Forest Inventory Strategic Plan

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BRITISH COLUMBIA

Ministry of
Forests, Lands and
Natural Resource Operations

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Forest Inventory Strategic Plan

The forest inventory program outlined in this strategic plan will help the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) secure both economic prosperity and environmental sustainability for British Columbians. The resource information that will be produced by the investments outlined in this plan is required for the ministry to continue to make durable decisions on the land base, and to support a healthy and competitive forest sector.
This document also fulfills a commitment to develop a 5-year provincial inventory action plan, as recommended by the August 2012 report of the Special Committee on Timber Supply.

Program Mission

> *The mission of the ministry's Forest Inventory Program is to produce reliable forest inventories and stand growth models so that natural resource management in British Columbia is informed by credible information on forest condition.*

The Forest Inventory Program

The ministry's forest inventory program includes both forest inventory and stand growth modeling sub-programs. The primary products of the forest inventory program are the province-wide forest cover polygon data set, stand growth and yield prediction models, ground sample data, special GIS (Geographic Information System) spatial layers, and a variety of analyses and reports. Both the public sector and private sector use the products and services of the forest inventory program.

The data and models produced by the forest inventory program are used to characterize current, and forecast future, forest condition. This information is used in many settings including the analysis of fibre supply, evaluation of tenure options and business opportunities, simulation of forest carbon dynamics, design of silviculture regimes, timber harvest planning, state of forest reporting, habitat mapping, wildfire risk assessment, management of visual resources, biodiversity assessment, and much more.

Situation Analysis

The following issues are especially pertinent to the development of the strategy for the ministry's forest inventory program.

Mountain Pine Beetle – With the mountain pine beetle infestation nearing its conclusion, now is the appropriate time to update affected inventories in our interior forests. Existing stand growth models are not well-suited to forecast the development of some post-beetle stand conditions. The beetle has generated new management questions and elevated the importance of some pre-existing questions. For example, the mid-term timber supply in some beetle-affected areas is now highly dependent on the growth rate of young stands, thus increasing the importance of monitoring stand growth rates. Beyond the current epidemic, in future years, climate change may increase the size and frequency of additional disturbance events by agents such as wildfire, drought, pathogens and insects. Updating inventories will allow us to improve yield prediction capabilities and to better monitor stand growth and development.

Technology – In recent years, new technologies and inventory methods have been developed. The newest digital air photos provide high resolution and may permit the automating of some photo-interpretation steps. With the emergence of LiDAR (Light Detection and Ranging) new approaches to forest inventory have developed. A common theme in current inventory research is the sophisticated combining of various data sources, including satellite imagery. To support new uses for forest fibre, the biomass in forest stands must be characterized in terms relevant to its use in bio-fuels, bio-energy, and bio-products. Given these changes, some components of the information technology infrastructure of the inventory program are outdated and require modernization. Opportunities exist to innovate and adopt new technology and methods in the provincial forest inventory program.

Status of the Inventory – Currency and completeness are two important criteria for assessing the status of British Columbia's forest inventory. In the current inventory, polygon coverage is lacking for about 6 per cent of the province. One-quarter of the data in the inventory is less than 13 years old, but another quarter is over 35 years old, primarily in large parks and remote areas. A backlog has developed with harvest, silviculture, and other disturbance updates not yet transferred into the forest cover inventory. Approximately one-half of the timber harvesting landbase is inventoried to the Vegetation Resources Inventory (VRI) standard. To better support forest operations, some data users would like finer resolution, more detail, and higher accuracy in the "working forest" portion of the forest inventory. A current but lower resolution inventory is viewed by many data users as appropriate for locations such as remote areas and large parks. More detail on the status of the provinces' forest inventory is contained in

Forest Inventory Strategic Plan – Backgrounder. An ongoing inventory program will improve the currency, completeness and other desired characteristics of the provincial inventory.

