



Special Report on The Forest and Range Evaluation Program

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BOARD COMMENTARY

In an increasingly complex background of forest and range resource management decisions, the importance of independent, science-based evaluation information becomes more critical.

In 2014, the Board published its report, *A Decade in Review: Observations on FRPA*. At that time, the Board identified a number of concerns about government's approach to monitoring the effectiveness of the *Forest and Range Practices Act* (FRPA). Following publication of that report, the Board carried out a more detailed evaluation of government's Forest and Range Evaluation Program (FREP), looking at progress in implementing the program and achieving its intended outcomes. This more in-depth evaluation has served to affirm and reinforce the Board's earlier concerns. We found that, while the program is doing some good evaluation work and is providing some information to resource professionals and decision-makers, it has not yet achieved all of its intended outcomes.

Government created FREP to fill the effectiveness monitoring role within the FRPA framework, however, FREP is not currently monitoring whether forest and range practices are effectively conserving many FRPA values (e.g., soils, wildlife, plant communities, etc.). FREP needs to include effectiveness monitoring of practice requirements on all FRPA values, at all relevant scales, to inform decision makers and maintain public confidence in FRPA. Doing so will require substantially greater resources, more specialist involvement, and collaborative partnerships with parties such as forest licensees and First Nations.

Government has relied on professionals to voluntarily make changes to their practices based on FREP's results, even when this demands reconciling broad social and economic considerations with environmental considerations. As stated many times previously, the Board believes that this is the role of government. In an increasingly complex background of forest and range resource management decisions, the importance of independent, science-based evaluation information becomes more critical. We believe that FREP is best positioned to provide this information to decision-makers, and government has a responsibility to take the lead on deciding which improvements should be implemented through professional reliance and which require policy or legislative change.

In this report, the Board makes five recommendations to government aimed at ensuring the FREP program fulfills its intended role as a foundational element of FRPA. Fundamental to those recommendations is ensuring the program has the resources it needs.

EXECUTIVE SUMMARY

Effectiveness monitoring is necessary to evaluate how well forest and range practices are conserving the 11 values identified in FRPA, and to identify opportunities for continuous improvement.

The **Forest and Range Evaluation Program (FREP)** was established in 2003 to implement the effectiveness monitoring foundation of the *Forest and Range Practices Act* (FRPA) regulatory framework.

The Forest Practices Board (the Board) evaluated FREP's progress in implementing its effectiveness monitoring role in the FRPA framework, using FREP's intended program outcomes as the evaluation criteria. This is a report on the Board's findings.

The evaluation was largely based on interviews with the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) staff (FREP staff, executive staff, district staff and value specialists), forest licensees and the professionals they employ, as well as a review of reports and documents produced by FREP. A panel of expert advisors also provided advice to Board staff in carrying out the evaluation.

Since 2006, FREP has conducted almost 9000 monitoring evaluations and about 20 special projects. This work has led to dozens of reports and extension notes on specific forest values, and summaries and trend reports at the district, timber supply area and provincial levels. These reports include many suggestions and recommendations to improve practices.

The Board found that FREP has made some progress in achieving its intended outcomes, but there are four key issues limiting FREP's progress. Some of these issues, or components of the issues, have developed over time due to factors that are outside of FREP's control. The four issues are:

1. Communicating how effectiveness of practices is being measured.
2. Updating monitoring priorities and responding to growing demands for information.
3. Engaging licensees and involving specialists in the monitoring program.
4. Ensuring FREP's results lead to continuous improvement of practices under FRPA.

These four issues need to be addressed by FLNRO in order for FREP to improve its progress in implementing the monitoring that is a critical foundation to the results-based FRPA framework.

The Board provides five specific recommendations that, if implemented, will assist FLNRO in achieving FREP's intended program outcomes and ultimately, should result in continuous improvement of forest practices under FRPA.

INTRODUCTION

Effectiveness monitoring is a foundation of BC's results-based model of forest and range practices regulation. FLNRO, in partnership with the Ministry of Environment and Climate Change, established FREP in 2003.

This report is the first in-depth evaluation of how well FREP is carrying out its effectiveness monitoring role under the FRPA framework. FLNRO executive and FREP staff endorsed the concept of a program evaluation and provided Board staff with access to documents and other information about the program.

Purpose

The purpose of the Board's evaluation is to:

1. summarize FREP's progress towards achievement of its intended outcomes;¹
2. identify issues limiting FREP's progress; and
3. identify opportunities for improvement to the monitoring program.

Approach

The Board's evaluation of FREP included the period between the program's inception in 2003 up to April 2017 (FREP first started monitoring values on-the-ground in 2005). The evaluation looked at implementation of the FREP program, using the intended outcomes as a guide.

The evaluation is primarily based on the views of the people interviewed, but also a review of reports and documents produced by FREP. Interviews provided necessary views, opinions and experiences related to FREP's progress in implementing its effectiveness monitoring role and, ultimately, whether monitoring results are influencing continuous improvement of practices on the ground. The Board did not examine FREP's individual value indicators or the monitoring protocols.

FREP's Program Outcomes

FREP's intended outcomes are:

1. Forest and range practices are achieving FRPA's objectives.
2. FREP's monitoring results influence continuous improvement of practices on-the-ground.
3. Decision-makers and licensees have the necessary information on land base condition and trends for FRPA's 11 values.
4. FREP's monitoring results influence forest and range policy and legislation.
5. Monitoring staff gain field experience and knowledge about the land base.
6. FREP is recognized as a provincial "go-to" program for data on land base condition and trends.

¹ Outcomes describe what program success would look like. They link to program objectives, but are more specific on what would change or occur as a result of FREP if the program were successful. The outcomes were developed by FREP staff together with Board staff as part of the evaluation.

Board staff conducted interviews by phone or in-person with 105 individuals located across BC.

