Resource Stewardship Monitoring Framework

For the most current version of this document, please consult the FREP web site http://www.for.gov.bc.ca/hfp/frep/7_rsm.html

For other FREP information, please go to http://www.for.gov.bc.ca/hfp/frep/

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BRITISH COLUMBIA

Ministry of Forests and Range
Ministry of Environment
Ministry of Agriculture and Lands

Resource Stewardship Monitoring

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Purpose of Document

This document provides a comprehensive description of the objectives and scope of Resource Stewardship Monitoring, as a component of the FRPA Resource Evaluation Program (FREP). The document also describes stakeholder involvement, critical success factors, and major deliverables.

FRPA Resource Evaluation Program Background

The *Forest and Range Practices Act* (FRPA) and regulations introduce the transition to a results-based forest practices framework in British Columbia. Under this new approach to forest management, the forest industry is responsible for developing results and strategies, or using specified defaults, for the sustainable management of resource values. The role of government is to ensure compliance with established results and strategies and other practice requirements, and evaluate the effectiveness of forest and range practices in achieving management objectives.

The FRPA Resource Evaluation Working Group (FREWG), representing the Ministry of Forests and Range (Field Services Division, Research Branch and Forest Practices Branch), as well the Ministry of Environment (MoE), and the Ministry of Agriculture and Lands (MAL) began developing the provincial FRPA Resource Evaluation Program (FREP) in May 2003. Over the last two years, FREWG has been actively developing the program structure and framework, along with resource value indicators and monitoring/evaluation protocols.

FREP has been put in place as a multi-agency program to evaluate whether practices under FRPA are meeting not only the intent of current FRPA objectives, but also to determine whether the practices and the legislation itself, are meeting government's broader intent for the sustainable use of resources.

There are two primary delivery mechanisms for FREP – resource stewardship monitoring (RSM) and intensive evaluations. This document describes the RSM framework within the overall context of FREP.

For more information on FREP and its structure and deliverables, please see http://www.for.gov.bc.ca/hfp/frep/.

Purpose of Resource Stewardship Monitoring

Resource stewardship monitoring (RSM) is conducted primarily at the district and regional levels (in consultation with regional BA2 teams). RSM consists of overview type monitoring of on-the-ground forest practices to assess whether resource value objectives and/or Forest Stewardship Plan (FSP) results and strategies are being achieved, and whether the results and strategies can be improved. RSM provides valuable information on the status, trends and implementation issues related to specific resource values. In addition, by monitoring the effectiveness of FSP results, strategies and related practices, RSM will help to develop improved evidentiary requirements for future FSPs. As a result, RSM is a fundamental component for implementing continuous improvement of forest management in British Columbia.

Under FREP, scientifically based and peer-reviewed RSM monitoring protocols will be developed for all 11 resource values identified under FRPA. RSM results will provide district staff with the data and analysis needed to inform district managers and other decision makers whether on-the-ground practices by licensees are achieving FRPA resource value objectives and/or whether Forest Stewardship Plan results and strategies are being achieved. In addition, forest stewardship monitoring will provide the data required to implement continuous improvement of on-the-ground practices, FSP content, best practice guidelines, legislation and forest management policies. Furthermore, communicating the results of resource stewardship monitoring can provide valuable information to enhance professional reliance and public accountability.

RSM consists of monitoring on-the-ground forest practices on randomly selected sampling sites to assess whether resource value objectives or strategies are being achieved. There are two levels of RSM:

- **Routine** – A relatively low intensity evaluation calling for typically inexpensive and rapid data collection.

  Routine evaluations are low-cost overview evaluations that often involve visual estimates and "yes/no" checklists. These types of evaluations are useful for identifying management trends or issues that may require more detailed evaluations. An example of a routine-level evaluation might be an overview survey of impacts related to riparian management, which could include visual assessments of stream bank disturbance.

- **Extensive** – A more detailed evaluation involving the collection of categorical data using visual estimates or relatively simple measurements.