Workforce and Budget - The ministry has increased funding to forest inventory in recent years, from $3.7 million (operating) in 2010/11 to $7.5 million (operating) in 2012/13, with staffing levels remaining constant. When the Forest Investment Account was replaced with the Land Based Investment Program in 2009, inventory program staff assumed substantial new project management responsibilities. Coupled with this increased work load, the program faces succession challenges due to an aging workforce. Much of the work of the program is delivered through contract and the current contracting community has similar workforce demographics and capacity limitations. Other groups within and outside of the ministry (e.g., universities, industry, and federal research centers) have resources and capability in forest mensuration or supporting fields (such as information technology and remote sensing). By collaborating with groups within and outside of the ministry, the inventory program can expand the pool of available resources. With a small increase in staffing, the inventory program can manage succession and sustain the delivery of an enhanced inventory program.

Program Reviews - Over the past two years, several organizations have reviewed components of the forest inventory program and made improvement recommendations. Significant reviews have been released by the Office of the Auditor General of British Columbia, the Association of British Columbia Forest Professionals, and the Forest Practices Board. An inventory strategic plan provides a useful framework to organize action on these recommendations.

A Common Vision

From a consideration of the program's mission, an assessment of the current situation, and dialogue with stakeholders, the outline of a broadly held vision for the forest inventory program has emerged. Dimensions of this common vision include the following:

1. Natural resource management in British Columbia is informed by reliable forest inventory and stand growth models.
2. The data and models of the provincial forest inventory are current, complete, reliable, accessible, and relevant. Together they provide information on the status, trends and condition of B.C.'s forests and the capability to forecast future condition under alternative scenarios.
3. The ministry's forest inventory program engages and communicates with stakeholders, and collaborates with partners in project delivery. The program is

efficient, effective, and high-performing. The program is innovative and adopts new technology and methods. The program is responsive to priorities and mobilizes to deliver information on demand.

Options

In the development of this strategy, program capability was assessed and a variety of program options were evaluated. The typical unit costs and production rates in various program components were used to forecast program outputs under various funding and staffing scenarios. The following strategies, goals, 5- and 10-year targets, and required resource levels comprise the selected option.

Strategies

In the pursuit of its mission, and cognizant of the strategic context outlined above, the ministry will employ the following broad strategies in the forest inventory program.

1) Provide stable and adequate funding and staffing levels.
2) Employ a mix of inventory methods. Inventory most areas to the VRI standard and use less detailed methods where the high costs of VRI are not warranted (e.g., remote areas and large parks).
3) Acquire and provide interim inventory information to respond to priorities and near-term demands for data to support critical decision-making. When forest inventory information is required before a VRI photo-interpreted inventory can be completed, use a variety of approaches to provide interim forest inventory information. These approaches may involve ground sampling, photo-sampling, remote sensing, or other methods.
4) Focus the program where the need is greatest. To deliver the greatest value, focus the forest inventory program on areas where information needs are most acute. In the short-term, focus inventory on areas impacted by the mountain pine beetle and special coastal areas (ecosystem-based management areas and Haida Gwaii). Focus the growth and yield sub-program on data collection and improving modelling capability for beetle-impacted areas.
5) Innovate and use new technology to provide answers to new management questions, improve the quality of inventory program outputs, and find efficiencies.
6) Engage and communicate with stakeholders through transparent, fact-based planning, easy access to data and products, collaboration, and the public reporting of program performance.
7) Improve work processes through the Public Service Lean initiatives.

Program Goals and 5- and 10-year Targets

For the forest inventory program, the ministry adopts the following goals and associated 5- and 10-year targets.

