmith TSA

# Arrowsmith TSA Values Matrix

Scenarios are assessed  
by Values

This is where the  
I.S. Strategy is  
More than the previous  
versions

Value Category	Objective / with indicators or Performance measures for each
Economic	Maximize volume harvested Maintain even flow Maximize revenue of harvest
Environmental	Maintain Northern Goshawk nesting and foraging habitat Maintain Marbled Murrelet Habitat Maintain CDF representation Maintain elk and deer winter range habitat Maintain Riparian function
Social	Maintain visuals Maintain availability of Cw for First Nations cultural use Minimize risk of catastrophic fires in the interface



# Timber Goals and Objectives

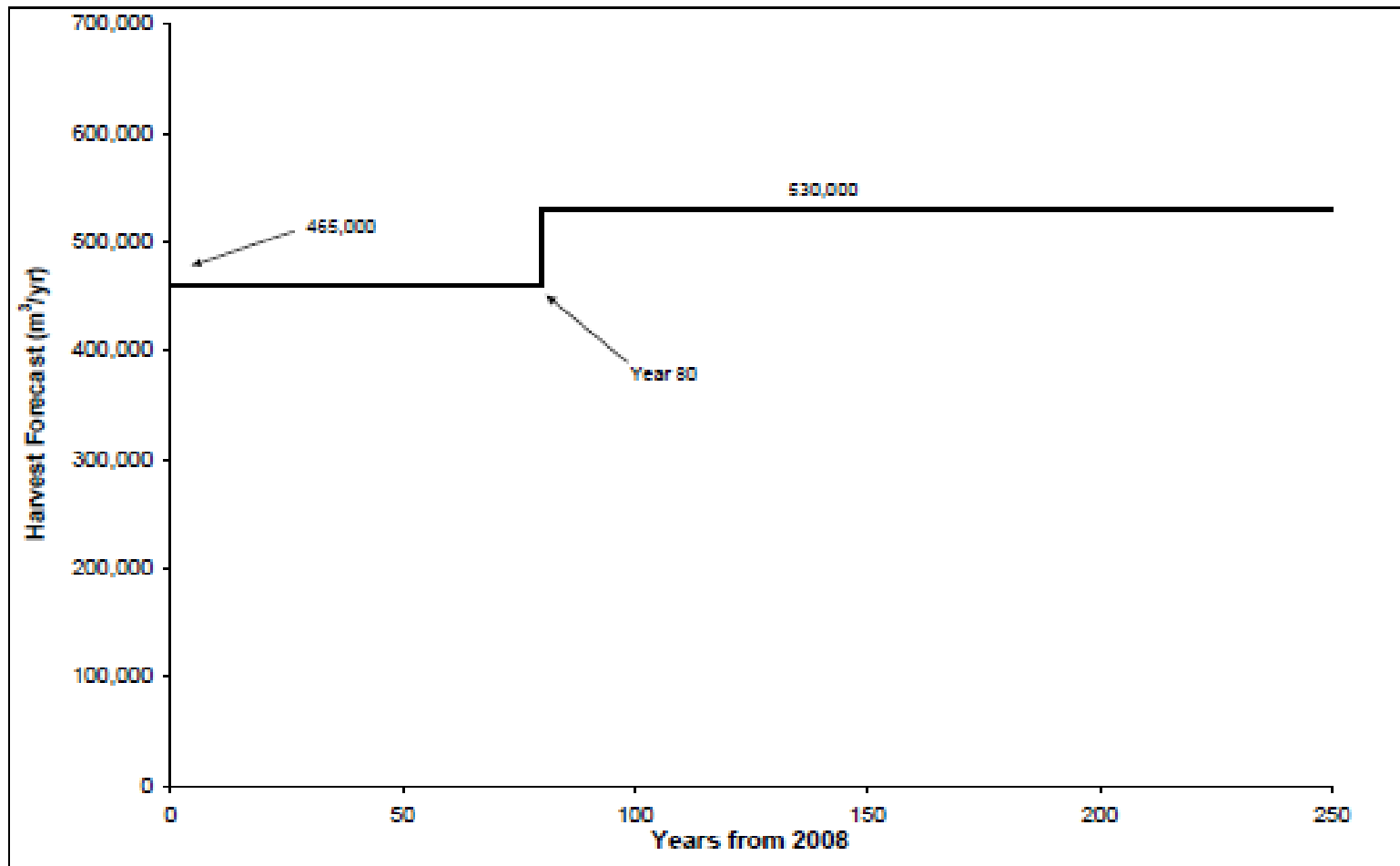


Figure 8: Timber supply forecast for the Arrowsmith TSA; TSR 3 2008

# Case for Enhanced Forestry Zones

- Zonation of management intensity
- Better basic reforestation on the best sites
- Higher productivity sites generate more volume
- Financial rate of return better on higher sites

## Best sites for investment are;

- Un-constrained, low risk, medium to good sites with low costs;
- Slopes  $<50\%$  (best  $<30\%$ )
- Proximity to existing road access or not isolated
- East and West with truck haul
- BEC/Site indices; all CWHxm,dm,vm1 with SI  $>30m$
- No significant constraints to future harvest

# Enhanced Basic Reforestation

## What is it?

- “Enhanced basic reforestation” is basically a generic description for doing a better or more preferred job of site prep, re-stocking treatments and brush control

## How can it help?

- Potential strategy is to invest in “enhanced reforestation” on at least our better sites to increase resiliency and set up more preferred stands which have the best potential to be manipulated in the future (e.g.; density management and fertilization)
- Strategy can be a hedge against “borrowing from the future” or a strategy to improve timber quality and supply at the back end of the “mid-term” or early in the long term

# Volume and Value Comparison of Harry Smith Trials, UBC Research Forest

- Established in 1957-1958
- Fd and Cw espacement trial
- CWHdm 07 (06,01)
- FD SI 43 m
- CW SI 32 m



Spacing	Metric Spacing (m)	Initial Stems/ha
6 ft	1.83	2,990
9 ft	2.74	1,329
12 ft	3.66	747
15 ft	4.57	478



# Harry Smith Trials, UBC Research Forest



Cw 15 ft spacing

478 stems/ha planted



Cw 6 ft spacing

2,990 stems/ha planted



B.A. Blackwell  
& Associates Ltd.



