



**Forest
Practices
Board**

Reporting the Results of Forestry Activities

*Compliance with Section 86 of the
Forest Planning and Practices Regulation*

Special Investigation

FPB/SIR/33

November 2011 (*revised December 2011*)

Board Commentary

Reports from the forest industry about the effects of their activities have always been important to managing the public forests. However, forestry in BC is in a new era that differs from the past in two important respects in the context of reporting.

First, the move to a results-based regime under BC's *Forest and Range Practices Act* (FRPA) means that accurate reporting is now more important than in the past. Under FRPA, forest licensees have been given freedom to carry out their forest practices provided those practices are consistent with objectives set by government for forest values. One corollary to this freedom to manage is that licensees must provide complete, accurate and timely reports about what has happened, and what the effect has been on the forest, so that government can assess whether its objectives are being met.

A second and perhaps more important difference is that, over the last decade, the forest ministry has dramatically reduced the number of field and office staff responsible for overseeing forestry activities and the role of the remaining staff has changed. In the past, ministry staff could, and did, go to see what was happening on the ground and they provided first-hand reports. They also received reports submitted by agreement holders, and were involved in ensuring the quality of those reports, and maintaining information in their own offices.

In 2005, the forest ministry crossed a 'digital divide' and all reporting is now required to be done through an electronic submission to a computerized reporting database; now it is often the case that the only information available to the ministry comes from a report received by a computer with little or no human quality control.

The Board did not investigate how much these changes have affected the quality of reporting, but what we did find about the current state of reporting gives us cause for concern; we do not have confidence that the forest ministry can adequately describe the current condition of the managed forest or track changes in its condition into the future.

The Board believes there is a significant opportunity to evaluate the kinds of reports that are required from those conducting forestry activities. A complete analysis of the information needs of the principal users of the data and the way the data is linked to other information systems is opportune.

The Board realizes that such an undertaking would be time-consuming. In the meantime, it seems reasonable to expect full compliance with the basic legal reporting requirements. There are dual responsibilities here: the forest ministry could affect substantial improvements in reporting with a few more rules that validate data entry; and there is also a clear requirement for increased training for, and quality control over, those submitting reports. Separately, there is a degree of responsibility that falls to professional foresters to ensure the information being submitted is accurate and complete. Just because the electronic submissions system 'accepts' the report, it does not mean that the responsibility of the professional forester has been met.

The Board also has two immediate concerns regarding the reductions in forest ministry staff dedicated to reporting. First, the unexpected loss of one or two individuals would put the entire reporting system in jeopardy – there is little or no redundancy. Second, there is a great deal of very useful and valuable information about the history of forest management contained within the reporting database. Unfortunately, there are few people (perhaps only one or two) who have a complete understanding of the data. It is critical that those people pass that understanding on before they leave the field.

The Board wants to ensure that three pieces of context are kept in mind when considering the results of this investigation:

- Notwithstanding the problems found, the reporting database contains a vast amount of invaluable and irreplaceable information about the history of forest management in BC. That information is used on a daily basis by a large number of people; notably public servants responsible for overseeing the management of the forest resource.
- Many of the findings about the shortcomings in the reporting system and the implications for other information management systems were already known by government staff. There have been problems addressing these known issues because of significantly restricted funding for systems maintenance and development.
- Many of the issues found during this investigation are common to all large databases, particularly those that have been developing for many years and those with electronic submissions from a large number of users with widely varying business knowledge and capabilities.

Forest management in BC is evolving in response to rapidly changing influences, such as the introduction of new tenures and tenure holders, ecosystem-based management and climate change. The reporting of timber harvesting and silvicultural activities and the resulting changes in land status needs to be flexible enough to accommodate those kinds of changes. It is also critical that the reports are usable by those providing information to decision makers and are seen as reliable by those decision makers.

In the interest of improving the current reporting system, so that it can meet current and future challenges, the Board is making four recommendations. The Board is aware that the forest ministry is already actively engaged in addressing some of these recommendations. The Board encourages them to continue this work and looks forward to their specific responses to the recommendations.

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NOTE:

This is a revised version of the report. Changes, from the original version, were made to the Detailed Findings sections 2.6.2 and 2.6.3 and to the Summary and Conclusions of Investigation at the heading Section 86(3)(a)(iii) & (d).

Executive Summary

Sound management of British Columbia's public forests requires information about its condition. Information about changes in forest condition resulting from primary forestry activities (harvesting and silviculture) is obtained through reports filed under Section 86 of the *Forest Planning and Practices Regulation*. Section 86 reports are a continuation of a long history of reporting to government by the forest industry. While reporting has always been important, the move to a results-based approach to forest management in 2004, with the introduction of the *Forest and Range Practices Act* (FRPA), makes it even more important. Under a results-based system, reports are an integral part of a feedback loop, intended to ensure that forest management activities are meeting government's objectives for forest values.

In 2010, the Forest Practices Board investigated compliance by forestry licensees' with the annual reporting requirements under Section 86, and also examined the state of government's database that houses those reports (called RESULTS, or **RE**porting **Silviculture** **U**pdates and **L**and status **T**racking **S**ystem).

Section 86 specifies that when harvesting is complete, a report is required specifying the location and amount of area harvested and containing: a forest cover map of the area; information about what trees have been retained for wildlife and biodiversity; and what resource features and wildlife habitat features were found. Later, when both reforestation is complete and trees reach free growing status, additional reports updating the forest cover maps are required.

When assessing compliance with Section 86, the Board found that:

- Reports about the location and amount of area harvested were submitted as required. However, for the requirements to submit and update forest cover maps there were high levels of non-compliance because of a combination of late, missing and incorrect information. This non-compliance has, at least in part, caused government to have limited success in updating the province-wide forest cover map. As a result, that map cannot be used to portray the consequences of forestry activities in the landscape context.
- The reports about trees retained for wildlife and biodiversity are fraught with problems. There have been several changes in reporting procedures over time, and the reporting system has never enforced the correct procedure. The result is very high rates of incorrect reporting. Since 1995, government and the forest industry have put significant effort into retaining wildlife tree patches for wildlife habitat and biodiversity, but government is unable to consistently identify where those areas are and thus cannot protect them from future harvesting.
- Government has not put in place a process for reporting wildlife habitat features or resource features, which is not a problem yet because—with very few exceptions—government hasn't identified any of these values in the legislation, so there is nothing to report. But as wildlife habitat features and resource features are identified, this will become a problem in the future.

- The sections of legislation requiring reporting of road construction and deactivation were repealed in 2008, and the system for recording the information was eliminated. This reporting requirement was supposed to be transferred to new resource roads legislation, but that legislation is not yet in place. As a result, since 2008, the effects of roads, outside of cutblocks, on the forested landscape are unknown.

The Board's review of the state of the RESULTS database found that most of people who use it are licensees who are required to submit reports and that, aside from their submissions, licensees do not use the database because they have their own separate information systems. Government compliance and enforcement staff sometimes use the system to help identify legal obligations for inspection; and other government staff, such as timber supply analysts, use the system to generate information for decision makers and public reports. Beyond that there are a few others who use the system.

A completely different category of user is the 10 other government databases that extract and report on the information in RESULTS. Problems were found with the linkage between RESULTS and six of those databases that compromises the use of the information.

The RESULTS database is the most recent incarnation of a decades-old system for reporting information about silvicultural activities and obligations, and changes in land status resulting from forest management. Over the years, the type and form of information required in those reports has been repeatedly modified. A consequence is that some information is collected that never gets used, and there is often significant difficulty in using the information that people do need. For example, it should be possible to answer the question 'where and when has forest harvesting occurred?' But even that fundamental question requires complex database queries that challenge the most experienced users.

During the last decade, significant cuts have been made to staffing and resources used to manage and maintain RESULTS. It is currently required that licensees electronically submit their information, but there is limited opportunity for training in how to do that. The system lacks necessary checks to ensure information is accurately entered and there is no government staff responsible for checking accuracy. Many of the problems the Board found are not news to the ministry—and government staff are currently addressing some of them. However, overall, the resources and funding necessary to fix the system have not been made available.

While it may have been acceptable to live with imperfect information in the past, today's results-based approach to regulating forest management makes it more important that complete, accurate and timely information about the results of forest management are available so government and the public can know whether government's objectives for public forests are being met.

In the interest of improving the reporting system the Board is making four recommendations (listed below) to government and the forest ministry (Ministry of Forests, Lands and Natural Resource Operations), including recommendations about re-designing the system. The Board is aware that this is a long-term solution, so it is also making a recommendation and detailed suggestions about short-term improvements to the existing system.

The Board is making the following recommendations:

1. Government should immediately make legislative, policy and information management system changes required to implement a reporting system for construction and deactivation of roads outside of cutblocks.
2. The forest ministry should conduct a needs analysis to evaluate the current status of reporting under section 86 of the FPPR, and institute any design, re-design, improvements and/or simplifications that are warranted.
3. The forest ministry should move towards a less expensive, more flexible option for development and maintenance of the reporting system.
4. In the near term, until recommendations 2 and 3 are acted upon, the forest ministry should implement a comprehensive quality control system for reports filed under section 86; including changes to RESULTS that would enforce submission of basic legal requirements of the section and they should improve the documentation for RESULTS and enhance training opportunities for users (detailed suggestions are provided in Appendix 3).

Summary and Conclusions of Investigation

Introduction and Purpose of the Investigation

British Columbia's forests are predominantly (95%) publically owned. Sound management of these forests requires information about changes in their condition. Information about changes in the forest resulting from primary forestry activities (harvesting and silviculture) is obtained through reports filed under Section 86 of the *Forest Planning and Practices Regulation* (FPPR). Section 86 reports are a continuation of a long history of reporting to government by the forest industry. While reporting has always been important, the 2004 move to a results-based approach to forest management, with the introduction of the *Forest and Range Practices Act* (FRPA), makes them more important.

Part of any results-based system is the ability to assess whether the results are being achieved. To that end, section 86 of the FPPR¹ requires people who conduct forest management activities to submit annual reports to government. These reports are a fundamental part of a feedback loop that is intended to ensure that forest management activities are meeting government's objectives for forest values.

Section 86 reports are required in a "form and manner that is satisfactory to the minister."² The manner is an electronic submission to the government database **RESULTS (REporting Silviculture Updates and Land status Tracking System)**. The form is specified in a document titled RESULTS Information Submission Specification (RISS).³

This form and manner is the current version of a reporting system that has been evolving for 40 years. There have been numerous changes in computer technology and submission procedures over that time. In 2005, reporting to RESULTS became part of a mandatory electronic submissions framework that also included cutting permit and road permit applications. This followed several years of system development accompanied by staffing and budget reductions associated with the reporting.