From late 2014 through 2015, Board staff conducted interviews by phone or in-person with 105 individuals located across BC, including individuals involved in program development and operations (FREP staff, district monitoring staff and others), primary intended users of the monitoring information (forest licensees and their professionals), First Nations and other stakeholders. Since FREP does not generally monitor range practices (see text box on page 5), the Board's evaluation of FREP focused on forest practices and the opinions of forest licensees and their professionals.

The interviews followed a structured format using a series of questions that were customized for various functional groups being interviewed (e.g., district management staff, district monitoring staff and licensee professionals). To the greatest extent possible, Board staff selected interviewees with the intent of representing the major geographic regions of the province, using the eight FLNRO regions as a guide. Although most interviews took place in 2015, Board staff continued to discuss the program evaluation with FLNRO staff and licensee professionals up to the end of August 2017.

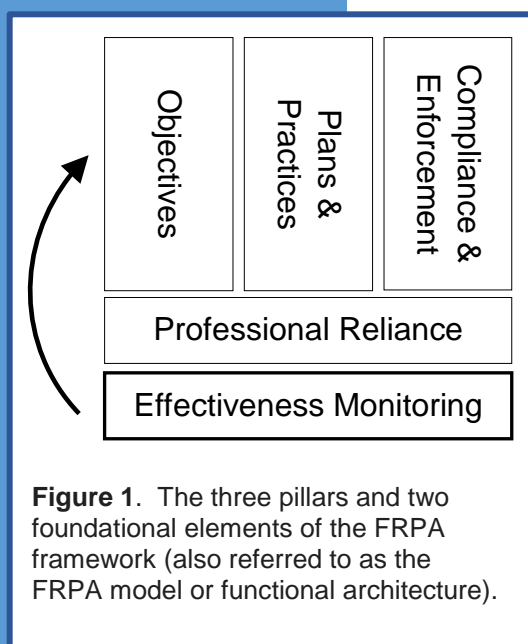
Board staff also convened a seven-person advisory panel. Panel members consisted of individuals known for their expertise in monitoring and adaptive management programs in BC. The panel met twice with Board staff to discuss the approach that was used to conduct the evaluation, the preliminary findings of the evaluation, and elements of effective forest and range monitoring.

BACKGROUND

The FRPA Framework

FRPA is results-based legislation in which government sets the objectives for forest and range management and, with certain restrictions, provides licensees and their professionals with the flexibility to carry out practices in a way that contributes towards achievement of the objectives.

The legislation consists of objectives, plan and practice requirements, and compliance and enforcement (referred to as pillars). Although not explicit in the legislation, two foundational elements support effective implementation of the three pillars—professional reliance and effectiveness monitoring. The pillars and foundational elements are collectively referred to as the 'FRPA framework' (Figure 1).



FRPA includes regulations that set objectives for 11 values. The objectives reflect government's expected results for those values where forest and range practices occur. For most values, the regulations include additional practice requirements (i.e., rules that must be followed on the ground).ⁱ

Roles in the FRPA Framework

In the FRPA framework, it is the role of forest and range licensees and their professionals to plan and carry out practices consistent with the objectives. Government (through FLNRO) approves licensees' plans (e.g., forest stewardship plan) and implements its compliance and enforcement regime to ensure that requirements are met. It is the role of government to monitor the effectiveness of practices in achieving FRPA's objectives.

Effectiveness monitoring is particularly important for results-based legislation. This is because the legislation sets the desired results (through objectives) and provides licensees and their professionals freedom to manage practices to contribute toward achievement of the objectives. Effectiveness monitoring is the primary mechanism to determine if practices are achieving the objectives and, if not, where improvements need to be made. The ongoing process of monitoring effectiveness and making changes to practices is known as continuous improvement.

FREP's Mandate and Program Objectives

Program Charter

FREP was established by charterⁱⁱ in 2003, just prior to the transition from the Forest Practices Code to FRPA, with the chief forester being accountable for the program. The charter stated FREP's primary objective was to, "determine if forest and range policies and practices in BC are achieving government's objectives for FRPA resource values." Three secondary objectives were listed in support of achieving the primary objective:

1. evaluating the status and trends of resource and ecosystem values and determining causal factors.

What are the 11 FRPA values?

- Soils
- Visual quality
- Timber
- Forage and associated plant communities
- Water
- Fish
- Wildlife
- Biodiversity
- Recreation resources
- Resource features
- Cultural heritage resources



What is continuous improvement?

In the context of FRPA's results-based framework, the continuous improvement cycle involves licensees planning and carrying out practices consistent with FRPA's objectives (Plan and Do); FREP carries out effectiveness evaluations and assesses achievement of FRPA's objectives (Check); licensees improve practices and FLNRO improves policy and legislation (Act).

2. determining whether resource values are being managed in a sustainable manner through proven or alternative forest practices; and
3. recommending options for changes to forest and range policies, practices and legislation, where required.

In 2011, accountability for FREP was moved from the chief forester in the Office of Chief Forester Division to the assistant deputy minister in the Resource Stewardship Division of FLNRO. FREP's program purpose and objectives in the charter were replaced by program objectives in subsequent strategic plans.

Current Mission Statement and Program Objectives

In 2007, FREP published its first strategic plan, which replaced the 2003 charter.ⁱⁱⁱ Updated strategic plans were published in 2011^{iv} and 2016^{v,2}. The strategic plans were approved by FLNRO executive and include variations on FREP's mission statement, program objectives, monitoring priorities and, for the 2011 and 2016 strategic plans, the number of sites to be monitored annually per value, per district.

FREP's mission is to "collect and communicate the best available natural resource monitoring information to inform decision making, improve

resource management outcomes and provide evidence of government's commitment to environmental sustainability." The current objectives of the monitoring program are to:

- assess the impacts of forest and range development on the 11 FRPA resource values to determine if on-the-ground results are sustainable;
- identify resource value status, trends and causal factors, and
- identify opportunities for continued improvement of practices, policies and legislation.