# Harry Smith Trials, UBC Research Forest



Fd 15 ft spacing

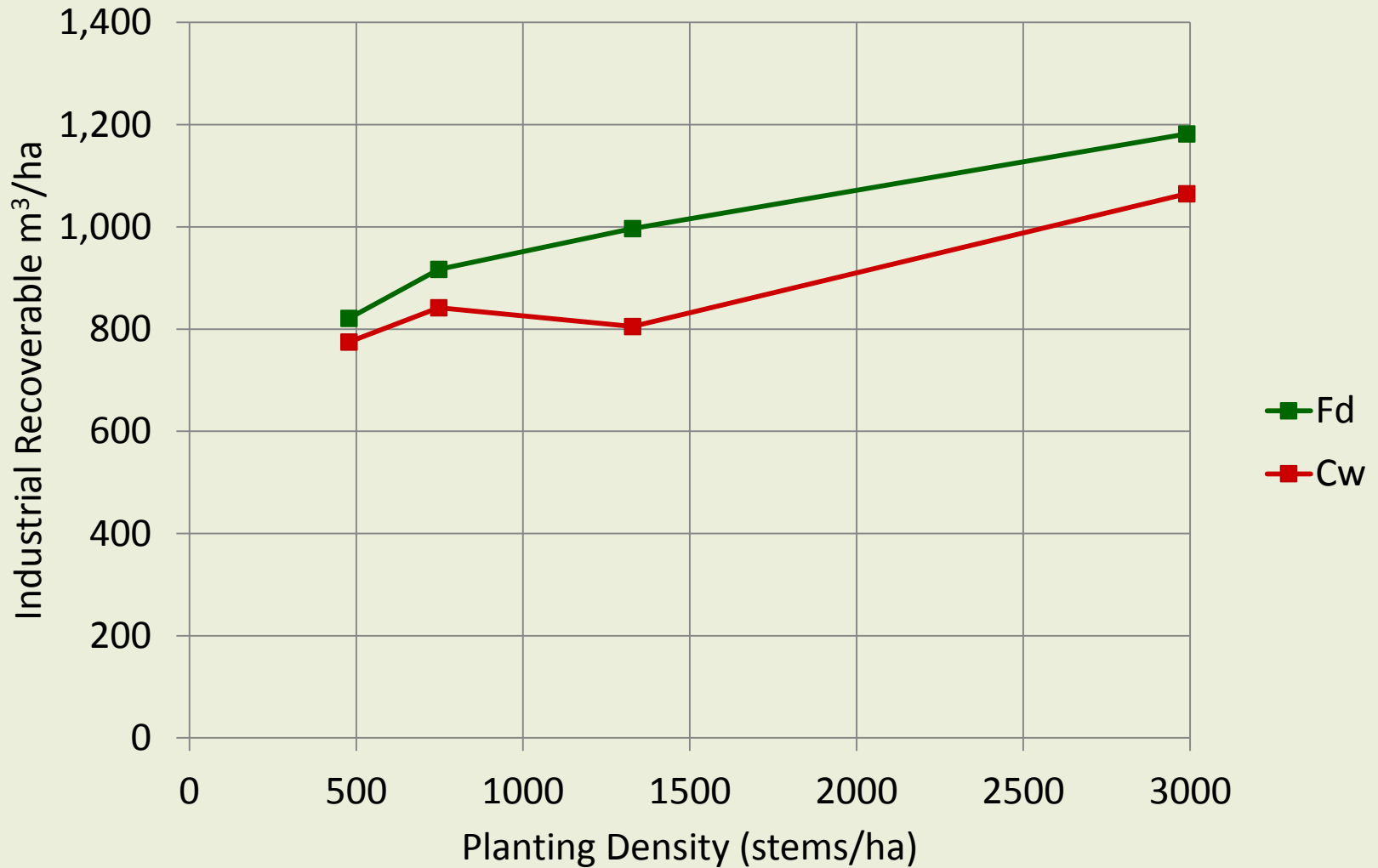
478 stems/ha planted



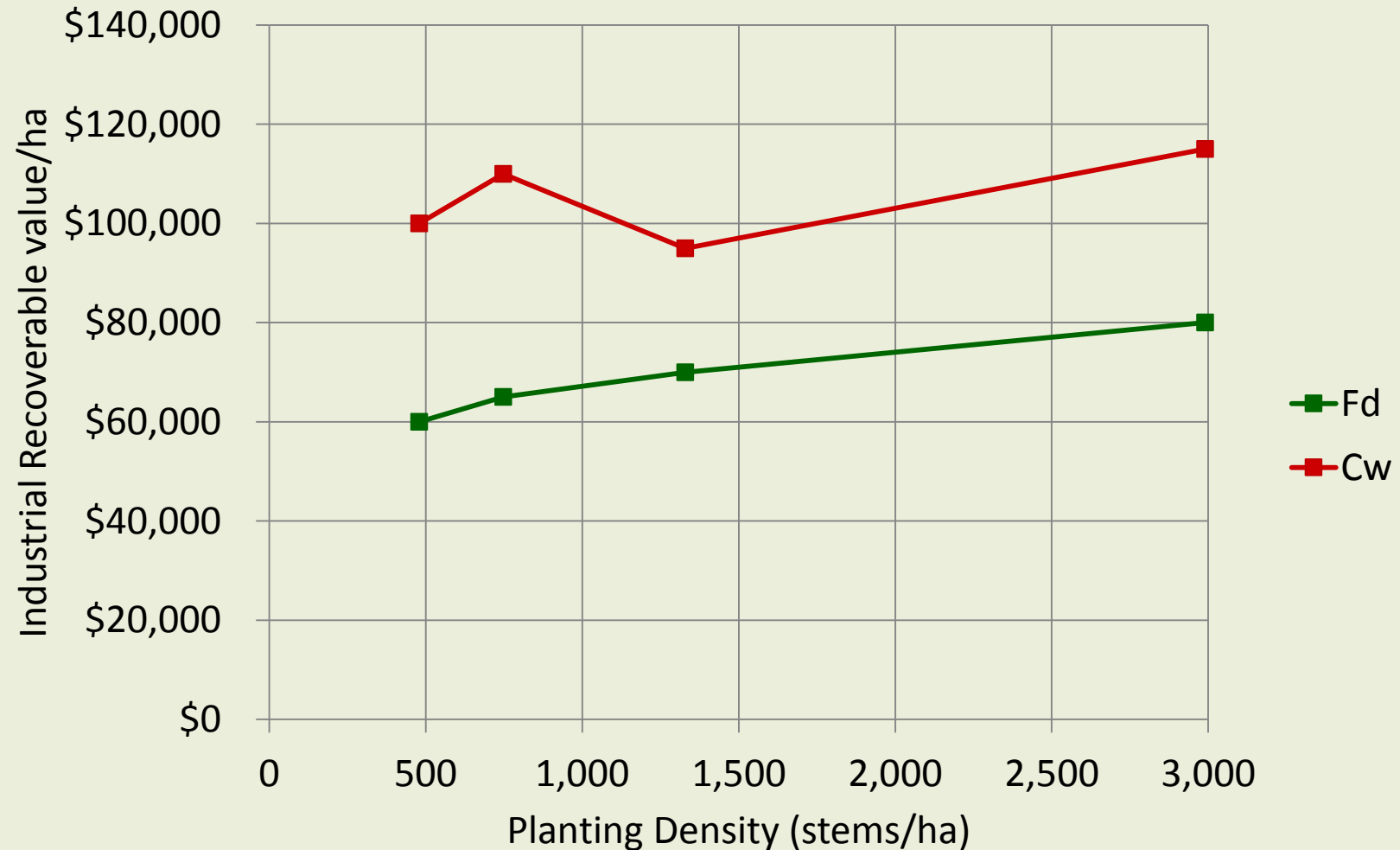
Fd 6 ft spacing

2,990 stems/ha planted

# Harry Smith Trials, UBC Research Forest



# Harry Smith Trials, UBC Research Forest





# Other Silviculture Scenarios

- Spacing CwHw stands to promote Cw
- Commercial thinning FdHw for fibre
- Late rotation fertilization of Fd and Cw
- Partial cutting in high risk interface areas
- More extensive use of Dr regimes