This investigation:

- assessed compliance by agreement holders⁴ and BC Timber Sales (BCTS) managers with section 86 of the FPPR for the annual reporting period April 1, 2009, to March 31, 2010; and
- examined who is using the information in RESULTS, what the information is being used for and whether the information is suitable for those uses.

¹ See Appendix 1 or http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/12_14_2004#section86.

² FPPR Section 86(6).

³ http://www.for.gov.bc.ca/his/results/RISS_ls_3a_ed_Oct1.pdf for the period of interest to this investigation. Minor changes, that have since been made to the specification, are found at http://www.for.gov.bc.ca/his/results/RISS_ls_3b_ed_Jan1.pdf.

⁴ Defined in the FPPR as "a holder of an agreement under the *Forest Act*, other than a woodlot licence" but more specifically for the purposes of this report "A holder of a major licence or community forest agreement who harvests timber to which a forest stewardship plan applies" (FRPA Section 29).

Compliance Assessment

Section 86(3) (a)(i) & (ii) require that a report about the location and the area harvested be submitted if harvesting is completed during the reporting period. This was done for 97% of area where it was required.⁵ Nearly everyone complied with this basic reporting requirement.

Section 86(3)(a)(iii) & (d) require that an update of the forest cover inventory, including a map, be submitted on three occasions (at harvest, regeneration and free-growing). These submissions are used to provide a timely picture of changes in BC's forests.

Forest cover updates were non-compliant for 16%⁶ of the area where they were required. This non-compliance was a combination of lack of reporting, late reporting and reports that were timely but non-compliant in at least one respect (submission of crown closure estimates). This non-compliance rate is a minimum estimate because the Board could not determine compliance for a portion of the area (managed under the *Forest Practices Code of British Columbia Act* [FPC]); and did not conduct an exhaustive investigation of the quality of the forest cover reports.

This non-compliance has, at least in part, resulted in the government's limited success in updating the provincial forest cover map (other issues are discussed in the detailed findings). Only half of the area harvested since 2003/04 has made its way into provincial forest cover mapping that is currently available. As a result, users of that map cannot rely on it to portray the consequences of forest harvesting in the landscape context.

Section 86(3)(a)(iv) requires that the location and size of wildlife tree retention areas (WTRAs) be reported. WTRAs are the mechanism by which the government meets its objective for stand-level biodiversity.

It is not possible to assess compliance with this subsection because the RISS is ambiguous about how to identify WTRAs. Therefore, an assessment of compliance with the more general requirement of the RISS to track "long-term reserves," areas "constrained for an entire rotation"⁷ was performed. Nearly one-third of the area of group reserves and over 80% of the area of dispersed reserves was incorrectly reported.

These rates include problems with the reporting of reserves at harvest and with the updating of existing reserve reports. In response to previous work done by the Board⁸ that raised concerns about the reporting of wildlife tree retention areas, the forest ministry⁹ indicated that updates,

⁵ This rate of compliance was estimated because of a problem with the linkage between RESULTS and the Forest Tenures and Administration System.

⁶ 16% at each of regeneration and free growing and 13% at harvest plus 3% where no report at all was submitted at harvest.

⁷ RISS section 5.7.3.5.1.

⁸ Most recently, "Biodiversity Conservation during Salvage Logging in the Central Interior of BC," (Special Report FPB/SR/35, November 2009), but also, "Implementation of Biodiversity Measures under the Forest Practices Code: Implications for the Transition to the Forest and Range Practices Act", (Special Report FPB/SR/17, March 2004) and "Skaiakos Point Road construction and logging of old-growth trees near a proposed hiking trail by Sechelt Inlet" (Complaint Investigation 990205 FPB/IRC/37, 2001).

⁹ The Ministry of Forests, Lands and Natural Resource Operations.

“will significantly improve the...coverage of wildlife tree retention in RESULTS.”¹⁰ However, this investigation indicates that there will be limited improvement in the reporting of previously reserved areas and, in fact, the deterioration of that reporting in some cases.

Over the last 15 years, there has been a significant investment in reserving wildlife trees from harvest for the purpose of meeting the stand-level biodiversity objectives. That investment is in jeopardy because government is unable to identify those areas, so as to protect them from future harvest.

Section 86(3)(b) requires the reporting of wildlife habitat features and resource features. This allows the forest ministry to ensure that the practice requirements of the FPPR related to those features are met.

Neither the RISS nor RESULTS contains any provision for reporting these features. This issue is not particularly important at the moment because the minister responsible for the *Wildlife Act* has yet to legally establish any wildlife habitat features,¹¹ and there is only one place¹² and one resource feature (karst) that is required to be reported. The issue will become more important as more resource features are identified and when wildlife habitat features are identified.

Sections 86(2) and (4) required the reporting of activities related to road construction and deactivation outside of cutblocks. These activities have effects on forest values that are perhaps more important and pervasive than forest harvesting.¹³

Those parts of section 86 were repealed in 2008. The reporting requirements were to have been transferred to new resource roads legislation. However, that legislation is not yet in place. As a result, for the last three years, there has been no reporting of road building, deactivation or harvesting associated with roads outside of cutblocks.

RESULTS Usage and Utility

Users of RESULTS fall into four main categories:

1. Agreement holders (and BCTS managers) represent 75% of the users. Their use is almost entirely inputting information into RESULTS to comply with the reporting requirements. They generally do not make significant use of the information in RESULTS because they have their own information management systems.
2. The next biggest category is compliance and enforcement officials at the forest ministry. They use the information in RESULTS as a starting point in investigations, primarily about the achievement of silvicultural obligations.

¹⁰ http://www.fpb.gov.bc.ca/SR35_Government_response_to_Board.pdf

¹¹ Wildlife habitat features are to be established by the minister responsible for the *Wildlife Act*, under the authority of section 11 of the *Government Actions Regulation*.

¹² South Island Forest District, Resource Feature Order, effective January 15, 2010.

¹³ Robinson, C., P. Duinker and K. Beazley. 2010. A conceptual framework for understanding, assessing, and mitigating ecological effects of forest roads. *Environmental Reviews*, 2010, 18:61-86.

3. Various analysts use the information in RESULTS to support decision making and public reporting. Notable are timber supply analysts who support allowable annual cut determinations.
4. Finally, there is a small group of people who use RESULTS information in the day-to-day management of silvicultural activities funded under the Forests For Tomorrow Program.¹⁴

A completely separate category of user of RESULTS information is other government information management systems that require information from RESULTS for some purpose. There are 10 such systems and there are problems with the linkage between RESULTS and 6 of them. As noted above, there are problems with the linkage between RESULTS and the system used to update the provincial forest cover map.¹⁵ The Board has been assured that a work-around for these issues will be implemented in the near future. Nonetheless, the current problem is that having forest cover maps in RESULTS is of limited (or no) value when an assessment of the consequences of forest management on the landscape is required. Another important problem is that other systems¹⁶ use RESULTS information to identify forested reserves, but the data those systems use has been obsolete since April 2008. The implication is that all recently reserved areas will not be identified when this information is needed for planning or statusing. Finally, the Integrated Land Resource Registry (ILRR) is used to communicate potential legal conflicts to public users, such as land agents involved in the oil and gas industry. The ILRR purports to identify outstanding silvicultural obligations, based on RESULTS data; however, no such capability exists.

There are a number of other issues related to the use of the RESULTS database:

- The information in RESULTS is used to calculate “% Permanent Access Structures.”¹⁷ The information is inappropriately used when doing this calculation. This problem, in combination with the lack of reporting of road construction and deactivation outside of cutblocks, discussed above, means that the effects of roads on forest soils and the forested landscape cannot be adequately assessed.
- Between 2002/03 and 2009/10 there was a substantial amount of late reporting of harvesting to RESULTS. This has caused a significant underestimate of area harvested in the forest ministry service plan (annual) reports and the 2010 State of the Forest report.
- There is information in the database that apparently gets little or no use, such as in the update of the forest cover inventory around the time of regeneration. Concerns have been expressed by those who submit section 86 reports about whether the level of effort required collecting and submitting that information is warranted.

¹⁴ <http://www.forestsfortomorrow.com/fft/>

¹⁵ The Vegetation Resources Information Management System.

¹⁶ The Corporate Reporting System, the Land and Resource Data Warehouse, iMapBC, the Forest Tenures and Administration System and the Vegetation Resources Management Information System.

¹⁷ A forest ministry performance measure related to percentage of cutblocks covered by permanent roads.

- It is often difficult to use the information in RESULTS because of inconsistencies in the data caused by:
 - the long history of reporting to the system, and its predecessor databases, combined with a lack of a comprehensive and readily available explanation of changes in data standards and requirements;
 - limited validation rules governing data entry to the system; and
 - limited human supervised quality control on information that is entered.

Reporting to the RESULTS database under Section 86 is a continuation of a long history of reporting of silvicultural activities, obligations and changes in land status resulting from forest management. This has caused continuous and incremental change in the information requirements and the systems used to submit that information, report on and use it. The result is that some of the information never gets used, and there is significant difficulty in using other information that is useful and needed. For example, even the basic question of, 'where and when has forest harvesting occurred?' requires complex queries that challenge the understanding of the system held by the most sophisticated users.

Recommendations

The Board is making the following four recommendations to government and the forest ministry:

1. Government should immediately make legislative, policy and information management system changes required to implement a reporting system for construction and deactivation of roads outside of cutblocks.
2. The forest ministry should conduct a needs analysis to evaluate the current status of reporting under section 86 of the FPPR, and institute any design, re-design, improvements and/or simplifications that are warranted.
3. The forest ministry should move towards a less expensive, more flexible option for development and maintenance of the reporting system.
4. In the near term, until recommendations 2 and 3 are acted upon, the forest ministry should implement a comprehensive quality control system for reports filed under section 86; including changes to RESULTS that would enforce submission of basic legal requirements of the section and they should improve the documentation for RESULTS and enhance training opportunities for users (detailed suggestions are provided in Appendix 3).

Detailed Findings

1.0 Introduction and Objectives

The *Forest and Range Practices Act* (FPRA) and associated regulations and policies have moved forest management in British Columbia towards a results-based approach. An integral part of any results-based system is the ability to assess whether the results are being achieved. Therefore, complete, accurate and timely reports regarding land status and alteration are a desirable element of a results-based forest management system. Some aspects of that reporting are legally required under Section 86 of the *Forest Planning and Practices Regulation* (FPPR). Section 86 requires reporting about the effects of harvesting and silviculture activities on forest cover and about other resources; notably wildlife trees, wildlife habitat and resource features.