  Extensive evaluations are more rigorous and quantitative than routine evaluations, and are used to collect more detailed information on a given area. An example of an extensive evaluation might be collecting categorical and quantitative data on the impacts of forest management on karst resources, such as assessing the level of soil disturbance on high vulnerability karst terrain.

Resource Stewardship Monitoring Objectives

The objectives of resource stewardship monitoring are to provide a mechanism for continuous improvement of forest stewardship through the assessment of on-the-ground forest practices as they relate to approved Forest Stewardship Plan results and strategies and FRPA resource value objectives. This will be accomplished by:

- providing valuable monitoring and assessment data and other information for decision makers responsible for the approval of results and strategies in FSPs;

- determining, an overview of resource value status, trends and implementation issues at the district, regional and provincial levels;

- assessing and comparing default and innovative practices, strategies, activities and outcomes across multiple geographic areas and licensees;

- collecting, analyzing and communicating information and results to improve decision-making, and enhance professional reliance and continuous improvement of forest practices;

- identifying issues related to FRPA resource values (subject areas) that require detailed investigation (i.e., identifying "red flags" for regional/provincial intensive evaluations); and

- recommending options for changes to forest and range practices and/or guidance (e.g., best practices), where appropriate.

2004/05 Resource Stewardship Monitoring Activities

In 2004/05, three resource stewardship monitoring (RSM) protocols (soils, stand-level biodiversity and fish-riparian) were pilot tested to assess the indicators and monitoring protocols; site selection criteria; training methodologies; and data collection, analysis and interpretation in order to refine estimates of the resource required to implement the three piloted checklists. The pilot testing occurred on a voluntary basis and was conducted in eight districts across the province.

In addition to pilot testing three RSM checklists, indicators and monitoring protocols for recreation and range indicators, the development of monitoring checklists for landscape-level biodiversity, terrain stability, visual quality, karst, wildlife, and water quality were also initiated. Checklists for recreation sites and range were operationally implemented in 2004. The latest versions of resource stewardship monitoring indicators and protocols are at: http://www.for.gov.bc.ca/hfp/frep/3_indicators.html.

Critical Success Factors

The following critical success factors must be achieved in order for RSM to be successful:

- sufficient staff, budget and time to collect, analyze and interpret monitoring data to provide credible, valid and meaningful results;

- clearly identified participant roles and responsibilities (including districts, regions, branches, and other stakeholders);

- access to the necessary expertise to assist district staff with questions/issues related to data collection, analysis and interpretation;

- sufficient ongoing staff training in the collection, analysis and interpretation of monitoring data;

- peer reviewed, scientifically valid, measurable, verifiable and cost-effective indicators and protocols that allow for monitoring in a timely manner and at various scales of intensity, and provide the necessary information to facilitate district manager decision-making and continuous improvement of forest practices and/or policy;

- implementation of a comprehensive Quality Assurance Framework for FREP as a whole, and for RSM individually;

- a well-planned and executed Information Management Strategy, which includes quality control protocols for data collection, analysis, storage and maintenance;

- a well-defined and executed continuous improvement and decision-making cycle to improve practices, plans and policies;

- ongoing communication of the results across resource agencies, the public and other stakeholders; and

- credible, accurate and unbiased reporting based on actual monitoring data analysis that follows specific quality assurance guidelines.

Scope

The following activities are within the scope of RSM:[1]

1. Overview-level (most often routine in nature) monitoring of:
   - on-the-ground results and strategies of Forest Stewardship Plans and Code Pilots;
   - first-level assessment/indication of the sustainable management of each resource value; and
   - status and trends of resource values, and where possible, identification of the underlying causal factors for these status or trends.

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1   Resource stewardship monitoring activities may take place anywhere within the total provincial land base.

2. Providing options and recommendations for changes to local forest practices, approval of FSP results and strategies and recommending options for changes to forest and range policies, practices, guidance (e.g., best practices) and policy where required and appropriate.