# Harry Smith Trials, UBC Research Forest



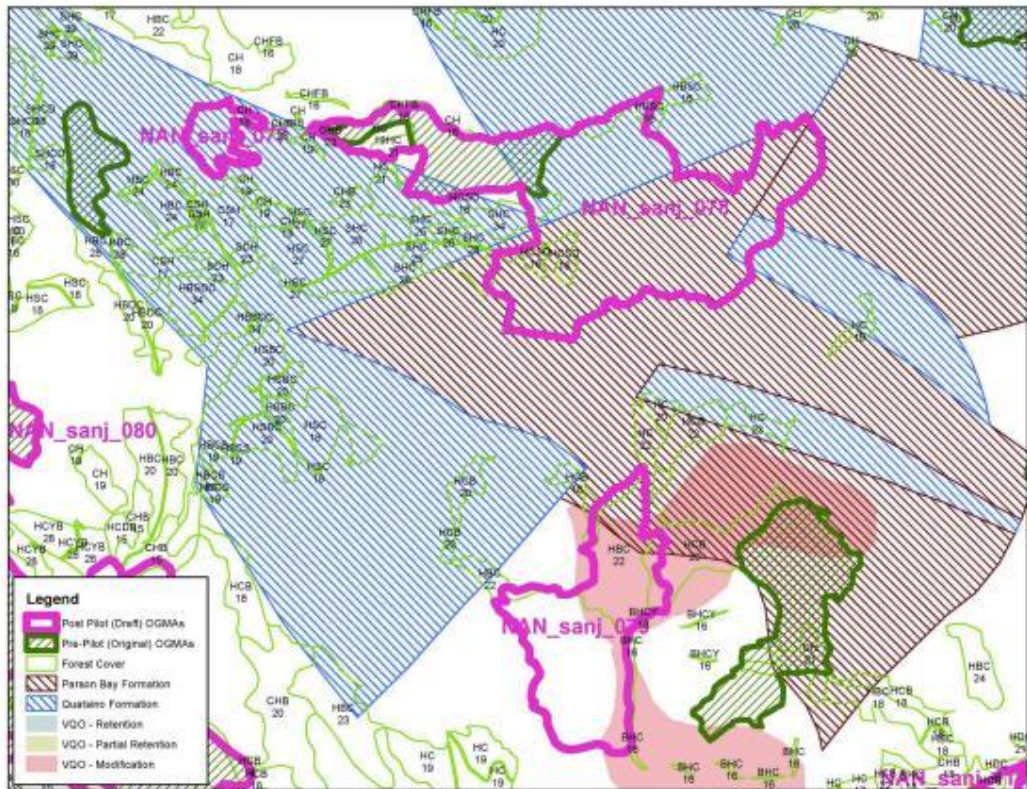


# First Nations – a tool for engagement

An example from VI

Pre pilot OGMAs (green hatch) included subzones, typically with low quality cedar

Post pilot *Draft* OGMAs (purple outline) now overlap with subzones likely to contain large cultural cedar.



**Stewardship and Stabilizing the Timber Harvesting Land Base**

# Wildlife / Biodiversity

## Species at Risk and Regionally Significant Species

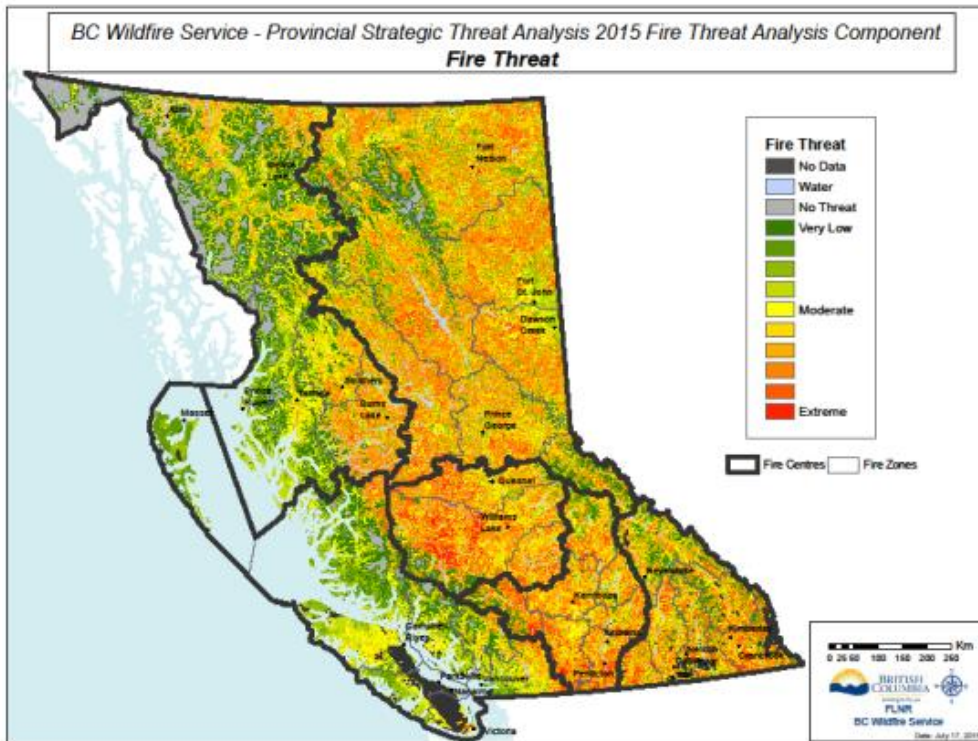
- Modelling existing and proposed recovery strategies
- Co - location with existing stewardship reserves and protected areas
- Can silvicultural treatments create required habitat attributes?