Section 86(6) of the FPPR states that the “[i]nformation required under this section must be reported in a form and manner that is satisfactory to the minister.” On September 30, 2008, the chief forester¹⁸ announced that the form and manner was an electronic submission to the government’s REporting Silviculture Updates and Land status Tracking System (**RESULTS**) database that adhered to the RESULTS Information Submission Specifications: Licensee Submissions (**RISS**).¹⁹

The announcement was, in many ways, the culmination of the development of a computerized database for tracking silvicultural activities and obligations and land status that had been ongoing for more than 15 years at ‘the forest ministry’²⁰ That development process accelerated in 2002 when the RESULTS system was re-invented from the previous system, the Integrated Silviculture Information System (ISIS), in anticipation of a number of changes at the forest ministry, including:

- the implementation of results based forest management framework;
- the move to an Oracle database platform for all ministry computer systems; and
- substantial staffing and budget reductions associated with the reporting.

RESULTS is seen to be important for a myriad of uses and users. The database has been in continual development over many years and new information is entered daily. There is significant potential for issues that could impact the utility of the data. The Forest Practices Board has experienced such issues with the database during previous audits and the preparation of special reports, and these issues raise questions about the accuracy and utility of the information in RESULTS.

Therefore, the Board decided to investigate levels of compliance with section 86 of the FPPR, and the use and utility of RESULTS. The specific objectives of the investigation were to:

1. assess compliance with Section 86 of the FPPR (the annual reporting requirement through the RESULTS system); and
2. determine who is using the information housed in RESULTS, and whether that information is suitable for the purposes.

¹⁸ To whom the responsibility has been delegated by the minister.

¹⁹ Specification relevant to this investigation is at http://www.for.gov.bc.ca/his/results/RISS_ls_3a_ed_Oct1.pdf .

²⁰ The ministry has undergone a number of name changes in the last 15 years, and is currently called the Ministry of Forest, Lands and Natural Resource Operations.

2.0 Compliance with Section 86 of the FPPR

2.1 Summary of Section 86 Requirements

Section 86 of the FPPR²¹ requires annual reports²² from “agreement holders”²³ and government timber sales managers. These reports are meant to inform government about forestry activities and specific stewardship considerations on areas where there is an obligation to re-forest.²⁴ Note that those holding woodlot licences are subject to similar reporting requirements under section 76 of the *Woodlot Licence Planning and Practices Regulation*. These licence holders were not part of this investigation.

When forest harvesting is completed, a report is required specifying where the harvesting occurred and how much area was harvested along with an update of the forest cover inventory (hereafter a forest cover report) and a specification of location and size of wildlife tree retention areas. Another report, updating the forest cover inventory, is generally²⁵ required when either of two silvicultural obligations is due or met; those are, the obligation to “regenerate”²⁶ the forest and the obligation to establish a “free growing”²⁷ stand.

Reports are also required about:

- the nature of seeds used to grow seedlings that are planted;
- any resource features or wildlife habitat features that are found; and
- any silvicultural treatments that are carried out (e.g., site preparation and brushing).

These reports are to be submitted “in a form and manner that is satisfactory to the minister.”²⁸ That form and manner is an electronic submission to RESULTS as specified in the RISS.

Two subsections of section 86 were repealed in 2008.²⁹ Those subsections related to reporting about the construction and deactivation of roads.

²¹ http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/12_14_2004#section86. See Appendix 1.

²² Covering each “fiscal year” – from April 1 to March 31.

²³ Defined in the FPPR as “a holder of an agreement under the Forest Act, other than a woodlot licence,” but more specifically for the purposes of the report “A holder of a major licence or community forest agreement who harvests timber to which a forest stewardship plan applies” (FRPA Section 29). Each agreement holder can hold more than one agreement (i.e., forest licence).

²⁴ For example, where a free growing stand must be established under Section 29 of FRPA or the area must continue to conform to a stocking standard after commercial thinning or harvesting of specialty forest product.

²⁵ There is a minor exception under Section 86 where the free growing requirement has been achieved on every hectare of an opening, but there has been no declaration of that achievement. For blocks managed under the *Forest Practices Code of BC Act* there is no requirement to report where the obligation to achieve regeneration or free growing has not been met by the specified date, as will be discussed later.

²⁶ Ensure that the net area to be reforested has the density and species of trees established and growing that conform to the stocking standard, typically by planting seedlings, although natural regeneration can result in the obligation being met (FPPR various sections).

²⁷ This differs from the regeneration obligation in that the established trees must attain a specified height that “demonstrate that the tree is adapted to the site, and is growing well and can reasonably be expected to continue to do so” (FPPR various sections).

²⁸ FPPR 86(6).

²⁹ 86(2) and 86(4).

2.2 Out of Scope for This Investigation

The Board chose not to investigate compliance with two subsections of Section 86 for the following reasons:

- Subsection 86(3)(c), which requires a report on the nature of seeds used to grow seedlings that are planted, because there are well defined edit rules in RESULTS that ensure this information is reported consistently. Also because the Board is undertaking a separate investigation into compliance with the chief forester's standards on seed use.³⁰
- Subsection 86(3)(e), which requires reporting of silvicultural treatments, because, while it would be possible to enumerate the treatments that were reported, it would be impractical to provide a reasonable estimate of the treatments that were not reported without a substantial field investigation.

2.3 Impact of Subsections That Have Been Repealed

In 2008, subsections 86(2) and 86(4) were repealed in their entirety. These subsections required reporting of road construction and deactivation. From 2005 to 2008, the forest ministry maintained a system separate from RESULTS³¹ for reporting under these subsections. Since 2008, that system has been disabled and there has been no reporting of road construction or deactivation outside of cutblocks. The provision to report on road construction and deactivation was to be re-implemented under new resource roads legislation, which is not yet in place. The current RESULTS submission standard specifically directs that roads under a road permit are not to be reported.³² This combination of circumstances has caused two problems:

- For the last three years, there has been no reporting of the construction and forest harvesting associated with roads, nor the deactivation of existing roads, for roads constructed under a road permit. This has serious consequences for the monitoring of stewardship because road building (and deactivation) has the potential to have large impacts on non-timber resources.³³
- It has been a common practice for some agreement holders in some parts of the province to harvest in-block roads under a road permit. The result is that these roads can then be considered not part of the block and not reported to RESULTS. This has implications for reporting on amounts of permanent access structures in cutblocks.

2.4 Approach to Compliance Assessment

The Board assessed compliance with section 86 of the FPPR:

- for the annual **reporting period** beginning April 01, 2009, and ending March 31, 2010.
- for the legal **submission period** for those reports beginning April 1, 2009, and ending May 31, 2010.

³⁰ http://www.fpb.gov.bc.ca/Seed_Transfer_ToR.pdf

³¹ The Forest Roads Management Application (FRMA).

³² RISS 3b 5.7.3.6.1.

³³ Robinson, C., P. Duinker and K. Beazley. 2010. A conceptual framework for understanding, assessing, and mitigating ecological effects of forest roads. *Environmental Reviews*, 2010, 18:61-86.

Specifics of how the areas of interest relevant to each subsection of section 86 were defined and obtained are discussed below.

Where an update of the forest cover inventory was required, two tests of compliance were conducted:

1. Determine whether a required forest cover report was submitted for each relevant subsection.
2. Check, where a forest cover report was submitted, to see if it complied with the requirements for submission of crown closure estimates.³⁴ This was done partly because this attribute was critical to inclusion of the information in the provincial vegetation resources inventory map.³⁵ In additions, compliance with submission of this attribute was used as an indicator of the quality of the entire report—but no attempt was made to examine forest cover reports in their entirety.

Section 86 is part of a regulation under FRPA. However, we found that a substantial amount of the area requiring annual reports was being managed under areas the *Forest Practices Code of British Columbia Act* (FPC). These areas were included in the investigation because the form and manner of reporting under the FPC is essentially the same as under FRPA, and it is forest ministry policy that reports submitted in accordance with the specifications of the RISS meet FPC reporting requirements.³⁶ Areas managed under the FPC were identified by their lack of a Standards Regime ID.³⁷ FRPA and the FPC have different reporting requirements, which affect the compliance assessment. These differences are discussed later, as appropriate.

Section 86(5) separately and specifically requires BCTS timber sales managers to submit a report. That report is identical to the report required of agreement holders. For the purposes of this investigation, each timber sales manager was treated simply as another agreement holder.

A review was conducted of the RISS in relation to the requirements of a compliant annual report under Section 86.

2.5 Reporting Harvesting

A submission to RESULTS should have been made for all areas where timber harvesting was completed during the reporting period.³⁸ To identify where this condition applied, an attempt was made to query the Forest Tenures Administration (FTA) system database to obtain a list of those areas where harvesting was completed during the reporting period, however, this was not possible.

³⁴ Specification of crown closure where a tree species had been specified.

³⁵ The forest ministry has implemented a work-around that allows non-compliant RESULTS submissions to be incorporated into the VRI semi-automatically. This work-around would have to be implemented continuously until changes in RESULTS are made.

³⁶ RISS Section 3.

³⁷ <http://www.for.gov.bc.ca/ftp/his/external/!publish/RESULTS/Communiqes/RESULTS-OIF-OA-Sessions-March-4-10.pdf>. This method will overestimate the area managed under the FPC because not all FPC block “grandfathered” into Forest Stewardship Plans will be correctly assigned an Standards Regime ID.

³⁸ 86(3)(a)(i)

In FTA, the status of cutblocks is automatically changed to logging complete ('LC' [or 'S'³⁹]) when a submission to RESULTS is received. However, a status of 'LC' can be entered manually in FTA prior to submission of a report to RESULTS; these blocks need to be checked to see if a report to RESULTS was required and submitted.

The issue, in this context, is that one of the reasons for manually changing the block status to 'LC' is that no logging is intended (not that logging was completed). This is done when a cutting permit needs to be closed, even though all of the blocks in that permit have not been harvested. The problem is that it is not possible to cancel a cutblock in FTA once it has been entered. Typically, the actual area harvested is entered as zero for these blocks, but this is not a system requirement and it is not always done.

Because it's not possible to automatically generate a list of blocks requiring an annual report submission, the area was estimated in the following way:

- extract all of the blocks from FTA, where the block status had changed to 'LC' (or 'S') during the reporting period.
- determine whether any harvest had been billed against the cutting permits associated with those blocks during the reporting period and:
 - where there had been no harvest billed, assume the block had not, in fact, been logged.
 - where there had been harvesting in the permit assume the block had been logged and that there likely should be corresponding submission to RESULTS.

Using this process, the Board estimated that there were 149 000 hectares of harvest completed during the reporting period and that a report was submitted to RESULTS for all but 4 500 hectares (3%).