Information on how FREP conducts its effectiveness evaluations can be found in *Appendix 1*.

Range Monitoring and FREP

FREP does not monitor the FRPA 'forage and associated plant communities' value (see text box on page 4 for the FRPA's 11 values). This value, as well as other resources like riparian and upland areas subject to grazing by livestock, are monitored by Range Branch staff or district range staff using internally developed protocols. While FREP publishes many of the reports on behalf of Range Branch, these data are not integrated into FREP.

Some data about range use are collected by district monitoring staff when carrying out routine monitoring for the fish (riparian) and water quality values, but only when livestock use is being attributed as a causal factor affecting site conditions. FREP reports the information in its publications, but does not provide the range-related data to range agreement holders or with range staff (nor has FREP received any requests for the data).

² The 2011-2013 strategic plan was extended for an additional two years until the 2016-2018 strategic plan was approved.

FREP's OUTCOMES: CURRENT STATUS AND ISSUES

The following section provides a summary of the status of FREP's progress towards its intended outcomes and the issues limiting progress. The focus is on the issues limiting FREP's progress because these are the matters that need to be addressed in order for FREP to improve on its monitoring role in the FRPA framework.

Current Status

Outcome 1: Forest and range practices are achieving FRPA's objectives

FREP is not directly assessing whether forest and range practices are achieving government's objectives in FRPA. Instead, for each site that FREP monitors in a district or timber supply area, FREP determines whether practices result in conditions that are 'sustainable'. If the condition of a value at a site is deemed sustainable (low or very low impact from practices), FREP assumes that the value is being conserved as intended in FRPA.

Outcome 2: FREP's monitoring results influence continuous improvement of practices on the ground

The Board found that FREP's monitoring results are having some influence on practices on the ground (e.g., improvements to road grading near streams, better protection of culturally modified trees and historic trails, and increased levels of coarse woody debris retained during forest harvesting). However, most of the licensees we spoke to said they have not changed their practices in response to FREP's monitoring results and FREP does not track the implementation of its recommendations. The full extent to which practices are improving because of FREP is not known.

Outcome 3: Decision-makers and licensees have the necessary information on land base condition and trends for FRPA's 11 values

FREP has amassed a substantial dataset of monitoring information with almost 9000 routine evaluations and about 20 special projects/evaluations carried out to date. However, significant gaps remain between FREP data and the type and level of information that decision-makers and licensees

FREP's monitoring results are having some influence on forest policy & ministry guidance.

require about the land base. These gaps limit the development, refinement and assessment of results and strategies in forest stewardship plans and the ability to address land use issues with First Nations and other stakeholders.

Outcome 4: FREP's monitoring results influence forest policy and legislation

The Board found that FREP's monitoring results are having some influence on forest policy and ministry guidance (e.g., chief forester's guidance on coarse woody debris and district manager's expectations letters). To date, information from FREP has not resulted in changes to the FRPA legislation.

Outcome 5: Monitoring staff gain field experience and knowledge about the land base

FREP is providing valuable field experience to the nearly 100 FLNRO staff involved with monitoring. District management recognize that having these staff out in the field is a benefit, as they provide "eyes and ears on the ground."

Outcome 6: FREP is recognized as a provincial "go-to" program for data on land base condition and trends

FREP's monitoring protocols and results are increasingly being used as a cost-effective and scientifically defensible source of information to support new government initiatives, resource development authorizations and public consultation processes. There is broad recognition in the natural resource sector that FREP data are one of the few sources of information available about the condition of the land base.

Issues Limiting FREP's Progress

The Board found that FREP has made some progress towards achievement of its intended outcomes. However, four key issues are limiting FREP's progress towards achieving its outcomes. Some of these issues, or components of the issues, have developed over time due to factors that are outside of FREP's control. The four issues are:

1. Communicating how effectiveness of practices is being measured.
2. Updating monitoring priorities and responding to growing demands for information.
3. Engaging licensees and involving specialists in the monitoring program.
4. Ensuring FREP's results lead to continuous improvement of practices under FRPA.

1. Communicating how effectiveness of practices is being measured

FREP's original mandate (the 2003 charter) stated that FREP was intended to evaluate the condition of FRPA's 11 values and to assess whether practices are achieving FRPA's objectives for those values. However, FREP staff found that FRPA's objective statements were not measureable. Also, most of FRPA's objectives are limited to the extent that they will not unduly affect the supply of timber—an economic factor that is outside of FREP's mandate to monitor.

In 2013, FREP developed a new measure of effectiveness for reporting the condition of values monitored. The approach aligns with FREP's revised program objectives in its 2016-2018 strategic plan (approved by FLNRO executive). For each value that FREP monitors in a district or timber supply area, FREP reports whether on-the-ground results are sustainable. To determine whether practices are sustainable, FREP assigns monitoring results at individual sites to one of four resource development impact rating categories. Sites with a very low and low impact rating are deemed sustainable, a moderate rating is borderline and a high impact rating is unsustainable. If the condition of a value is deemed sustainable, FREP assumes that the value is being conserved as intended in FRPA.

Most FLNRO staff and licensee professionals interviewed thought that FREP's primary role is to assess achievement of FRPA's objectives. The Board found that many intended users of the monitoring information were either unaware or did not understand FREP's use of 'sustainability' as a measure of effectiveness, including the relationship between results that are deemed sustainable and FRPA's objective for a given value.

In recent discussions, some licensees have told the Board they would like to see FREP monitoring more directly tied to FRPA, such as looking at whether the practice requirements in the legislation and results and strategies in forest stewardship plans are leading to results on the ground that meet government's expectations—and to be told whether the expectations have been met. Ministry managers (regional executive directors and district managers) also believe FREP is a fundamental part of the FRPA framework and must assess achievement of government's objectives to inform decision-makers about the effectiveness

Sites with a very low and low impact rating are deemed sustainable, a moderate rating is borderline and a high impact rating is unsustainable.