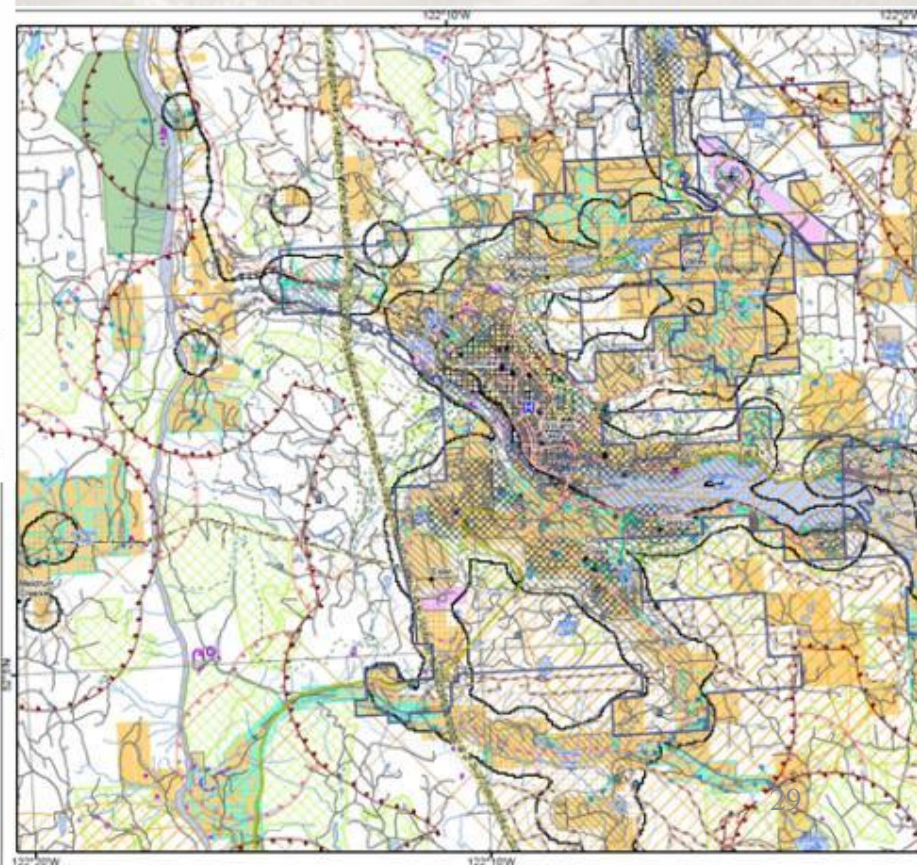


# Landscape Fire Management

$$\begin{array}{c} \text{Provincial Strategic Threat Analysis} \\ \times \\ \text{Priority Value Themes} \\ = \\ \text{Risk} \end{array}$$



- Fuels treatments to address fire risk
  - CWPPs
- Prioritize silviculture investments based on risk

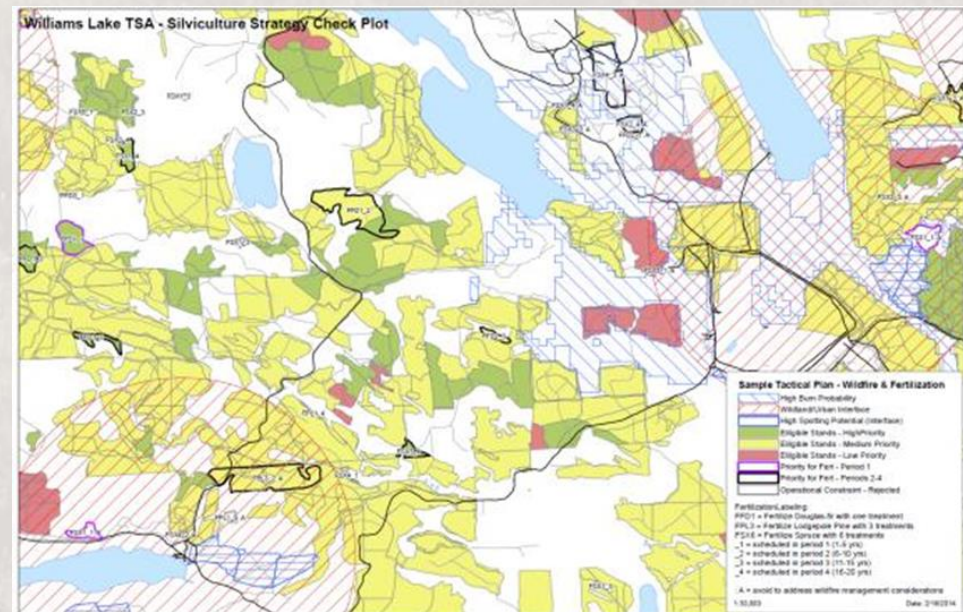




# The Integrated Silviculture Strategy Process

## “Operational-izes” Strategic direction

- Builds on and integrates strategies, plans and frameworks.
- Provides for First Nations engagement.
- Addresses issues and provides direction for the implementation and coordination for a range of values
- Potentially provides a timber supply implementation plan where, timing, stocking standards...
- Guides operations and investments across the landscape.
- Continuous improvement.
- An effective framework for Professional Reliance.



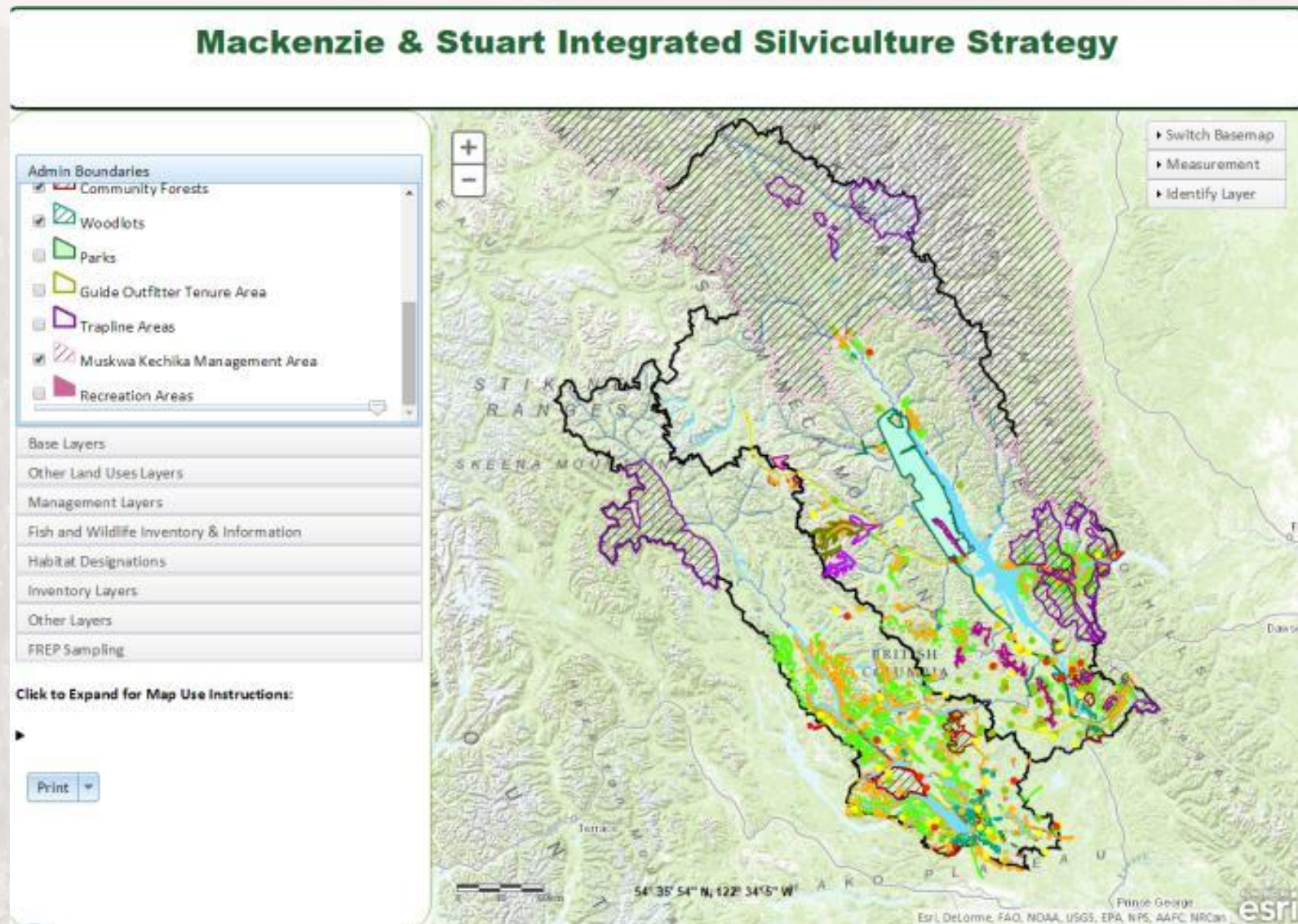
# Big Picture Objectives

- Vision of where we want to go and how to get there using silviculture.
- More efficient use of the THLB
  - Optimized reserve strategy (range of values)
  - Clear priorities for harvesting (recommendations)
  - Clear recommendations for investment (gov't funding)
- Tactical direction on how to execute
- Feedback loop to guide improvements