More than half (53%) of this non-compliance could be attributed to 1 agreement holder and over 90% could be attributed to 11 agreement holders. It is difficult to assess the importance of this finding because this investigation is the first attempt to do a comprehensive assessment of compliance with Section 86. This finding may simply be an anomalous occurrence during this particular reporting period, or it may indicate targeted training needs.

2.6 Submission of an Update of the Forest Cover Inventory

In general, a forest cover report⁴⁰ must be submitted on three⁴¹ different occasions. They are when, during the reporting period:

1. harvesting is completed;
2. the regeneration requirements have been met, or are due but have not been met;⁴² or
3. the free growing stand requirements have been met, or are due but have not been met.⁴³

³⁹ Or to 'S' (silviculture) depending on the status of the area in the RESULTS submission.

⁴⁰ Formally "an update of the forest cover inventory."

⁴¹ Although as many as five reports may be required if both the regeneration requirements and the free growing requirements came due but not met.

⁴² Under the FPC *Timber Harvesting and Silviculture Practices Regulation* (B.C. Reg. 352/2002) Section 46(c), there is no requirement to report if regeneration requirements have not been achieved.

2.6.1 Forest cover report at harvest

Forest cover reports should have been submitted for the entire opening gross area⁴⁴ in all openings where the harvest was completed during the reporting period.⁴⁵

There was 145 000 hectares where a forest cover report was required; but none was submitted for 13 000 hectares (9%).

One hundred eighty-four agreement holders had harvesting that required a forest cover report. Of those, 33 (18%) had at least one missing report. A single agreement holder was responsible for 55% of the missing reports and 10 agreement holders were responsible for over 80% of the missing reports. As stated previously, it is difficult to assess the importance of this finding because this investigation is the first attempt to do a comprehensive assessment of compliance with Section 86. This finding may be an anomalous occurrence during this particular reporting period, or it may indicate a targeted training need.

Ninety seven percent of the total area was harvested under the authority of FRPA, so no assessment was done about whether there was a difference in reporting between areas harvested under FRPA and FPC authorities.

The forest cover reports that were submitted were examined to see if they complied with the RISS requirements for submitting crown closure estimates, partly because it was critical to inclusion of the information in the provincial forest cover map.⁴⁶ An estimated 4% of the area had submissions that did not have properly submitted crown closure.⁴⁷

To conclude, there was a minimum overall non-compliance of 13% (i.e., 9% of the area had no forest cover report **plus** 4% of the area had incorrectly submitted crown closure).

2.6.2 Forest cover report at regeneration

Forest cover reports should have been submitted for the net area to be reforested where the following conditions applied:

1. The areas, managed under FRPA, where the regeneration requirement was due during the reporting period but:
 - a. there was no declaration during the submission period that the requirements had been met;⁴⁸ and

⁴³ There is a minor exception under FRPA Section 86(3)(d)(iii)&(iv) where no report is required for an opening if the free growing requirement has been achieved but that achievement has not been declared. Under the FPC *Timber Harvesting and Silviculture Practices Regulation (B.C. Reg. 352/2002)* Section 46(d), there is no requirement to report if the free growing requirement has not been achieved.

⁴⁴ RISS section 5.4.2.

⁴⁵ And a report of harvesting was submitted during the submission period; that is; 2009-04-01 <= ATU_WHEN_CREATED <= 2010-05-31 and 2009-04-01 <= DISTURBANCE_END_DATE <= 2010-03-31.

⁴⁶ The forest ministry has implemented a work-around that allows non-compliant RESULTS submissions to be incorporated into the VRI semi-automatically. This work-around would have to be implemented continuously until changes in RESULTS are made.

⁴⁷ These areas had either a species identified and no crown closure specified or a crown closure and no species identified.

⁴⁸ Section 86(3)(d)(i)&(iii), respectively.

- b. no forest cover report had been submitted during a previous submission period indicating that the requirements had been met.

Note that there were 10 000 hectares managed under the FPC where these conditions applied but, under that legislation, there was no requirement to report unless the area did, in fact, achieve the regeneration requirement. It is not possible to know if these areas met the regeneration requirement without conducting field inspections. However, these areas may be at high risk for non-compliance, as it is likely that much of this area was, in fact, regenerated and should have been reported.

2. The areas, managed under either FRPA or the FPC, where a declaration was made during the submission period that the requirements were met in the reporting period. If a forest cover report was submitted during the submission period it was assumed that report was in support of the declaration.⁴⁹

There were 145 000 hectares where these conditions applied.

There were 11 000 hectares where the first condition applied. We found that 5% percent had never had a forest cover report submitted and 17% had no forest cover report during the submission period, although 8% of the area had a late submission (last checked on 2011-02-28) (Table 1).

There were 134 000 hectares where the second condition applied. Where the declaration had been made, virtually everyone submitted a forest cover report, although for 4% of the area the submission was late (last checked on 2011-02-28).

Table 1. Percentage of net area not compliant with submission of a forest cover report at regeneration due or met.

Compliance assessment	Regeneration Requirement		Total
	Due but not declared met	Declared met	
No FC (forest cover report) ever submitted	5%	<0.5%	1%
No FC indicating the requirement was met	9%	1%	1%
FC submitted late ¹	8%	4%	4%
Total Not compliant	22%	5%	6%
Total Net Area (hectares)	<u>11 000</u> ²	<u>134 000</u>	145 000
	8%	92%	

¹ Between 2010/06/01 and 2011/02/28 – when last checked.

² There were 28 000 hectares where the regeneration requirement was due and not declared met but, in a previous reporting period, an update of the forest cover inventory had been submitted indicating that the requirements had been met – this area was not part of the sample population.

⁴⁹ RESULTS contains no provision for explicitly linking a report to a declaration notwithstanding the legal requirement to do so: “A written declaration under section 107 of the Act to the effect that the requirements for the regeneration date or free growing date on an area have been met in respect of an area must include or incorporate by reference a current forest cover inventory for the area.” FPPR Section 97(7).

In total, forest cover reports were not submitted for 6% of the area where they should have been.

There were no particularly poor performers identified at the agreement holder level and the majority of the agreement holders had some level of non-compliance when the requirement was due but not met.

The submitted forest cover reports were examined to see if they complied with the RISS requirements for submitting crown closure estimates, partly because it was critical to inclusion of the information in the provincial forest cover map.⁵⁰ An estimated 10% of the area did not have properly submitted crown closure.⁵¹

To conclude, there was a minimum overall non-compliance of 16% (that is, 6% of the area had no timely forest cover report **plus** 10% of the area had incorrectly submitted crown closure).

2.6.3 *Forest cover report at free growing*

Section 86 of the FPPR requires a forest cover report either when a free growing declaration is made or the requirement is due but not met.⁵² There were 143 000 hectares where these conditions applied during the reporting period.

However, 95% of that area was being managed under the FPC. Under the regulations of that Act, a forest cover report is only required if the free growing requirements have been met.⁵³

There were 9000 hectares where the free growing requirement was due but not declared met. It is not possible to know if these areas were free-growing without conducting field inspections. These areas may be at high risk for non-compliance, as it is likely that much of this area was, in fact, free-growing and should have been reported.

Therefore, the area of interest, for the purposes of this investigation, consisted of the 134 000 hectares where a declaration was made during the submission period that the free-growing requirements were met in the reporting period. If a forest cover report was submitted during the submission period it was assumed that report was in support of the declaration.⁵⁴

No forest cover report was submitted for over 3% of that area (4300 hectares) and a forest cover report was submitted late⁵⁵ for over 3% of that area (4400 hectares). In total, nearly 7% of the area did not comply with the requirement to submit an update of the forest cover inventory.

There were no particularly poor performers identified at the agreement holder level.

⁵⁰ The forest ministry has implemented a work-around that allows non-compliant RESULTS submissions to be incorporated into the VRI semi-automatically. This work-around would have to be implemented continuously until changes in RESULTS are made.

⁵¹ These areas had either a species identified and no crown closure specified or a crown closure and no species identified.

⁵² FPPR Section 86(3)(d)(iii)&(iv).

⁵³ *Timber Harvesting and Silviculture Practices Regulation (B.C. Reg. 352/2002)* Section 46(d).

⁵⁴ RESULTS contains no provision for explicitly linking a report to a declaration notwithstanding the legal requirement to do so: "A written declaration under section 107 of the Act to the effect that the requirements for the regeneration date or free growing date on an area have been met in respect of an area must include or incorporate by reference a current forest cover inventory for the area." FPPR Section 97(7).

⁵⁵ Last checked on February 28, 2011.

The submitted forest cover reports were examined to see if they complied with the RISS requirements for submitting crown closure estimates, partly because at the time of the investigation, it was critical to inclusion of the information in the provincial forest cover map.⁵⁶ An estimated 9% of the area did not have properly submitted crown closure.⁵⁷

To conclude, there was a minimum overall non-compliance of 16% (that is, 7% of the area had no timely forest cover report **plus** 9% of the area had incorrectly submitted crown closure).

2.7 Reporting Wildlife Habitat Features and Resource Features

Sections 86(3)(b)(i)&(ii) of the FPPR require that the location of wildlife habitat features and resource features must be reported when they are encountered during harvesting, if the order establishing the feature⁵⁸ requires reporting. However, the RISS contains no guidance about the reporting of these features and RESULTS contains no provision for doing so.

For wildlife habitat features, this issue is theoretical rather than practical because the minister responsible for the *Wildlife Act* has yet to identify (name) any wildlife habitat features.⁵⁹

For resource features, there are currently five districts where recreational sites and/or cultural heritage sites have been identified as resource features. These features are already identified and would not need to be reported. On the coast of BC, there are six districts where karst caves and topography have been identified as resource features, but only one district⁶⁰ requires their location to be reported if they are encountered during forestry operations.

As more resource features are identified and, eventually, when wildlife habitat features are identified, it will become more important that there be some mechanism to report these features and that the orders that identify the features require reporting. Whether this mechanism is RESULTS remains to be seen but, regardless, the “form and manner” of reporting under section 86(6) needs to be specified.

2.8 Reporting of Wildlife Tree Retention Areas

Reporting of wildlife tree retention areas (WTRAs) is required for areas where harvesting is completed during the reporting period.⁶¹

There were two issues that had a significant bearing on the definition of the population of interest:

1. The Board has previously identified significant problems with the reporting of these areas.⁶² The government response was that, as silvicultural obligations come due for

⁵⁶ The forest ministry has implemented a work-around that allows non-compliant RESULTS submissions to be incorporated into the VRI semi-automatically. This work-around would have to be implemented continuously until changes in RESULTS are made.