How FREP defines 'sustainable'

- Managing British Columbia's forest and range resources to meet present needs without compromising the needs of future generations;
- Providing stewardship of forest and grasslands based on an ethic of respect for the land and communities; and,
- Conserving the resource values identified under FRPA and its regulations, namely: biodiversity, cultural heritage, soil, water, fish, forage and associated plant communities, timber, recreation, resource features, visual quality, and wildlife.

Source: FREP 2011 strategic plan

“...intended users of the information, including licensee professionals and decision makers, need to be well informed about how the information should be considered...”

of licensee practices and to inform continuous improvement. They also believe that FREP data are important to inform certification, professional reliance and cumulative effects assessment.

In the Board’s view, assessing whether on-the-ground results are sustainable for the 11 FRPA values is a legitimate measure of effectiveness. However, intended users of the information, including licensee professionals and decision-makers, need to be well informed about how the information should be considered in relation to continuous improvement of practices and achievement of FRPA’s objectives. There are a number of issues that need to be clarified:

- The relationship between very low and low resource development impact ratings, which are both deemed by FREP to be sustainable, and whether the values are being ‘conserved’ at the stand or landscape-level is not clear.³
- For most values that it monitors, FREP assesses the ecological condition and, in effect, reports on whether on-the-ground results at the stand-level are ecologically sustainable. This measure of effectiveness is narrower in scope than FRPA’s objectives, which may apply at various scales (stand and landscape-level) and can include ecological, economic and social considerations.
- The current condition of a value is not always the result of forest practices on the ground but, up until the past couple of years, FREP’s process didn’t necessarily take that into account. This issue is a concern for licensee professionals and needs to be addressed.
- FREP needs to explain to licensees and decision-makers how they could consider the monitoring results when preparing or evaluating results or strategies in forest stewardship plans for their consistency with FRPA’s objectives, or when seeking general information about the condition of the land base at various scales.

³ For example, in relation to monitoring for water quality, it is unclear how it is determined that a low impact rating, which equates between 0.2 - 1 m³ per year of potential sediment deposited into a stream at a road crossing, conserves water quality at or downstream of a site. In the same way, but at the landscape-level, it is unclear how the cumulative effect of multiple low impact ratings at road crossings throughout a watershed conserves water quality.

2. Updating monitoring priorities and responding to growing demands for information

Monitoring priorities

Monitoring programs normally use evaluation questions to articulate information that is required from monitoring. When a question is asked, the monitoring data collected and the way the results are reported can be structured to provide an answer to the question. Some questions may be answered in the short-term (i.e., several years), while other questions may be in place on an on-going basis. The monitoring program should include a process to determine when enough information has been collected to answer the question.

FREP's monitoring evaluation questions were developed more than 10 years ago and FREP intended that the questions would be reviewed and revised every 12 to 18 months to respond to emerging issues in forest management, but that has not happened. The Board also found that FREP does not use its monitoring data to answer the existing evaluation questions, nor does the monitoring program have a process to determine when enough data have been collected to answer the questions. As a result, FREP does not know whether continued monitoring using the same evaluation questions is an effective use of its limited resources.

FREP staff said the questions are still relevant to help identify trends, but a lack of resources has limited the number of samples FREP is able to collect, and it has taken a number of years to obtain sufficient data to begin to identify trends. FREP also planned to address new and emerging issues using one-off intensive evaluations, but has not had the resources to do this.

Most licensee professionals and some district monitoring staff told the Board that FREP's evaluation questions are too general and should be directed at determining whether practice requirements in FRPA, including commitments made in forest stewardship plans, are effective at conserving FRPA's values or addressing society's expectations (in the case of visual quality). They cited the evaluation questions for three FRPA values to make the point (see Table 1).

FREP's monitoring evaluation questions were developed more than 10 years ago.

Table 1. Three examples of new evaluation questions suggested by licensees and district monitoring staff.

FRPA Value	FREP's Current Evaluation Question	Question Suggested by Licensees & District Monitoring Staff
Visual quality	How are we managing views in scenic areas and achieving visual quality objectives?	Are the visual quality objectives in FRPA still relevant and appropriate given that they were established around 20 years ago?
Fish (riparian)	Are riparian forestry and range practices effective in maintaining the structural integrity and functions of stream ecosystems and other aquatic resource features over both the short term and long term?	Are the default reserve zone and management zone widths in FRPA effective at conserving the fish (riparian) value at the landscape-level. ⁴
Biodiversity (stand-level)	Is stand-level retention providing the range of habitat and the structural attributes understood to be necessary for maintaining species dependent on wildlife trees and coarse woody debris?	Is the required amount of retention (i.e., a minimum of 3.5% of gross cutblock area) greater or less than what is necessary to conserve species dependent on stand-level attributes in harvested landscapes?

FREP staff said that they did not change the original evaluation questions because they continue to have relevance. However, staff acknowledge that they have not developed any new evaluation questions due to limited capacity. FREP staff said that developing new evaluation questions could require the development of new indicators, monitoring protocols and associated training for district monitoring staff. The large amount of data collected to date for individual values could enable many questions to be asked and answered. FREP staff said they have recently hired new staff that will help with analyzing the monitoring data that have already been collected.

Capacity to respond to growing demands for information

FREP has limited capacity to implement effectiveness monitoring for soils, wildlife and wildlife habitat at both the stand- and landscape-level, biodiversity at the landscape-level or practices within designated areas such as community watersheds, fisheries sensitive watersheds, wildlife habitat areas or ungulate winter ranges. The Range Branch staff continue to do most range monitoring and they do not provide the data collected to FREP, nor are the data designed to be incorporated into FREP's monitoring process. These issues constrain the information available to decision makers, licensees and their professionals.

⁴ Note – the default riparian reserve zone and management zone widths have been in place for over 20 years (in place under the Forest Practices Code since 1995), but FREP has not yet determined whether those widths are effective at conserving the value.