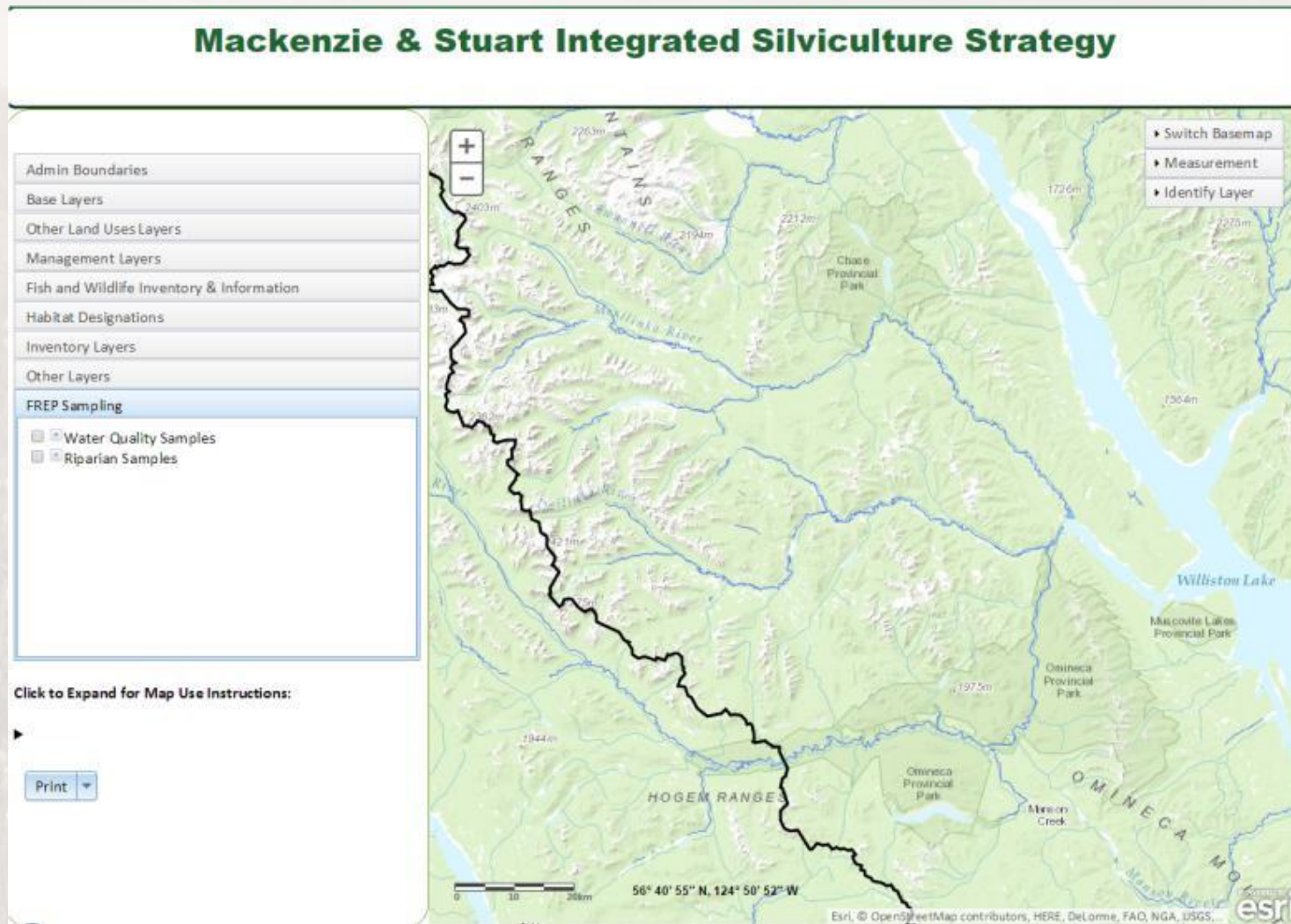




# Integrated Silviculture Strategy – Mapping Tool



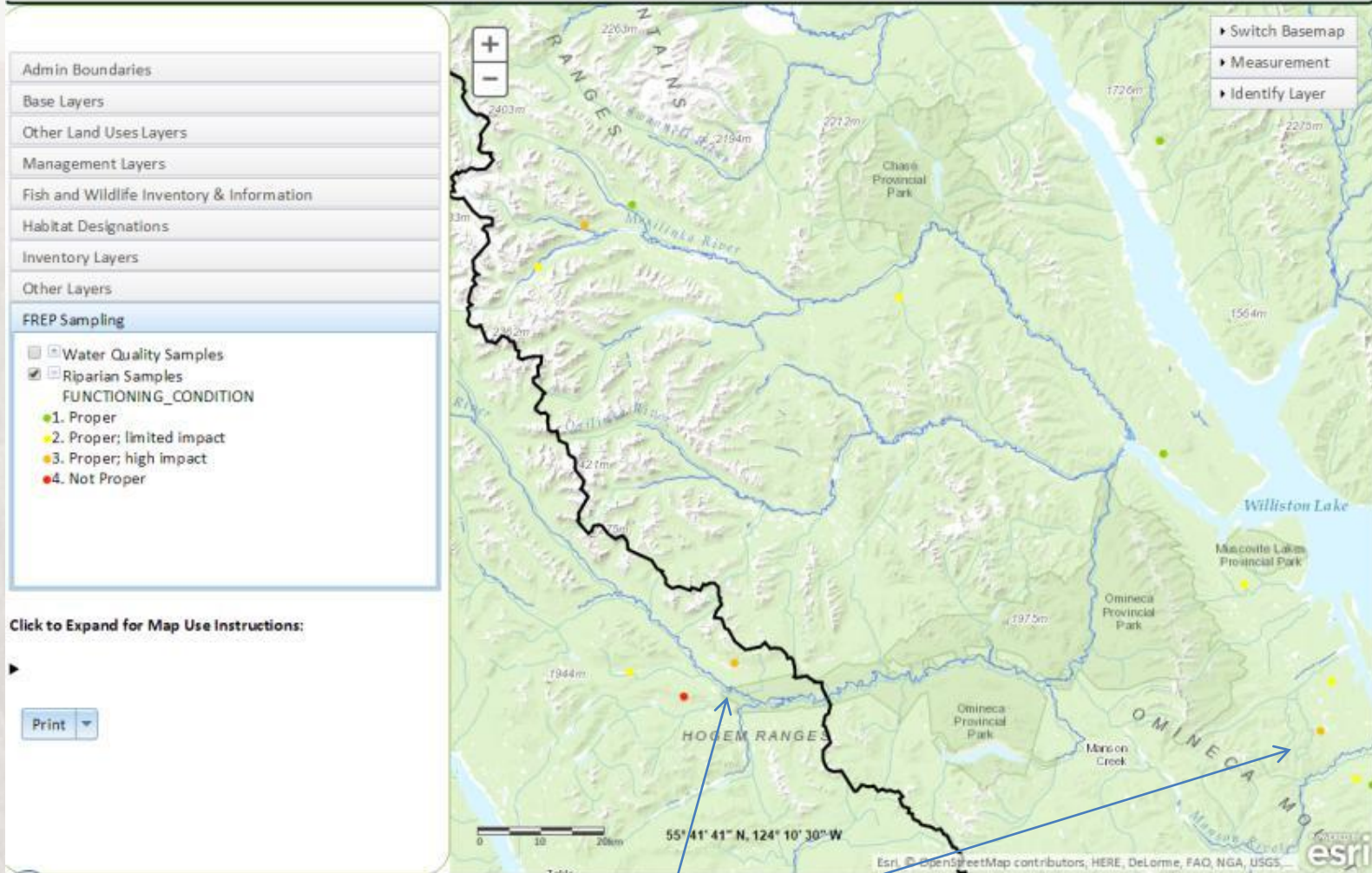
## Understanding values on the landscape