⁵⁷ These areas had either a species identified and no crown closure specified or a crown closure and no species identified.

⁵⁸ Under the *Government Actions Regulation*.

⁵⁹ Wildlife habitat features are to be established by the minister responsible for the *Wildlife Act* under the authority of section 11 of the *Government Actions Regulation*.

⁶⁰ South Island, Resource Feature Order, effective January 15, 2010.

⁶¹ 86(3)(a)(iv)

⁶²[http://www.fpb.gov.bc.ca/SR35 Biodiversity Conservation during Salvage Logging in Central Interior of BC.pdf](http://www.fpb.gov.bc.ca/SR35_Biodiversity_Conservation_during_Salvage_Logging_in_Central_Interior_of_BC.pdf)

existing openings, those openings will undergo an update of the forest cover inventory that “will significantly improve the...coverage of wildlife tree retention in RESULTS.”⁶³

2. As part of the effort to improve the reporting, the forest ministry retired some obsolete codes that were no longer supposed to be used when reporting reserves (including WTRAs).⁶⁴ This happened on December 1, 2009, midway through the reporting period of interest here.

Therefore, the areas included in the population were those areas where the forest cover inventory had been either **created or updated** between December 2, 2009, and May 31, 2010 (the end of the submission period). Looking at areas updated during the submission period allows an assessment of whether improvements in previously reported reserves are occurring. Within that time frame, the population of interest was defined as any area within a forest cover update where there:

- was a Reserve Type and/or Reserve Objective code, or
- was a stocking status of ‘MAT’ or ‘RES’ (Mature or Residual) and no reserve coding.

There were several issues encountered with compliance assessment.

The RISS is ambiguous with respect to the reporting of wildlife tree retention areas. The submission standard specifies that the Reserve Objective “refers to the management goal of the retained trees.”⁶⁵ It specifies that any Reserve Objective other than ‘TIM’ (timber) signifies the reserve is constrained for the entire rotation and it uses a code of ‘WTR’ as an example where the primary constraining objective is wildlife tree retention. However, there are 14 valid Reserve Objective codes (other than ‘TIM’). It is not clear which of these codes can, or should, be used to contribute to wildlife tree retention goals (e.g., it seems unlikely that the code ‘MSM’ [MSMA Treated Area] should apply).

The majority of Reserve Objective coding found in the population, other than ‘TIM’, is ‘WTR’ although the codes for the objectives of ‘Biodiversity’, ‘Riparian Management Area’ and ‘Other’ are commonly used. The codes for ‘Riparian Management Area’ and ‘Other’ areas have been historically used to indicate wildlife tree patches, but it is no longer clear if they can still be used for that purpose. The code of Biodiversity (‘BIO’) is new (as of 2007). It is used about 10% or 50% of the time depending on the Reserve Type (grouped or dispersed; see description below). While it is used by some agreement holders to simply indicate a ‘general’ reserve for biodiversity purposes (usually a dispersed reserve) it is also used to indicate wildlife tree retention areas. This occurs despite guidance to the contrary.⁶⁶ To complicate matters, guidance has been provided that directly contradicts the RISS.⁶⁷

⁶³ http://www.fpb.gov.bc.ca/SR35_Government_response_to_Board.pdf

⁶⁴ These were obsolete “Reserve Type” codes that were still in the system dating back to submission standards set under the under the FPC. Retirement of these codes did significantly improve the performance. Prior to their retirement about 38% of the area was being coded with obsolete Reserve Types.

⁶⁵ RISS section 5.7.3.5.1.

⁶⁶ <http://bcwildfire.ca/ftp/HIS/external!/publish/RESULTS/Communiques/QA-Reserve-Session-Feb2010.pdf>

⁶⁷ <http://bcwildfire.ca/ftp/HIS/external!/publish/RESULTS/Communiques/QA-Reserve-Session-Feb2010.pdf> The answer to question 9 states that “[a]reas of forest reserved under the biodiversity objective code are not necessarily restricted

For these reasons, an assessment was conducted of compliance with the more general requirement of the RISS to track “long-term reserves”; areas “constrained for an entire rotation.”⁶⁸ Results are provided that combine all reserve objectives (except ‘TIM’). That is, **the assessment was for the level of compliance with the RISS rather than compliance with the requirement to report WTRAs.**

There are two Reserve Types in RESULTS (that the various objectives, discussed above, can apply to):

- **Group**: a defined, mapped patch of trees; generally does not have a net area to be re-forested. The population examined contained 71 000 hectares of group reserves (see Table 2).
- **Dispersed**: trees that are retained individually or in unmapped groups (e.g., small clusters less than 0.25 hectares), but are enclosed within the boundaries of the mapped polygon designated as dispersed reserve; has net area to be re-forested. The population examined contained 24 000 hectares of dispersed reserves.

These types are discussed separately below.

2.8.1 Group reserves

Both a Reserve Type and a Reserve Objective code are required by the RISS. Eight percent of the area with a Reserve Type of ‘G’ (group) did not have any Reserve Objective code. Sixteen percent of the area had a Reserve Type code of ‘G,’ but the stocking status and type was inconsistent with the definition of a group reserve. For 8% of the area the stocking status/type was Mature/Natural and there was no Standard Unit identifier, but there was no Reserve Type code. These polygons are either reserves or they should not be part of the opening. Over half this area has polygons identifiers that clearly indicate they should be reserves (like ‘W’, ‘WTR’, ‘RES’). Overall, 32% of the area had non-compliant reserve coding.

Levels of non-compliant reserve coding were much higher for areas managed under the FPC and harvested before the reporting period than for areas harvested during the reporting period (47% versus 15%). These areas harvested before the reporting period are the areas where the forest ministry asserts that the update of the forest cover inventory, “will significantly improve the...coverage of wildlife tree retention in RESULTS.”⁶⁹ Unfortunately, this does not appear to be the case. Note that, as discussed above, all these areas had their forest cover either created or updated after the retirement of obsolete Reserve Type codes.

from future harvest” but the RISS states that “any Reserve Objective other than ‘TIM’ (timber) signifies the reserve is constrained for the entire rotation.”

⁶⁸ RISS section 5.7.3.5.1.

⁶⁹ http://www.fpb.gov.bc.ca/SR35_Government_response_to_Board.pdf

Table 2. Percentage of area with grouped reserves reported incorrectly according to the RISS.

Issue description	Harvest Completion			Total
	Before reporting period		During reporting period ¹	
	FPC	FRPA		
Reserve type code is G with no Reserve Objective code	14%	3%	6%	8%
Reserve type code is G but Stacking Status/Type is incompatible (e.g., IMM/ART, NSR/PL, NP/UNN)	22%	20%	3%	16%
Reserve type code is blank but Stacking Status/Type is Mature and Natural and lack of SU-ID indicates a reserve ²	11%	7%	6%	8%
Total of all issues	47%	30%	15%	32%
Total area (hectares)	27 000	24 000	20 000	71 000

¹ only 4% of the area applied to blocks that were managed under the FPC so they are not reported separately.

² These polygons are either reserves or they should not be part of the opening. Over half this area has polygons identifiers that clearly indicate they should be reserves (like 'W', 'WTR', 'RES').

The information in Table 2 represents an assessment of whether the Reserve Type and Reserve Objective were correctly reported. Whether the information about the nature of the reserved area is reported is a separate issue. Submissions were examined for areas where the Reserve Type was 'G' and the Reserve Objective was 'WTR' (wildlife tree retention [a clear subset comprising WTRAs]). A forest cover inventory⁷⁰ is required for these areas.⁷¹ This is a reasonable requirement, given that the intent of the WTRAs is to satisfy the stand-level biodiversity objective in the FPPR "...to retain wildlife trees."⁷² Of 43 700 hectares in this category, nearly two-thirds (27 800; 64%), had no information about the forest cover in the reserve.

2.8.2 Dispersed reserves

There was a total area of 23 800 hectares with a Reserve Type of 'D' (dispersed). A Reserve Objective code is mandatory for these areas, but 2500 hectares (10%) had none indicated.

The RISS requires that the "best information available for the residual stems"⁷³ (the reserved forest cover) be reported. No surveys are required and if no other information is available, the information from the previous forest cover label, if it exists, is to be reported. There were 17 500 hectares (79%) that did not meet even this minimum requirement of the RISS. That is, while the reserve was stated as being dispersed trees, there was no indication about the nature of those trees.

Overall, 81% of the dispersed reserves were incorrectly reported.⁷⁴

2.8.3 Issue common to both grouped and dispersed reserve reporting

The forest ministry indicates that 82% of the openings with reported reserves are not yet free growing and, as such, will receive an update of the forest cover inventory⁷⁵ as silvicultural

⁷⁰ "a survey of trees and tree-related matters" FPPR s1(1).

⁷¹ RISS section 5.7.3.5.1.

⁷² FPPR section 9.1 - http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/12_14_2004#section9.1.

⁷³ RISS section 5.7.3.5.2.

⁷⁴ There was some overlap between the two categories with 85% of those areas with no objective also having no forest cover information.

⁷⁵ Special report run by Mei-Ching Tsoi.

obligations come due and those forest cover reports “will significantly improve the...coverage of wildlife tree retention in RESULTS.”⁷⁶ There are two issues that will cause difficulties with this assertion:

- When an update of the forest cover inventory is submitted, there is no check on whether some reserve coding should be entered for an area—notable examples would be where the stocking status/type are Mature/Natural and there is no standards unit associated with the polygon. The reserve coding in these cases can simply be left blank. This practice was identified and the rationale given was that no reserve coding was required when the opening was submitted originally.

This practice means that there will be no improvement in reserve coding in these cases.

- When an update of the forest cover inventory is submitted, it is often as a result of a silvicultural survey. Those surveys are not typically conducted in areas of group reserves. In many instances, the survey results will be entered for the standards units in an opening and the reserve areas in that opening will be left blank. When the forest cover is submitted, it will overwrite any existing reserve coding with a blank.

This practice means that reserve coding will deteriorate in these cases.

2.9 Summary of Compliance Assessment

The Board estimated that 97% of the area harvested during the 2009/2010 fiscal year was reported to RESULTS. This was estimated, rather than precisely determined, because of structural problem in the linkage between RESULTS and the Forest Tenures and Administration System.

Updates of the forest cover inventory were not submitted for 6% to 9% of the area where they should have been submitted (Table 3). This non-compliance rate is a minimum estimate because the Board could not determine compliance for a portion of the area (managed under the FPC).

Table 3. Percentage of area non-compliant with the requirement to update the forest cover inventory.