Originally, FREP intended to assess the effectiveness of results and strategies in forest stewardship plans. This concept is described in FREP's 2003 charter and was often cited by monitoring staff in districts as a perceived program objective. However, FREP staff said that the number of approved forest stewardship plans provincially, combined with the variability of results or strategies between forest stewardship plans, is well outside of the scope of FREP's available resources to monitor. FREP told the Board that some work has been done on this question and it found no correlation between forest stewardship plan results and strategies and outcomes on the ground.

District managers said the information gaps in FREP's monitoring, particularly for wildlife and landscape-level biodiversity, are continuing to hamper their ability to make effective decisions about resource development on the land base. In recent discussions, some district managers told the Board their role has expanded dramatically in the last 10 years, in terms of the values they need to consider, but FREP monitoring has not kept pace with that. They said that FREP has historically been focused on monitoring values at the stand-level while the district managers are looking for the broad picture to deal with objectives in land use plans and First Nations' interests.

FREP staff acknowledge that information gaps exist in monitoring of some values and that capacity to address those gaps has largely been affected by available resources. FREP staff also said they are working to fill those information gaps and have several monitoring and special projects underway or completed in 2017 including:

- updating and developing a number of monitoring protocols, including stand-level wildlife protocols, a methodology to assess the condition of wildlife habitat areas, and a final draft of the karst monitoring protocol.
- initial drafts of a provincial road assessment (soils) and a steep slope logging project (soils).
- a small streams research project based on licensee best practices.
- publishing the first landscape-level biodiversity assessment results for each region (in the ADM Stewardship Report).

In the Board's opinion, it is important that FREP have the necessary capacity, in terms of budget and resources, to monitor the condition of all 11 FRPA values at appropriate scales and to address monitoring of priority issues within districts. While FREP has made some progress in addressing gaps in monitoring information, the pace of progress is not sufficient to keep up with demands by FLNRO managers for the information. This issue is more significant in FRPA's results-based framework because

The Board found that significant gaps remain in FREP's ability to assess the condition of FRPA's values at both the stand- and landscape-level.

feedback to government about whether the framework is functioning as intended relies, in part, on knowing whether the results (i.e., FRPA's objectives) are being achieved.

3. Engaging Licensees and Involving Specialists

Many licensees said FREP lacks credibility and even some district monitoring staff have concerns with how FREP is functioning. Licensee professionals generally said they do not trust FREP's monitoring results, and the Board believes this concern is having a major effect on FREP's success in convincing licensees to voluntarily make changes to their practices. There are two factors contributing to this situation.

Engaging licensees

There has been a lack of licensee engagement in all aspects of the monitoring program—starting when FREP was first developed. Initially, FREP staff said they tried to engage the forest industry in development of the program and the monitoring protocols, but had little success. In the following years, FREP staff said that the program did not have the capacity nor the budget to engage with licensees and their professionals, although that was the original intent. There are exceptions, but engagement has been sporadic and has varied widely between districts. As well, some district monitoring staff said they are uncomfortable engaging licensee professionals because they do not believe they are qualified to discuss the

details of the monitoring protocols, data interpretation or required changes to forest practices with those professionals.

Most licensee professionals told the Board they know little about FREP's program objectives, evaluation questions, monitoring protocols, data analysis or how it develops suggested opportunities to improve practices that they are expected to implement under professional reliance. The uncertainty about the monitoring program's objectives and design is likely a contributing factor to ineffective engagement between FREP and licensee professionals.

FREP staff said that engagement with licensees is a priority and they set targets in the current (2016) strategic plan for district staff to hold at least two communication events per year to discuss FREP's results. Since the Board interviews were completed, FREP has stepped up its communication



A FREP contractor examines a culturally modified tree within a recently harvested cutblock, as part of monitoring the cultural heritage resource value under FRPA.

— photo courtesy of FREP

and outreach efforts with licensees, including a series of workshops on small stream management across the province, followed by extension with individual licensees. In recent conversations, licensees have acknowledged these efforts.

It is extremely important that FREP continue this dialogue with licensee professionals to build relationships and support for the monitoring program. It is equally important for industry professionals to engage with FREP, discuss questions and concerns and get involved in data collection and analysis. Beyond simply communicating FREP's results, FREP staff need to understand and address the concerns many licensee professionals have with FREP's evaluation processes (see *Appendix 2* for examples of concerns licensees have about FREP's sampling design).

Involving specialists

The second factor influencing FREP's credibility is concerns by licensee professionals about the limited involvement of specialists (including researchers) in the sampling design, investigation and attribution of causal factors, interpretation of results, and development of recommendations for improved practices. As a result, licensee professionals say they are less likely to consider implementing improvements to practices recommended by FREP.

FREP's monitoring design originally intended that district staff would carry out routine monitoring and specialists would conduct intensive monitoring, in part, to explore issues identified through the routine monitoring. Specialists were to investigate causal factors and undertake research required to answer emerging questions.

FREP staff said that a large number of provincially recognized value specialists were involved in the development of existing monitoring protocols, and the involvement of specialists continues as new protocols are being developed. However, specialists carried out few intensive evaluations to investigate the issues identified by district monitoring staff, mainly due to funding limitations. As a result, FREP staff in Victoria have done the interpretation of results. FREP staff rely on trends in monitoring results obtained within a district or region to gauge whether forest practices are providing improved protection of FRPA's values over time. This approach may lead to over-simplification or incorrect interpretation of the many possible factors that could be affecting the condition of the values.

Provincial Small Streams Project

In 2015, Major Projects staff in FLNRO's Skeena Region initiated a project that brings together FLNRO staff, forest licensees, BC Timber Sales, and researchers to collaborate on the management of small streams. The small streams project, which is expanding across multiple FLNRO regions, provides a forum to exchange knowledge and develop collaborative solutions for effective small stream management. Influencing better outcomes for small streams is the shared objective for the project team.