# Base map



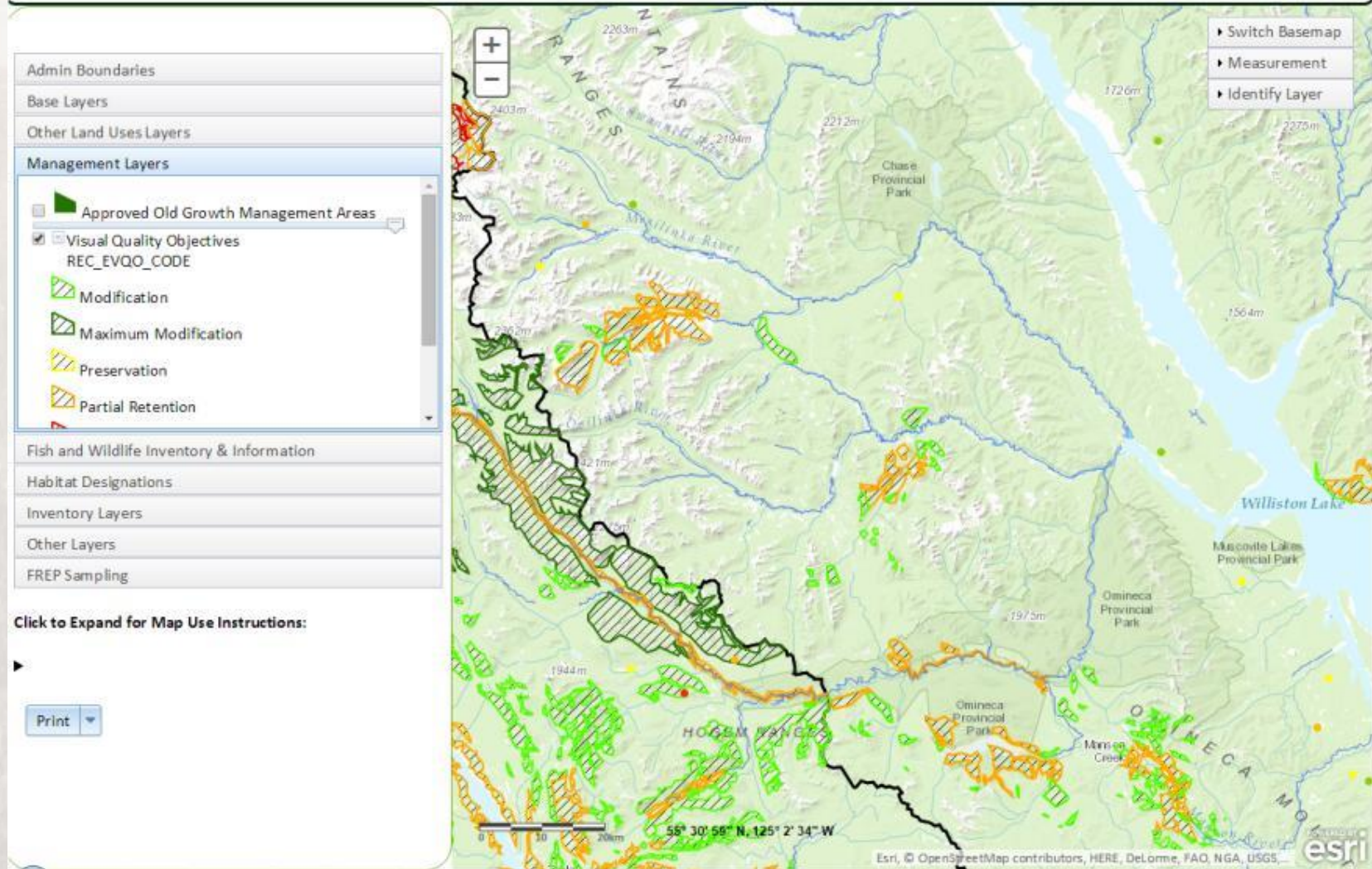
# Mackenzie & Stuart Integrated Silviculture Strategy