Topic	No Forest Cover Report Submitted	Submission Non-Compliant	Total Non-Compliance
Forest Cover Update at:		For Crown Closure	
harvest	9%	4%	13%
on Regeneration Met or Due	6%	10%	16%
on Free Growing Met or Due	7%	9%	16%

Where an update of the forest cover inventory was submitted, it was non-compliant, at least with respect to the submission of crown closure, 4% to 10% of the time. As stated previously, this attribute was examined partly because it was critical to inclusion of the information in the provincial forest cover map.⁷⁷ Also compliance with the submission of this attribute is used as an

⁷⁶ http://www.fpb.gov.bc.ca/SR35_Government_response_to_Board.pdf

⁷⁷ The forest ministry has implemented a work-around that allows non-compliant RESULTS submissions to be incorporated into the VRI semi-automatically. This work-around would have to be implemented continuously until changes in RESULTS are made.

indicator of the quality of the entire submission report on compliance with submission of—no attempt was made to examine forest cover submissions in their entirety.

It was not possible to report on compliance with the requirement to report wildlife WTRAs because the RISS is ambiguous about how to identify those areas. With respect to the more general requirement of the RISS to track “long-term reserves,”⁷⁸ the reserve coding was incorrect for one-third of the group reserves and over 80% of the dispersed reserves. Forest cover information was not provided for nearly two-thirds of the group reserves. The Board notes that compliance of reserves reporting has improved because of the retirement of obsolete reserve type codes on December 1, 2009.

Neither the RISS nor RESULTS contain any provision for complying with section 86(3)(b) related to the reporting of wildlife habitat features and resource features.

The requirements in section 86 to report activities related to road construction and deactivation were repealed in 2008. These requirements were to have been transferred to new resource roads legislation. However, that legislation is not yet in place. As a result, there has been no reporting of road building, deactivation or harvesting associated with roads constructed under road permits for the last three years.

3.0 RESULTS Usage and Utility

Summaries of users and usage were prepared based on data obtained from government about users of the RESULTS reports available through the Corporate Reporting System (CRS). A formal survey was conducted with 39 users of RESULTS identified through those summaries. Those surveys illuminated a number of specific issues about the use of RESULTS. Investigators also conducted numerous formal and informal discussions with RESULTS users and RESULTS business leads. The information was summarized primarily with the intent of highlighting important issues and opportunities for improvement, rather than day-to-day problems.

Estimates of the number of users of RESULTS vary from 2200 to 4000.⁷⁹ Approximately 75% of those users are agreement holders.⁸⁰

During 2008 and 2009, there were 55 200 RESULTS related reports generated by the CRS for 1060 different users.

Fifty-seven percent of the reports were opening reports, a reiteration of the information submitted for a single opening. An additional 17% were reports on the achievement of the regeneration or free-growing milestones.

More than half the reports were generated by only 53 users. About 20% of the users obtained only one or two reports. Of the top 10 users, 8 were Compliance and Enforcement officials working for the forest ministry. Government employees obtained 71% of the reports; consultants and service

⁷⁸ RISS section 5.7.3.5.1.

⁷⁹ 2200 from RESULTS server storage request BN July 21, 2009; 4000 from RESULTS live meeting OIF top 10 Q&A, Feb. 18 & 23, 2010 sessions; 3000 from “understanding key applications” version 6.1.

⁸⁰ Caroline McLeod, personal communications, 2010/07/28.

providers obtained 21%, and forest industry representatives obtained 7% (educational and unknown users accounted for the remaining 1%).

3.1 Categories of Users

The users of RESULTS fall into four main types:

1. Those who are solely or primarily interested in getting information into RESULTS. This includes virtually all the agreement holders and employees of the BCTS program. These users submit information to RESULTS in order to fulfill their legal obligations to report.⁸¹ They generally do not make significant use of the information in RESULTS because they have their own information management systems that generate business reports for silviculture operations. They typically only get information from RESULTS⁸² to confirm that their submissions match the data in their own systems. A small number of these users are beginning to make use of the spatial views of RESULTS data when they conduct planning at a landscape level. On some occasions, agreement holders use RESULTS to populate their own databases when they assume the licence rights and obligations of previous agreement holders. This may be done where the previous agreement holder had inadequate in-house record keeping.
2. Those who get information from RESULTS primarily to assist with assessments of compliance with forest practices legislation. This group is almost entirely composed of forest ministry employees engaged in compliance and enforcement activities. Others include auditors working for the Forest Practices Board and third party certification bodies (CSA, SFI, or FSC). Their primary use is to extract audit populations, to help with risk assessments and to guide field inspections. This group primarily uses milestones reports and opening details reports generated by the CRS. Often the information is used to begin the work and it must then be verified on a block-by-block basis.
3. Those who get information from RESULTS to produce analyses and reports for decision makers and public communications.
 - Timber supply analysts are among the most frequent user of the information to support decision making.
 - Those involved in other policy-related decisions make use of RESULTS information (e.g., First Nations consultation on cost-sharing, uses in legal applications such as Forest Appeals Commission and the softwood lumber agreement).
 - Those who prepare reports on forest ministry internal and public performance measures, forest ministry corporate service plan annual reports and state of the forest reports.
 - Other users in this category include, but are not limited to, investigators at the Forest Practices Board and researchers from universities and public policy ‘think tanks’.

⁸¹ Under s.86 and s.87 of the FPPR.

⁸² Either from the web-based RESULTS application itself or from the CRS.

4. Those who use RESULTS to assist in their day-to-day management of on-the-ground activities. This group consists of recipients of Forests For Tomorrow program funding and ministry employees that administer that fund, and district managers holding non-replaceable forest licence or small scale salvage obligations. There may also be a small number of licensees, primarily woodlot owners, without their own information management system, that rely on RESULTS for day-to-day management activities— although no specific examples were identified.

For the most part, these users obtain information from RESULTS in one of two ways; through reports generated by the CRS or through data requests submitted to the Land and Resource Data Warehouse (LRDW) for RESULTS spatial views. Ad hoc reports are also created by RESULTS business leads (usually through contractors). Many users view the information in RESULTS directly from the web based application⁸³ or through the government map viewing application, iMapBC.⁸⁴

3.2 Linkages to Other Information Systems

A completely separate category of ‘user’ of RESULTS information is other government information management systems that require information from RESULTS for some purpose. There are 10 such systems:⁸⁵

1. Compliance Information Management System (CIMS)
2. Corporate Reporting System (CRS)
3. Forest and Range Evaluation Program Information Management System (FREPIMS)
4. Forest Stewardship Plan Tracking System (FSPTS)
5. Forest Tenures Administration system (FTA)
6. Integrated Land and Resource Registry (ILRR)
7. GeoBC MapView web mapping application (iMapBC)
8. Land and Resource Data Warehouse (LRDW)
9. Seed Planning and Registry Application (SPAR)
10. Vegetation Resources Inventory Management System (VRIMS)

A comprehensive review of the linkage between RESULTS and these systems was not conducted, but the Board is not aware of any problems with the linkages between RESULTS and CIMS, FREPIMS, FSPTS or SPAR.

The issues identified with system linkages are:

- Five of the systems use information from RESULTS that is based on obsolete (and now retired) Reserve Type codes. Three of those systems, CRS, iMapBC and the LRDW, portray the occurrence of forest reserves using obsolete Reserve Type codes⁸⁶ to identify the areas. FTA uses the same obsolete reserve coding to identify conflicts during the clearance of

⁸³ <https://apps29.for.gov.bc.ca/results/indexAction.do>

⁸⁴ <http://geobc.gov.bc.ca/>

⁸⁵ RESULTS server storage request Briefing Note July 21, 2009; MFR 2008. Understanding key applications: The “big picture” of application inter-connections.

⁸⁶ The systems use the Reserve Type codes ‘W’, ‘R’, or ‘O’. Currently the only valid Reserve Type codes are ‘G’, ‘D’ and ‘N’.

cutting permit applications. The VRIMS uses the obsolete Reserve Type code 'W' to identify areas in a RESULTS update of the forest cover inventory where no harvesting has occurred.

This problem is known to the forest ministry and has been an issue since April 2008.⁸⁷ For submissions made prior to 2008, there are still issues because only some reserves were properly identified because of the flexibility in the way that reserves were (and continue to be) reported in RESULTS. The Board has been assured that the forest ministry is actively engaged in a process to remedy this situation.

The VRIMS uses updates of the forest cover inventory submitted to RESULTS to update the provincial forest cover map (also known as the Vegetation Resources Inventory – VRI).

This update process has met with limited success. The Board estimates that only half the area harvested from April 2003 to March 2009 has been incorporated into the currently available VRI (released on 2011/07 with harvest updated to 2009/03 [Appendix 2]). The lack of success is, in part, due to failure to update the forest cover inventory after harvesting and submission of reports with non-compliant attributes that are rejected by VRIMS (compliance with submission of crown closure is discussed in some detail in section 3). Other issues include submission of reports with non-compliant maps (spatial files that do not meet VRIMS standards) and an outage in the RESULTS reader associated with VRIMS tool that created a significant backlog of unprocessed submissions.⁸⁸ The Board is aware that a one-time fix is being implemented that may allow the majority of the backlog of RESULTS submissions, including some of the non-compliant ones, to be included in the next version of the VRI. The forest ministry estimates that with the next publication of the provincial forest cover map over 85% of the harvesting reported to RESULTS will be included. This fix is considered a temporary measure.⁸⁹

Once information from RESULTS makes its way into the VRIMS there are additional problems with the way that information is used to update the provincial forest cover map:

- Where updated of the forest cover inventory submitted to RESULTS do not include all the required forest inventory attributes, VRIMS assigns a non-treed BC Land Cover Class where the RESULTS polygon is treed.
 - VRIMS generalizes the forest cover information submitted to RESULTS for new harvesting and at regeneration. The results of the generalizations are unexpected, and arguably inaccurate, in many cases; particularly for large, multipart openings (which are becoming more common in RESULTS). Note that this generalization procedure is not done for free growing submissions.
 - There are many instances where complete openings are coded incorrectly as group reserves. These openings are not transferred into the VRI.
- The ILRR is used to communicate potential legal conflicts to public users such as land agents involved in the oil and gas industry. The ILRR purports to have the capability to use

⁸⁷ RISS 2nd Edition - http://www.for.gov.bc.ca/his/results/RISS_LS.pdf.

⁸⁸ Marc Rousseau, personal communication; 2011/07/21.

⁸⁹ Pat Martin, personal communication; 2011/09/22.

RESULTS information about the location of outstanding silvicultural obligations to (i.e., a check box for a layer titled 'silvicultural obligation' is present in the ILRR map window).