FLNRO has not followed its process to ensure FREP's results lead to continuous improvement of practices under FRPA.

FREP has started to build better support from licensees through its outreach efforts and it is very important that this engagement continue in order to improve understanding and resolve industry concerns with the program. It will also be very important to enable appropriate involvement of specialists from government, First Nations and industry in monitoring.

4. Ensuring FREP's Results Lead to Continuous Improvement

In FREP's 2003 charter (as well as several other program documents), FREP identified a process, to be led by FLNRO, for ensuring continuous improvement of practices. The process, which included involvement of licensees and other stakeholders, was designed to establish whether FREP's results warranted changes to policy or legislation or if practice improvements should be implemented voluntarily by licensees and their professionals. To date, that process has not been implemented and FLNRO has relied on licensees and their professionals to voluntarily make improvements to practices based on FREP's results (i.e., professional reliance).

FRPA legislation is intended to balance social, ecological and economic interests yet, for most values that it monitors, FREP only evaluates their ecological condition. The Board does not believe it is reasonable to expect licensees and their professionals to try and figure out how to implement FREP's recommendations in a way that also balances social and economic interests. This balancing issue is also a significant concern for some licensee professionals interviewed. Given that the original process was never implemented, FLNRO needs to clearly define its process and expectations for the implementation of changes to practices, policy and regulation arising from FREP's monitoring results.

In the Board's view, FLNRO has the responsibility to lead continuous improvement of practices in consultation with licensees, professionals and First Nations. This way, informed decisions can be made about which improvements should be implemented voluntarily and which require changes to policy and legislation.

CONCLUSIONS

This evaluation examined FREP's progress in carrying out its effectiveness monitoring role in the FRPA framework, using FREP's intended program outcomes as the evaluation criteria. Through the evaluation, which includes interviews with over 100 individuals, mostly FLNRO staff and forest licensees, the Board found that FREP has made some progress in achieving its intended outcomes. However, four key issues are limiting FREP's progress towards achieving all of its outcomes. Some of these issues, or components of the issues, have developed over time due to factors that are outside of FREP's control. The four issues are:

1. FREP's approach to using sustainability as a measure of effectiveness is not clear or well understood. Most FLNRO staff, licensees and their professionals thought that FREP's role was to assess achievement of FRPA's objectives and were either unaware or unsure how the effectiveness measure of 'sustainability' is meant to be interpreted.
2. FREP's monitoring priorities have not been updated and the monitoring program has limited capacity to update existing questions or develop new questions to respond to emerging issues in forest management. In addition, substantial gaps remain in monitoring several values, especially at the landscape-level. As a result, licensees and decision-makers do not always have all the information they need on land base condition and trends.
3. FREP has not adequately engaged with licensees or involved specialists in the monitoring program. These two factors are contributing to licensee professionals' reluctance to trust FREP data, and are having a major effect on the willingness of professionals to make voluntary changes to practices.
4. FLNRO has not followed its process to ensure continuous improvement of practices. Even if licensees and their professionals were well engaged by FREP, in the Board's opinion, it is not reasonable for professionals to determine which improvements should be implemented voluntarily and which require changes to policy and legislation.

These four issues need to be addressed by FLNRO in order for FREP to improve its progress in fulfilling the effectiveness monitoring role that is a critical foundation to the results-based FRPA framework.

RECOMMENDATIONS

...five Board recommendations that will assist FLNRO in achieving FREP's intended program outcomes...

In accordance with section 131 of the *Forest and Range Practices Act*, the Board is making five recommendation that, if implemented, will assist FLNRO in achieving FREP's intended program outcomes and, ultimately, should result in continuous improvement of forest practices, policies and legislation.

1. FREP should clarify and communicate to all involved what is meant by the measure of "sustainability" it uses, and how that relates to government's objectives for the values specified in FRPA. This should include the linkage between the impact ratings and sustainability measures and how the information is to be used by licensees and by decision-makers, such as district managers approving forest stewardship plans.
2. FREP should review the design of the monitoring program to ensure it can answer the priority evaluation questions and also develop new questions to address emerging information needs. It is essential that FREP is collecting the right data and providing the information that forest managers require today. This review should include consideration of long-term routine monitoring of specific sites in addition to the current approach of random sampling.
3. FREP should fully implement effectiveness monitoring for soils, wildlife, wildlife habitat, plant communities, landscape-level biodiversity, and values established under the *Government Actions Regulation* (e.g., wildlife habitat areas) and land use orders.
4. FREP should engage licensees and their professionals in all aspects of the monitoring program. FREP should also directly involve government and industry specialists in the monitoring program on an on-going basis, particularly in researching the causal factors affecting the condition of values. This should help to address industry concerns and build credibility, improving licensee confidence in FREP's monitoring.
5. FLNRO should implement a collaborative process at both the provincial and district levels to facilitate continuous improvement of practices based on FREP's monitoring results. At the provincial level, government should have a process to implement changes to legislation and/or policy where improvements are not made voluntarily.

In accordance with section 132 of FRPA, the Board requests that FLNRO notify it of the steps taken to implement these recommendations by March 31, 2018.

APPENDIX 1: How FREP Conducts Effectiveness Evaluations

Monitoring

FREP monitors effectiveness of forest practices by evaluating the condition of 10 of the 11 FRPA values in areas across the province that have been subject to forest harvesting.⁵

FREP has three levels of increasingly detailed monitoring it can use to evaluate the condition of values: routine, extensive and intensive. Routine monitoring represents the majority of monitoring by FREP and is mostly conducted at the stand-level by monitoring staff in districts. Extensive⁶ and intensive⁷ monitoring can be used when more detailed information is required or when routine monitoring has identified a red flag or issue of concern. These two levels of monitoring are typically carried out by value specialists within FLNRO or externally by consultants (see endnote^{vi}, which provides a reference for more information about FREP's monitoring design).