FREP Riparian Sampling



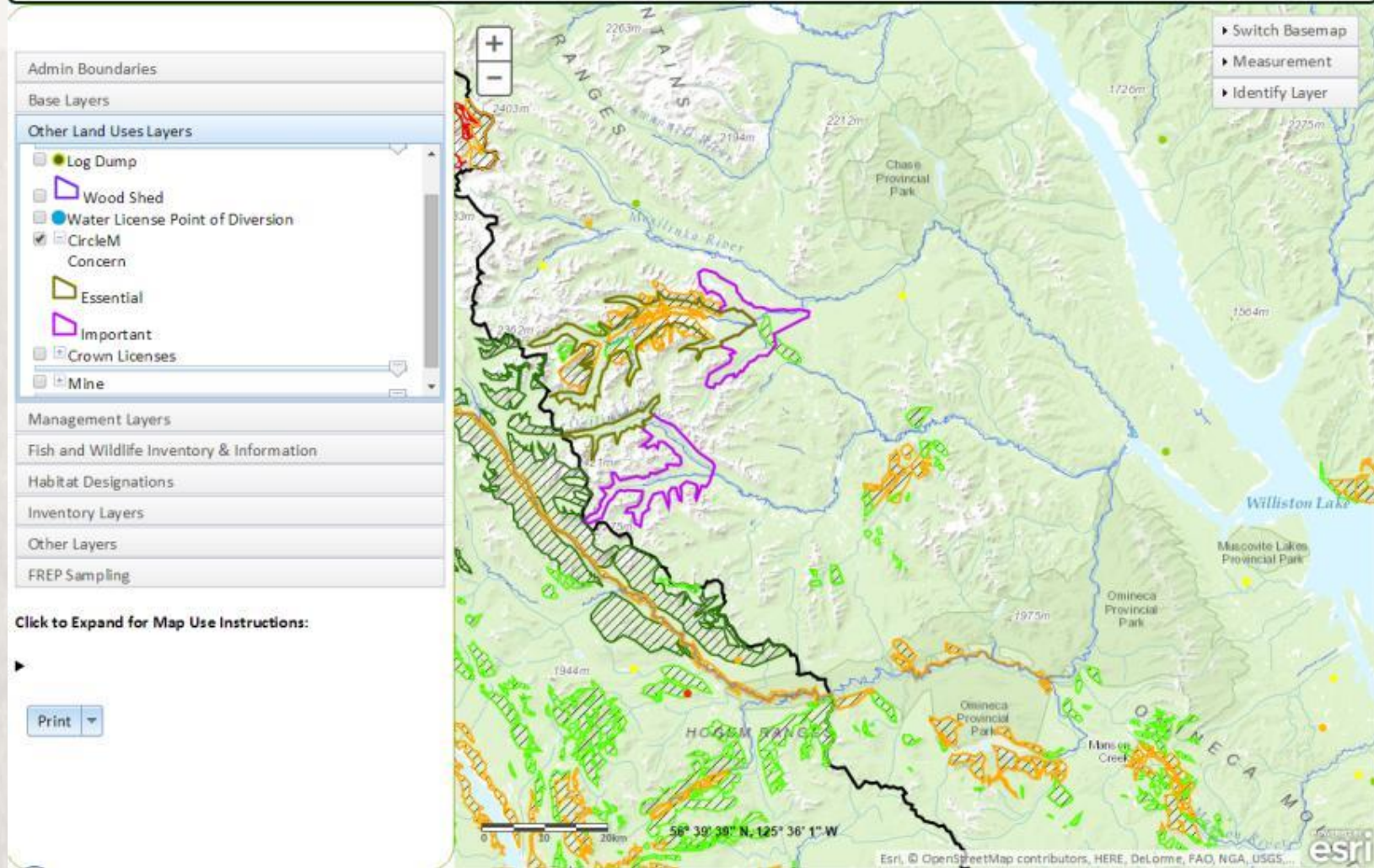
# Mackenzie & Stuart Integrated Silviculture Strategy



Visual Quality Objectives



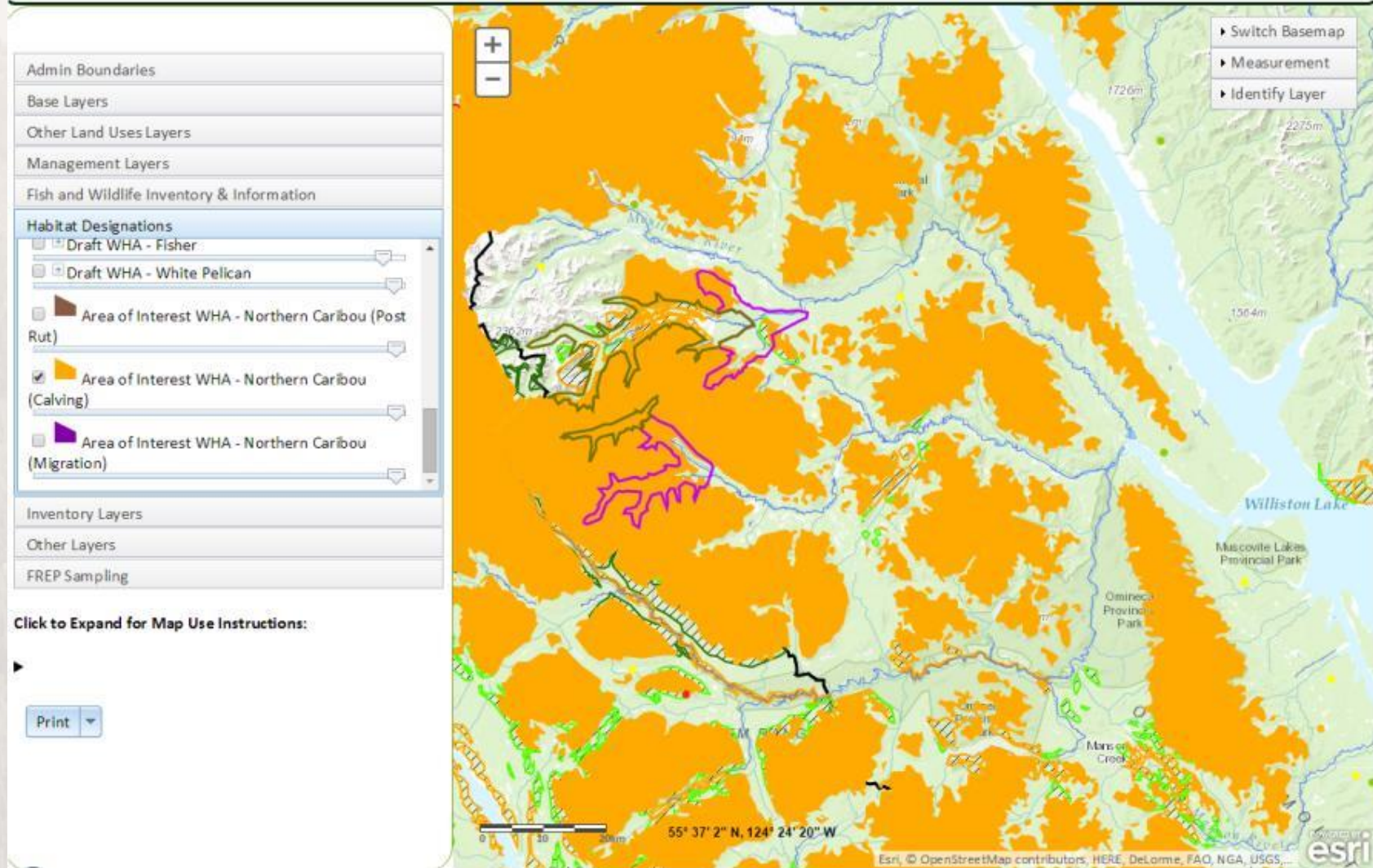
# Mackenzie & Stuart Integrated Silviculture Strategy