This capability does not actually exist. The developers of the ILRR intend to activate the capability in the near future.⁹⁰

3.3 Other Reporting Issues

RESULTS is used to generate information for public annual reporting⁹¹ and a number of public and internal (forest ministry) performance measures.⁹² There were issues with two of these reports:

- The CRS produces a “Key Performance Indicator Report” on “% Permanent Access Structures” that purports to calculate “the total area removed from the productive landbase for permanent access structures (PAS).”⁹³ This report has two important problems.
 - The denominator⁹⁴ used includes non-tenured opening where no harvesting has occurred (e.g., openings where fertilizer has been spread from a helicopter). This inflates the denominator.⁹⁵
 - The numerator⁹⁶ used is the sum of areas identified as temporary access structures in the RISS and it does not include any of the area identified as permanent access structures. This problem seems worse than it actually is because most submitters use the code for temporary access structures to identify their roads that will not be rehabilitated. Nevertheless, this issue, along with the lack of reporting of some roads at all (as discussed in section 2.3) results in poor confidence in our understanding of the impact of roads on the land base.
- The forest ministry’s annual report contains a table showing area harvested by silvicultural system (Table 7.3⁹⁷). That table has significantly under-reported the actual area harvested since 2002 because of late reporting to RESULTS. The worst year was likely 2006/2007, when Table 7.3 reported only 60% of the total harvest on Crown land of 247 600 hectares. Since 2003/04, only 72% of the actual harvest has been reported in Table 7.3 (Appendix 2). This late reporting has had negative implications for the forest ministry’s 2010 state of the forest report and for the forest ministry’s performance indicator of the ratio of area reforested to area harvested or lost to fire and pest.

⁹⁰ Ray Bonner, personal communication 2011-04-19.

⁹¹ e.g., <http://www.for.gov.bc.ca/hfp/silviculture/statistics/2009-10.htm>

⁹² e.g., http://www.for.gov.bc.ca/hfd/pubs/docs/mr/annual/ar_2009-10/for.pdf

⁹³ <http://www.for.gov.bc.ca/his/RESULTS/reports.htm#top>

⁹⁴ The number below the line in a common fraction; a divisor.

⁹⁵ The RISS-gf procedure for aerial application was changed from the original direction given. Prior instruction was to have Opening Gross Area as defaulted to 0.1 ha to not have impact on this type of reporting. RISS-gf no longer provides this direction.

⁹⁶ The number above the line in a common fraction to indicate the number of parts of the whole.

⁹⁷ Part of the Supplementary Financial and Statistical Information until 2006/07

(e.g., http://www.for.gov.bc.ca/hfd/pubs/docs/mr/annual/ar_2006-07/tables) and now published as part of the Annual Reports of Silviculture Investments and Accomplishments -

<http://www.for.gov.bc.ca/hfp/silviculture/statistics/statistics.htm>.

3.4 Information in RESULTS That May Be of Little or No Use

Several of the interviewees, and other people contacted during this investigation, indicated that some information submitted to RESULTS seems to get little or no use.

There is some evidence for this contention in that 5 of the 44 CRS reports represent 75% of all reports requested (excluding the opening details report).⁹⁸ There were 19 reports that, in total, represented less than 5% of all the reports requested. While this analysis cannot be used alone to indicate the utility of any given part of the information,⁹⁹ it is indicative of a problem with the system. Although the CRS reports were initially designed with user input, those uses and priorities have changed with time. Unfortunately, funding has not been available to make more or alternate reports.

There is further evidence for this contention in the number of codes available to describe some attributes and the limited usage of some of those codes. For example there have been 426 combinations of SILV_BASE_CODE, SILV_TECHNIQUE_CODE, SILV_METHOD_CODE to describe activities. Fifty of those combinations have only been used once. Of the 14 Reserve Objective Codes, 8 represented less than 1% of the area reserved during the 2009/10 reporting period – 1 code (MSM) has never been used.

Another concern is that some of the information submitted in the updates of the forest cover inventory seems to serve no purpose. This is particularly true of the information submitted when regeneration is due or met. Clearly, the submission of a report indicating that an area is satisfactorily re-stocked has had, and will continue to have, utility for the forest ministry for compliance assessments, policy development and reporting on such things as changes in land status and length of time to regenerate the forest. Information submitted at regeneration about the site index, species composition and number of stems per hectare have recently started to be used for timber supply analysis purposes. However, for this purpose, it is unclear whether the density estimate should be the total stems per hectare (an arguably meaningless number at the time of planting) or the well spaced stems per hectare (an arguably incorrect estimate for the purposes of initiating a TIPS^Y¹⁰⁰ run). It also is clear that some of the other information submitted at regeneration is of marginal or no utility. For example:

- there is no indication that the trees heights submitted at regeneration were used for any purpose (including updates of the VRI).
- RESULTS business leads have indicated that the crown closure estimate, submitted at regeneration, is a “more or less meaningless number.”¹⁰¹ While this may be true, an estimate of crown closure is required for the information to be incorporated into the provincial forest cover map.

⁹⁸ Regeneration/Free Growing Report; Activity Report; Milestone Report; Recipient Silviculture Accomplishment into RESULTS Report; and FDP & FSP Standards Report.

⁹⁹ For example the third least popular report is the “Achievement of Ministry Free Growing Obligations Under Forest Stand Management Fund.” This report is likely important to those managing the fund.

¹⁰⁰ Software used in BC for developing growth and yield estimates used in timber supply analysis: Table Interpolation Program for Stand Yields <http://www.for.gov.bc.ca/hre/gymodels/tipsy/index.htm>.

¹⁰¹ P. Rehsler, personal communication, 2011/07/21.

- The estimate of Total Well Spaced Stems per hectare is of limited value for any purpose given that the information is not submitted for half of the entire net area to be re-forested; and, for an additional 40% of the area the estimate is identical to the estimate of Well Spaced Stems (since 2003/04).

3.5 Issues Making RESULTS information Difficult to Use

The most obvious of issue that make the RESULTS database difficult to use is the complexity of the system that is required to accommodate the:

- duration of opening management (12 to 20 years);
- volume of records submitted; and
- changes in over time in:
 - technology and data entry methods;
 - the business of forestry; and
 - four legislative frameworks (pre-1987, pre-Code, Code, FRPA).

RESULTS business leads have provided documentation and limited training opportunities, but it remains a daunting task for a novice user to even begin to understand the complexities in the system.

There is also a significant problem using the data, particularly for historical trend analysis, because submission content and standards have changed over time and those changes are not transparently documented. As uses of the system expand, issues with changes over time will become more common. These issues are, to some extent, common to all complex and long standing database systems. However, a consistent comment provided by the users of the RESULTS database was the need for temporal metadata; a clear and complete timeline of changes in standards and data requirements and data reliability (e.g., the availability and requirement for spatial information, when changes were made in the requirements to report on forest reserves, etc.).

Finally, public users of the RESULTS data are told (in the metadata found in the GeoBC Geographic Data Discovery Service) that:

Comprehensive data attribute standards exist for the RESULTS attribute data. The associated quality assurance checks are comprehensive. The data custodian quality assures all records following their update and performs internal and external data audits. The practices, procedures and accuracy of regional update centres and contractors are also periodically audited.¹⁰²

¹⁰² <https://apps.gov.bc.ca/pub/geometadata/metadataDetail.do?recordUID=52578&recordSet=ISO19115>

The level, and types, of non-compliance found during this investigation show that this is simply not the case. In fact, a fundamental problem is that there are insufficient data entry validation rules in RESULTS to ensure complete and consistent data entry and there is currently little or no human quality control on the submissions. The RISS is more candid in its explanation:

RESULTS has validation rules that coarsely screen reports according to whether format and/or general content requirements are met; nevertheless, RESULTS is not programmed to fully reflect all legal nuances. For this reason, some reports may 'pass' validation rules but otherwise not meet legislated requirements. Licensed forest professionals who collect and prepare data for the reports are responsible to ensure that legal requirements are satisfied. Reports are subject to MFR audits. Reports that pass the RESULTS validation rules, but that otherwise do not meet legislated requirements, may be subject to compliance or enforcement action if detected during an audit.¹⁰³

This is not well understood by agreement holders and RESULTS business leads that have indicated that, "in absence of edit rules, if incomplete or erroneous data makes its way to the database, the Ministry is faced with the challenge that the [agreement holder] feels that their submission was accepted, hence they are in compliance."¹⁰⁴ This challenge is made more difficult because agreement holders own the data that is submitted electronically and the forest ministry cannot change this information even if it is found to be in error.¹⁰⁵ It is the responsibility of the forest ministry to correct any historical data (submitted through paper forms) that is in error.¹⁰⁶ The forest ministry currently has very limited resources to undertake these corrections—although it has spent over one million dollars in data cleanup in the past. The forest ministry has recently engaged the services of a consultant who will, "develop a standardized quality assurance protocol to verify that the data submitted or entered into the RESULTS database complies with the appropriate RESULTS Information Submission guide and...apply the protocol to a representative sample of RESULTS openings submitted between June 1, 2011, to March 31, 2012."¹⁰⁷

¹⁰³ http://www.for.gov.bc.ca/his/RESULTS/RISS_ls_3b_ed_Jan1.pdf

¹⁰⁴ C. McLeod, personal communication, July 28, 2010.

¹⁰⁵ <http://www.for.gov.bc.ca/ftp/his/external!/publish/RESULTS/Communiques/RESULTS-OIF-QA-Sessions-February-18-23.pdf>

¹⁰⁶ <http://www.for.gov.bc.ca/ftp/his/external!/publish/RESULTS/Communiques/RESULTS-OIF-QA-Sessions-February-18-23.pdf>

¹⁰⁷ M. Leroy, personal communication, September 16, 2011.

Appendix 1: Section 86 of the Forest Planning and Practices Regulation

Annual reports

86 (1) In this section and in section 86.1:

"**location**" means the approximate location;

"**reporting period**", in respect of the year in which the report referred to in subsections (2) to (5) is to be furnished, means the 12 month period beginning on April 1 of the immediately preceding calendar year.

(2) Repealed. [B.C. Reg. 104/2008, s. 1 (a) (ii).]