For routine monitoring, the process began in 2005 with the identification of evaluation questions (i.e., what is monitoring intended to evaluate?) for each FRPA value.^{vii} Once the questions were approved, value teams developed indicators and monitoring protocols for field monitoring by district staff or other specialists. The evaluation questions have been developed for most of the values and were intended to be re-assessed internally and with stakeholder input every 12 to 18 months.

Prior to conducting on-the-ground monitoring, district monitoring staff are provided with training by value specialists to complete the monitoring protocols, as well as the necessary field forms and checklists developed by FREP. Refresher training is also provided on an on-going basis. In addition, as part of FREP's quality assurance process, value specialists conduct random, on-site quality assurance assessments of monitoring completed by district monitoring staff. Monitoring staff are made aware of issues identified through quality assurance as part improving the accuracy of assessing the condition of the values.

A key premise of FREP's sampling design is that monitoring sites are selected randomly and are not re-sampled.⁸ Each year, FREP staff provide district monitoring staff with a list of randomly selected cutblocks that have been recently harvested. District monitoring staff select cutblocks from the list (usually starting from the top of the list) and monitor values according to the targets set by FREP in the strategic plan.

⁵ For most values that it monitors, FREP assesses the ecological condition (exceptions include visual quality, cultural heritage resources and recreation resources which are social values).

⁶ Monitoring intended to collect more detailed information about a value over a specific area than provided by routine evaluations.

⁷ Monitoring carried out at the regional level or provincial level. These evaluations are an in-depth examination of a subject or topic stemming from a "red-flag" identified through resource stewardship monitoring or an emerging operational issue.

⁸ For most protocols, the random selection of monitoring sites is drawn from cutblocks harvested in the district within the past three years. Additional selection criteria vary for each value being monitored.

In the 2011 strategic plan, FREP set a minimum target for monitoring of 40 sites per year, per district (i.e., about 200 sites over 5 years) with a minimum of 5 sites per year minimum for water quality, fish (riparian) and stand level biodiversity.⁹ In the 2016 strategic plan, FREP modified the target to 30 sites per value (7 values), per district over a 5-year rolling window (i.e., about 210 sites over 5 years). In addition to completing monitoring at randomly selected sites, district staff are able to monitor some sites that are targeted to address issues at the district level.

Data Analysis and Reporting

FREP staff assemble and analyze data submitted by district monitoring staff and ensure it meets quality assurance requirements.^{viii} Results are published in various formats including value specific reports, district or timber supply area 'multiple resource value assessment (MRVA) reports'^{ix} and an annual provincial/regional 'assistant deputy minister (ADM) resource stewardship report' (ADM reports).

Value specific reports include detailed analysis and results about the condition of the values being monitored and the causal factors thought to be affecting the condition. The reports usually include suggestions to improve practices aimed at addressing the factors affecting the condition of the values.

In MRVA and ADM reports, FREP provides a brief summary of the condition of each value. In the reports, results for each site monitored are converted to one of four resource development impact rating categories (i.e., very low, low, moderate and high)^x and graphically represented showing the proportion, as a percentage, of each impact rating category. The data are also presented as a trend in a way that allows readers to assess whether forest practices are changing the condition of the value over time and under different legislative regimes (i.e., Forest Practices Code versus FRPA).

MRVA and ADM reports also include a summary of the leading factors affecting the condition of the values and suggested opportunities to improve practices. The district manager includes a statement, referred to as a commentary, summarizing the monitoring results and their expectations for improvements to practices where warranted.

How Does FREP Establish and Report Whether On-the-Ground Practices Are Sustainable?

One of FREP's current program objectives is to determine whether 'on-the-ground practices are sustainable'.¹⁰ Specific to FRPA, FREP defines 'sustainable' as conserving the 11 FRPA values (see page 4).

To determine whether on-the-ground practices are sustainable, FREP uses the resource development impact rating obtained for each site monitored as an indicator of whether on-the-ground practices are

⁹ FREP sets the minimum sampling target based on the need to increase precision, account for variability and logistical considerations (i.e., available funding and capacity of monitoring staff to undertake the monitoring). See reference at endnote ix for more information).

¹⁰ When FREP reports on whether the condition of an ecological value is 'sustainable', it implies that the condition is 'ecologically sustainable'. FREP defines sustainable as conserving FRPA's values.

sustainable. Sites with a very low or low impact rating are deemed to be sustainable. A moderate impact rating is borderline and a high impact rating is unsustainable. Reporting the monitoring results this way is intended to provide decisions-makers and licensee professionals with a continuous measure of whether forest practices, in relation to the values being monitored, are sustainable.

How Does FREP Suggest Opportunities to Improve Practices?

For some values that FREP monitors, like water quality and fish (riparian), if the condition of the value is within the moderate or high impact rating category (i.e., borderline or unsustainable), then monitoring staff identify possible causal factors and suggest opportunities to improve practices from an established list (the list is part of the monitoring protocol). The opportunities to improve practices are intended to address the causal factors but are also based on the practices that resulted in the best outcomes.¹¹

The opportunities to improve practices are directed at licensees and their professionals for voluntary implementation (see Table 2 for examples of opportunities to improve practices suggested by FREP). However, it is not FREP's role to consider the economic impact of implementing the suggested improvements. Also, FREP does not decide how or if the suggested improvements to practices are actually implemented. As stated in documents describing the design of the monitoring program, that is the responsibility of FLNRO in consultation with licensees, their professionals and other stakeholders.^{xi}

Table 2. Examples of FREP's opportunities to improve practices^{xii}

Value Monitored	Examples of FREP's Recommendation to Improve Practices
Soils	Plan operations in and outside roadside work areas to minimize soil disturbance.
Visual quality	Eliminate self-exemption language from forest stewardship plans at time of renewal; where exemptions are necessary, use the appropriate tools within FRPA (i.e., <i>Forest Planning and Practices Regulation</i> sections 12(7) or 25.1(1). In addition, FRPA Bulletin 25 provides advice on how to write defensible practicable statements.
Timber (stand development)	Promote species that are less impacted by forest health factors and have higher productivity to benefit timber supply.
Water (quality)	Armour, seed, and protect bare soil as soon as possible after disturbance.
Fish (riparian)	Increase retention generally on small streams, especially those wider perennial streams that make significant contributions of water, sediment, debris, and nutrients to downstream fish habitat and watershed function.
Biodiversity (stand-level)	Leave at least some retention on every cutblock.
Cultural heritage resources	Avoid skidding across cultural trails (in some cases, use of designated crossings).