Example of a Guide Outfitter area of interest



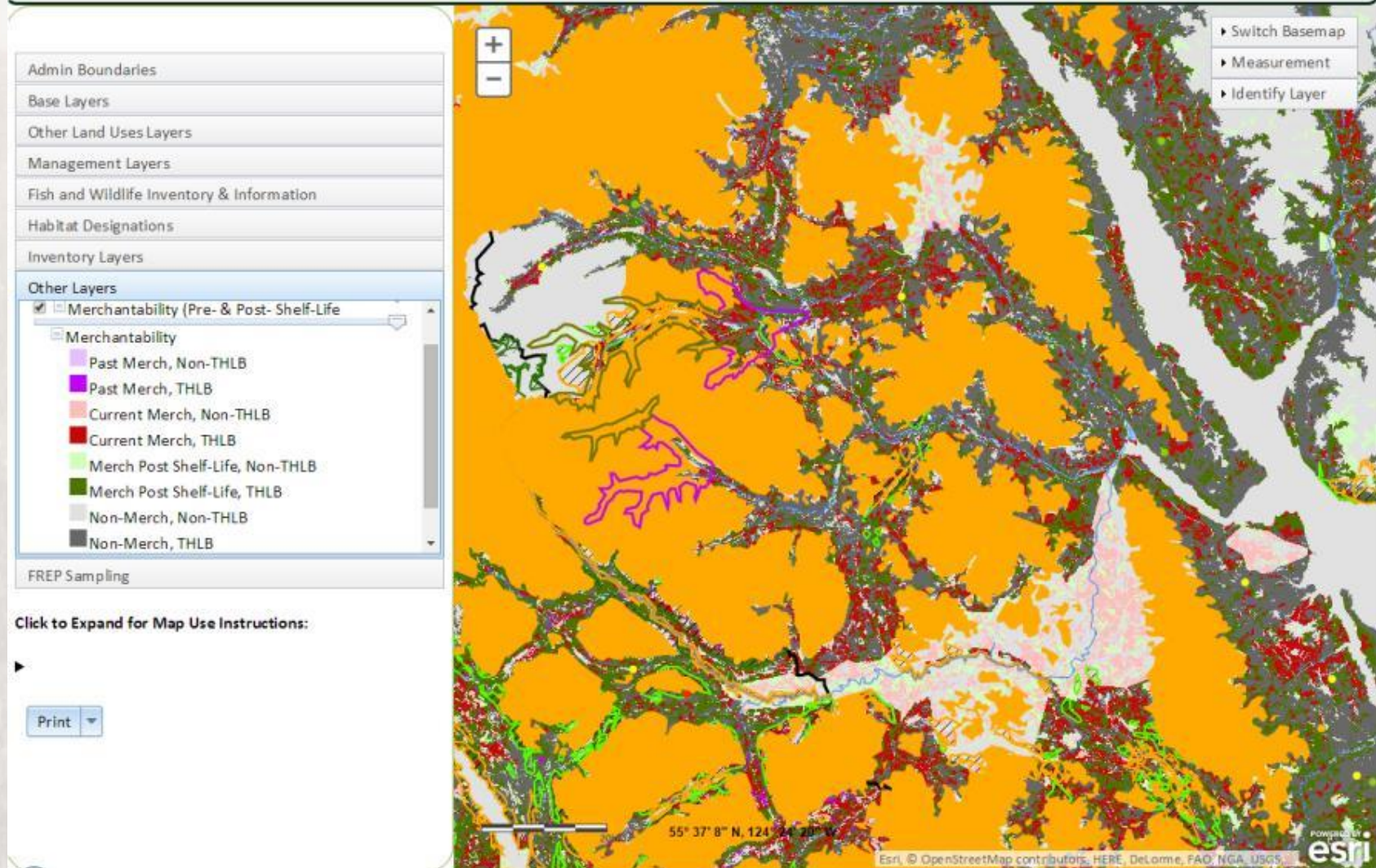
# Mackenzie & Stuart Integrated Silviculture Strategy



Area of Interest for a WHA – Northern Caribou - calving



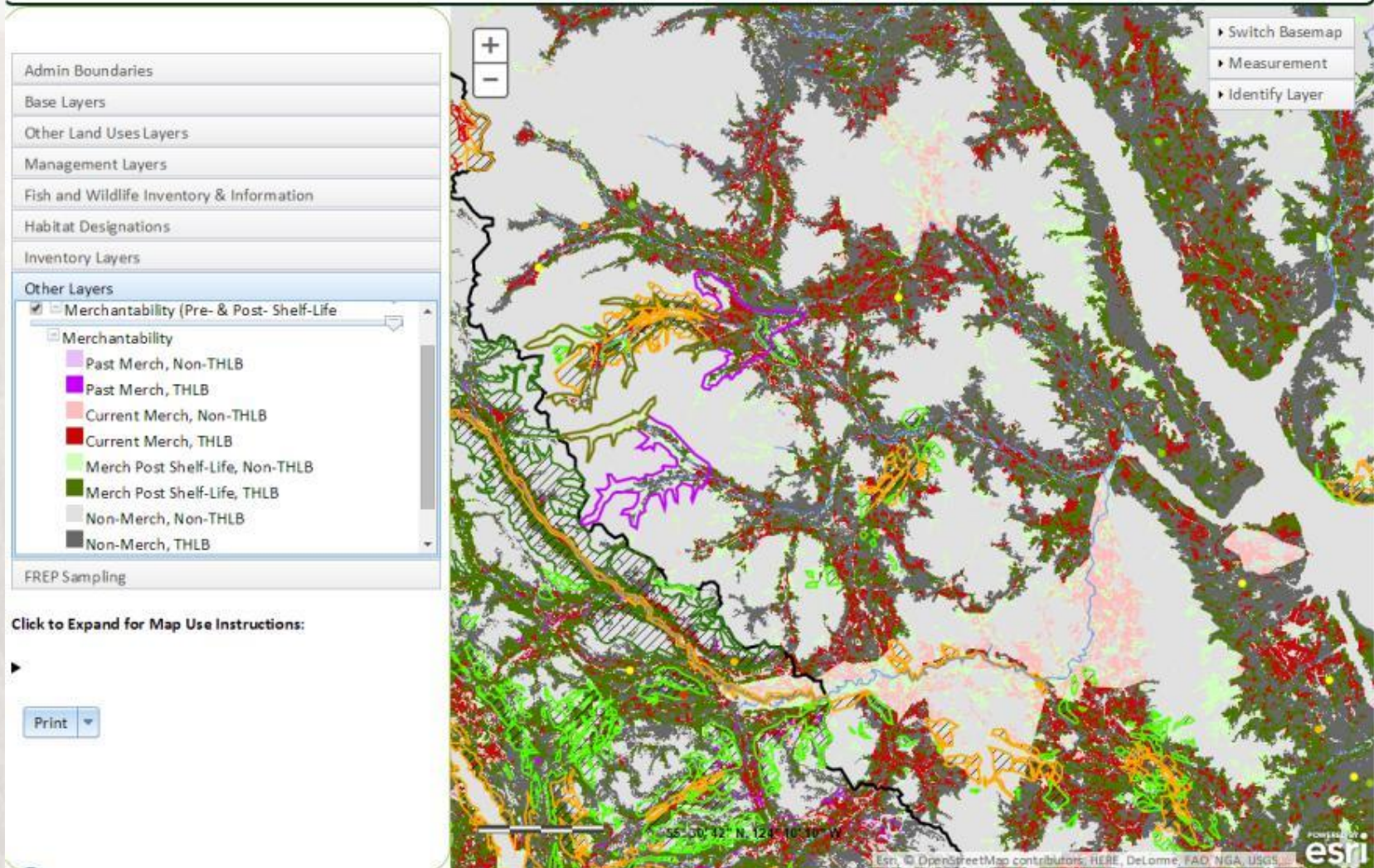
# Mackenzie & Stuart Integrated Silviculture Strategy



Merchantability with the other layers



## Mackenzie & Stuart Integrated Silviculture Strategy



Merchantability without the AOI WHA

# The First Iteration (of cycle) vs the Ideal

### The First Iteration may be:

- Perhaps not ideal.
- May yield more questions than answers.
- Like the apple tree analogy...

When is the best time to plant an apple tree?



**Remember this is a journey!**



# Thanks to all who have contributed to date



## Remember this is a journey – please get involved