(3) Before June 1 of each year, an agreement holder must report to the district manager

(a) for each area in which timber harvesting was completed during the reporting period and to which section 29 of the Act applies or to which section 44 (4) of this regulation applies, the following information:

- (i) the area in which the harvesting occurred;
- (ii) the amount of area that was harvested;
- (iii) an update of the forest cover inventory;
- (iv) the location and approximate size of all associated wildlife tree retention areas,

(b) the location of any resource feature or wildlife habitat feature in or contiguous to a cutblock or road of which feature the holder is aware during the reporting period if

- (i) the holder has not, in a previous reporting period, reported the resource feature or wildlife habitat feature, and
- (ii) the order establishing the resource feature or wildlife habitat feature requires the location of the resource feature or wildlife habitat feature to be reported under this section,

(c) the pertinent information about seeds used during the reporting period to grow seedlings planted by the holder in cutblocks on the land to which the agreement pertains,

(d) an update of the forest cover inventory for each area in which during the reporting period

- (i) the requirements for the regeneration date have been met,
- (ii) the requirements for the regeneration date have not been met but the regeneration date has passed,

(iii) a free growing stand has been declared under section 97 or 97.1 of this regulation or the requirements of section 46.11 (2) (b) of this regulation have been met, or

(iv) a free growing stand has not been established, but the free growing date has passed, and

(e) a summary of any silviculture treatments that were carried out during the reporting period.

(4) Repealed. [B.C. Reg. 104/2008, s. 1 (a) (ii).]

(5) Before June 1 of each year, a timber sales manager must report to the district manager

(a) for areas harvested during the reporting period under

(i) a timber sale licence entered into under the *Forest Act* between the timber sales manager and its holder, or

(ii) a forestry licence to cut entered into under the *Forest Act* between the timber sales manager and its holder,

the information referred to in subsection (3) (a) and (b) of this section, and

(b) for areas in which the timber sales manager establishes free growing stands as required under section 29 (2) of the Act, the information referred to in subsection (3) (c), (d) and (e) of this section.

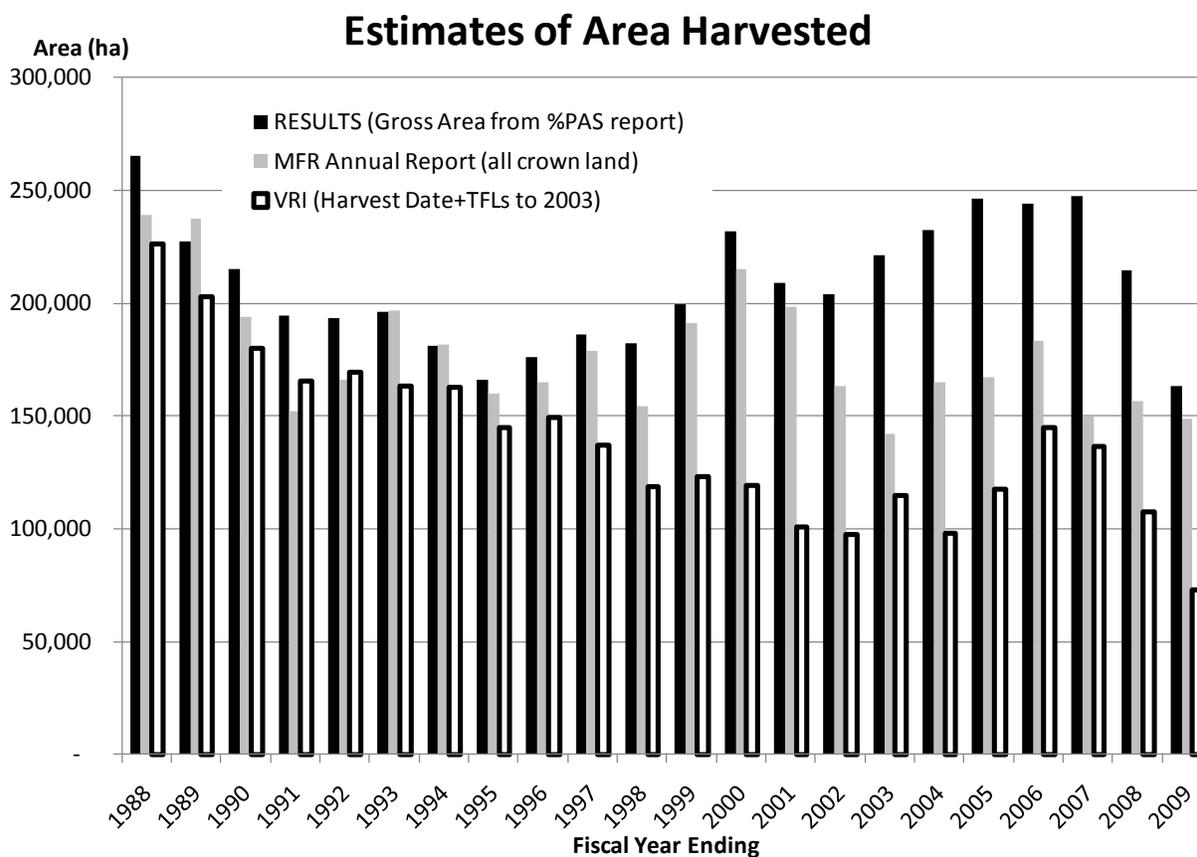
(6) Information required under this section must be reported in a form and manner that is satisfactory to the minister.

[en. B.C. Reg. 580/2004, s. 55; am. B.C. Regs. 62/2005, s. 11; 102/2005, s. 7; 320/2006, s. 3; 152/2007, s. 4; 104/2008, s. 1 (a).]

Appendix 2: Estimates of Area Harvested

Time Period (fiscal year ending)	Source of Area (ha)			% of RESULTS	
	RESULTS (Gross Area)	MFR Annual Report	VRI	MFR Annual Report	VRI
1988 - 2003	3,250,026	2,935,603	2,375,277	90%	73%
2004 - 2009	1,348,789	971,249	677,917	72%	50%
all years	4,598,815	3,906,852	3,053,194	85%	66%

Source	%PAS report -	Total for all crown	Polygon Area by
Notes	Summary Report for	land from various	Harvest Date
	KOI Reporting @	tables (C-4, C-2,	(+TFL harvest
	2010/10/05	7.3)	after 2003)
Revisions	include only tenured	include harvesting	based on VRI
	openings for 2004-	on private land	version released
	2009 (v2)	TFLs for 2004-09	2011/07 (v3)
		(v2)	



Appendix 3: Suggestions for Improvement to the RISS and RESULTS

1. Make it possible to comply with the FPPR when submitting an annual report.
 - a. Specify the form and manner of reporting of wildlife habitat features and resource features.
 - b. Modify the RISS and RESULTS to include an indicator that identifies which, if any, of the following sections a forest cover submission is meant to apply to Sections:
 - i. 86(3)(a)(iii) at harvest
 - ii. 86(3)(d)(i) or (ii) at regeneration due or met
 - iii. 86(3)(d)(iii) or (iv) at free growing due, declared or met.

At a minimum implement this item for the free growing submission, that is, enable the system to allow the reference required under section 97(7) of the FPPR.
2. Modify RESULTS business rules (checks on electronic submissions) and the RISS, as needed, to ensure that submissions are compliant with section 86(6). Specifically regarding:
 - a. Section 86(3)(a) – harvest reporting:
 - i. Make disturbance end date a mandatory field
 - ii. Ensure that the opening definitions include all the items, and only the items, in the ‘Opening Gross Area’ field specification; RISS section 5.4.2
 - b. Section 86(3)(a)(iv) – reporting wildlife tree retention areas:
 - i. For any forest cover polygon with a Stocking Status/Stocking Type of ‘MAT/NAT’ or ‘RES/NAT’, that has no associated standards unit, make a Reserve Type of ‘G’ (group) mandatory.
 - ii. Where a Reserve Type is ‘G’ or ‘D’ (dispersed) make a valid Reserve Objective mandatory.
 - iii. Where a Reserve Type is ‘D’ make the submission of information about the residual forest cover that is reserved mandatory.
 - iv. Clearly specify in the RISS which Reserve Objective codes can and cannot be used to contribute to wildlife tree retention goals specified in an FSP.
 - c. Sections 86(3)(a)(iii) and 86(3)(d) – updates of forest cover
 - i. Ensure that the form and manner of RESULTS submissions of forest cover are compliant with requirements of VRIMS.
 - ii. Ensure that submissions after the initial harvest submission only appropriately overwrite information in forest cover polygons with no standards units – notably Reserve Type and Reserve Objective.
3. Institute changes that would simplify the process of assessing compliance with legal reporting requirements:

- a. Implement an indicator in RESULTS indicating what the appropriate reporting requirement for an opening are based on whether it is managed under the *Forest Practices Code of British Columbia Act* or FRPA and, if so, whether the opening has reporting requirements under the FPPR - Section 86, the WLPPR - Section 76 or the FRPA, Part 11 – Transitional .
 - b. Implement a Block Status Code, in the Forest Tenures and Administration System, which indicates that a block was not harvested even though the Tenure Status Code has been changed to 'HC' (complete).
 - c. Automatically change the Regeneration Overdue indicator to 'N' (No) if there is a Free Grow Declared Date.
 - d. For those openings where forest cover polygons have been submitted but no opening boundary has been submitted, create an open boundary.
4. For reporting of roads in cutblocks:
 - a. Make a clear distinction in section 5.7.3.6.1. Roads of the RISS between areas with a Stocking Status/Type of 'NP/UNN' that are expected to be permanent access structures and those that are not.
 - b. Modify the %PAS reports in the CRS to accurately reflect permanent access structures.
 - c. For the Corporate Reporting System – in the near term, until previous recommendations have been implemented, ensure that the Permanent Access Structure reports only use tenured openings in the gross area and that they use both Stocking Status/Type combinations of 'NP/UNN' and 'NP/RD' as the indicator of permanent access structures.
 5. Fix the linkages between RESULTS and other government information systems that use obsolete reserves codes:
 - a. retire the Corporate Reporting System's report titled "Wildlife Tree Retention" and the spatial view in the Land and Resource Data Warehouse titled "RESULTS - Forest Cover Reserve,"
 - b. sever the existing linkages with other government information systems that use obsolete reserve type coding (as discussed in section 3.2.2), and
 - c. replace the CRS report, the spatial view and the linkages with a "best estimate" of forest reserves.
 6. Undertake the following general tasks:
 - a. Review the utility of the information required in the update of the forest cover inventory to support the Regeneration Met Declaration.
 - b. Review all code tables and retire/reconcile obsolete, contradictory and unused codes and provide unambiguous definitions for the remaining codes.
 - c. Review the RESULTS web site, in particular the Technical Specifications, Business and Policy Documentation and Training sections to ensure that they are up-to-date and contain valid, consistent and relevant information.

- d. Review all the Corporate Reporting System reports and ensure that they are adequately reflecting what they are meant to report
- e. Prepare a clear and complete timeline of changes in standards and data requirements and data reliability relevant to the information housed in RESULTS (e.g., the availability and requirement for spatial information, when changes were made in the requirements to report on forest reserves, etc.).



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