Goal #1: Update the inventory for all depletions and major disturbances		
	10-year target:	100% of harvest, reforestation, free growing, and fire updates integrated into the inventory.
	5-year target:	100% of harvest, reforestation, and fire updates integrated into the inventory.
Goal #2: Produce new VRI for MPB-affected areas and other priority areas.		
	10-year target:	35 million hectares of new VRI photo-interpretation for areas significantly affected by the MPB and other priority areas.
	5-year target:	17.5 million hectares of new VRI photo-interpretation including Mid-Coast, Haida Gwaii, Pacific, 100 Mile House, Kamloops, and Lakes timber supply areas (TSAs), Vanderhoof district, tree farm licences 14, 23, and 35, and other areas.
Goal #3: All forest cover inventory data is less than 30 years old.		
	10-year target:	100% of forest cover inventory data is less than 30 years old.
	5-year target:	80% of forest cover inventory data is less than 30 years old.
Goal #4: Provide interim inventory information on demand for critical areas.		
	10-year target:	Interim inventory information provided on demand for critical mountain pine beetle units
	5-year target:	Provide interim inventory information for Lakes, Morice, and Merritt TSAs and western Williams Lake and southern Prince George TSAs, and other areas.
Goal #5: Use low cost, innovative methods to provide forest cover inventory information for appropriate areas.		
	10-year target:	Innovative inventory techniques employed to provide forest cover inventory for 15 million hectares.
	5-year target:	Innovative inventory techniques employed to provide forest cover inventory for 7.5 million hectares.
Goal #6: Monitor stand growth and change throughout the province.		
	10-year target:	4,000 (permanent sample plots PSPs) or monitoring plots established or re-measured.
	5-year target:	2,000 PSPs or monitoring plots established or re-measured.

Goal #7: Ensure that forest cover inventory is verified and supplemented with ground sample plots.		
	10-year target:	All new photo-interpreted inventory is verified and supplemented with a ground sample.
	5-year target:	As above
Goal #8: Reliable stand growth models for all significant conditions.		
	10-year target:	Stand growth models provide reliable predictions for all significant conditions.
	5-year target:	Stand growth models are enhanced to handle post-beetle stands.
Goal #9: Complete the forest inventory coverage province-wide.		
	10-year target:	100% completion of the provincial inventory polygon coverage. No gaps in inventory coverage over the province.
	5-year target:	95% completion of the provincial inventory polygon coverage.

Inventory Priorities for Areas Affected by Mountain Pine Beetle

Consistent with the strategies, goals, and targets outlined above, inventory priorities for areas affected by Mountain Pine Beetle are as follows.

First priority	Quesnel TSA, Vanderhoof Forest District, Lakes TSA, 100 Mile House TSA
Second priority	Williams Lake TSA, Fort St. James District, Morice TSA, Mackenzie TSA, Prince George District, Kamloops TSA, Merritt TSA
Third priority	Dawson Creek TSA, Lillooet TSA, Bulkley TSA, Invermere TSA, Robson Valley TSA, Cranbrook TSA, Arrow TSA, Okanagan TSA, Kootenay Lake TSA, Golden TSA, Boundary TSA

Required Resources

To implement this strategic plan, the ministry anticipates that the following resource levels are required:

1. Addition of four new staff to bring the total compliment to 32 staff in the forest inventory program
2. $8 million annual operating funds (averaged over the 10-year plan period)

Performance Reporting

The ministry will develop annual targets consistent with the strategy and report performance against these targets.

References

Special Committee on Timber Supply. 2012. Growing Fibre, Growing Value. 70p.

Ministry of Forests, Lands and Natural Resource Operations. 2012. Beyond the Beetle: A Mid-Term Timber Supply Action Plan. 19 p.

Office of the Auditor General of British Columbia. 2012. An Audit of the Ministry of Forests, Lands and Natural Resource Operations' Management of Timber. Report 11. 23p.

Association of BC Forest Professionals. 2011. Assessment of the Status of Forest Inventories in British Columbia: An Update to the 2006 ABCFP Review. 20p.

Forest Practices Board. 2011. Reporting the Results of Forestry Activities: Compliance with Section 86 of the Forest Planning and Practices Regulation. Special Investigation Report #33. 40p.