¹¹ With some exceptions, the opportunities to improve practices are meant to be applied to future forest harvesting or road construction. Exceptions include improvements to practices on roads already constructed, like reducing erosion and controlling sediment.

APPENDIX 2: Licensee Professionals Concerns with FREP's Sampling Design

Monitoring of FRPA values at the stand-level is undertaken at randomly selected cutblocks or roads under permit. The monitoring data collected are recorded and permanently linked to the selected cutblock or road, along with the name of the licensee that harvested the cutblock or has responsibility for the road.

Licensee professionals told the Board they have two issues with how FREP records monitoring data tied to the cutblocks they have harvested or roads they are responsible for. These issues affect their willingness to engage with the monitoring program:

1. FREP's approach to recording monitoring data linked to cutblocks or roads can lead to incorrect attribution of practices. For example, monitoring the fish (riparian) value at a site may find the condition of a stream immediately adjacent to a cutblock boundary to be non-functional. However, monitors determine the causal factor of the non-functional condition to be historical upstream harvesting and not the harvesting of the cutblock adjacent to the stream. But when FREP records the monitoring information, the non-functional stream is permanently tied to the cutblock that was selected for sampling. Licensees said there are two problems with incorrect attribution:
 - First Nations, FLNRO staff and the general public who view FREP's data may form negative views about a licensee's forest practices, even when those views are not necessarily warranted.
 - It is difficult for licensees and their professionals to determine the practices they need to improve when there is uncertainty about who or what caused the problems leading to the decline in the condition of the value.
2. District monitoring staff will sometimes report observations made at monitoring sites directly to compliance and enforcement staff without first discussing their observations with licensees. If the sites are investigated by compliance and enforcement staff without talking to licensees first, issues may arise because monitoring staff may have incorrectly identified who is responsible for the problems observed at the site (i.e., it may not be the practices of the licensee that resulted in the problem). Licensee professionals also said that monitoring by district staff should be completely separate from the work of compliance and enforcement.

ENDNOTES

- ⁱ Regulations containing objectives include the *Forest Planning and Practices Regulation*, *Woodlot Licence Planning and Practices Regulation* and *Range Planning and Practices Regulation*. Other regulations, such as the *Government Actions Regulation*, enable objectives to be set. Orders setting objectives can be made under the *Land Act*. Although they apply to forest and range licensees, they are not regarded as FRPA objectives.
- ⁱⁱ FRPA Resource Evaluation Working Group, 2003. FRPA Resource Evaluation Program Charter. Ministry of Forests and, Ministry of Water, Land and Air Protection. Version 1.1, September 24, 2003. Victoria, BC.
- ⁱⁱⁱ Forest and Range Evaluation Program, 2007. Forest and Range Evaluation Program 5 Year Strategic Plan 2007-2011. September 2007. Victoria, BC.
- ^{iv} Forest and Range Evaluation Program, 2011. Forest and Range Evaluation Program Strategic Plan 2011-2013. November 8, 2011. Victoria, BC.
- ^v Forest and Range Evaluation Program, 2016. Forest and Range Evaluation Program 3 Year Strategic Plan 2016-2018. April 19, 2016. Victoria, BC.
- ^{vi} Forest and Range Evaluation Program, 2005. FREP Monitoring and Evaluation Strategy. Version 1.0, July 20, 2005. Victoria, BC.
- ^{vii} Forest and Range Evaluation Program, 2006. Development and Priority Ranking of the Evaluation Questions for the Forest and Range Evaluation Program (FREP). Prepared by the Forest & Range Evaluation Program Working Group. Version 2.2, September 28, 2006.
- ^{viii} Monitoring data collected by staff are submitted to FREP who assure data quality and enter it into an information management system. FREP's monitoring and reporting activities are guided by its quality assurance program with oversight provided by a quality management team. The program includes quality control protocols built around a philosophy of continuous improvement. FREP's quality control protocols include training, field data verification, data management, reporting and structured input from monitoring staff and stakeholders. FREP's quality assurance program receives third-party verification by the National Quality Institute.
- ^{ix} Multiple resource value assessment reports are available for download at:
<http://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program/frep-multiple-resource-value-assessments>
- ^x Forest and Range Evaluation Program, 2013. Methodologies for Converting FREP Monitoring Results to Multiple Resource Value Assessment (MRVA) Resource Development Impact Ratings. Draft Technical Note #6, November 28, 2013.
- ^{xi} The design of FREP's monitoring program, including roles and responsibilities for FLNRO executive, FREP staff, licensees and their professionals are described in:
- 1) Forest and Range Evaluation Program, 2005. Resource Stewardship Monitoring Framework. Ministry of Forests and Range, Ministry of Environment, and Ministry of Agriculture and Lands. Version 1.0, July 20, 2005.
 - 2) Forest and Range Evaluation Program, 2009. FREP – Continuous Improvement of Forest Practices, Policy and Legislation. Version 2.0, May 12, 2009. Unpublished.
- ^{xii} The examples in the table were taken from: Forest and Range Evaluation Program, 2015. Assistant Deputy Minister Resource Stewardship Report: Results and Recommendations from the Forest and Range Evaluation Program. FREP Report #38, May 2015. The report is available for download at http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/frep_report_38_adm_resource_stewardship_report.pdf.



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