3. Identifying and communicating "red flags" that require more detailed investigation under FREP.

Organizational Structure, Roles and Responsibilities

The overall structure of FREP and the inter-relationships with RSM are illustrated in Figures 1 and 2. Individual regions and districts may wish to revise these general structures in order to meet their specific operational needs.
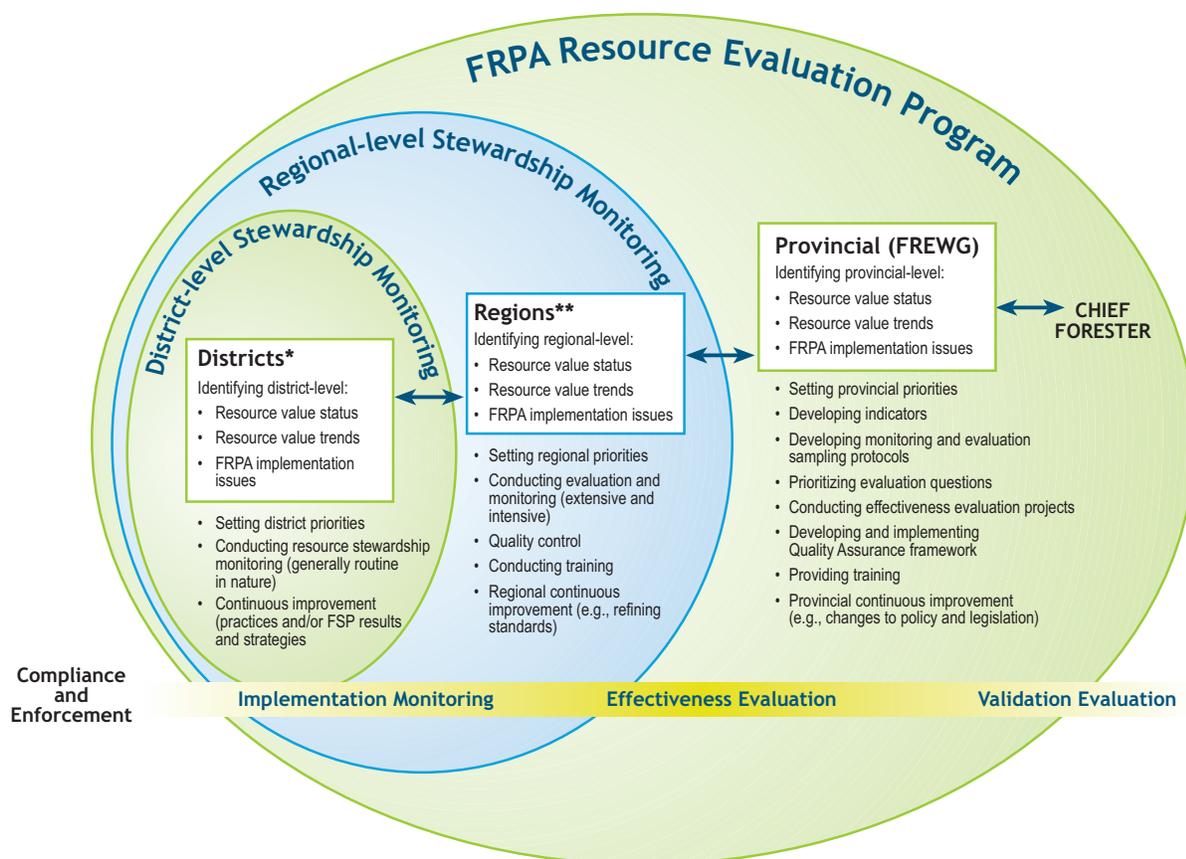
*district-level monitoring is co-ordinated in partnership with regional BA2 teams. Districts monitor practices carried out under FSPs; and flag any specific results, strategies or outcomes they feel need to be evaluated at a more intensive level. Resource Stewardship monitoring will generally be routine in intensity.

**regional-level monitoring/evaluation is a co-ordinated partnership with FREWG and Regional BA2 teams. Regional and FREWG monitoring and effectiveness evaluations will include all levels of intensity.

FSP = Forest Stewardship Plan   BA2 Team = Regional Stewardship Business Area Team   FREWG = FRPA Resource Evaluation Working Group

Figure 1. The integrated approach to district, regional and provincial monitoring and effectiveness evaluations.
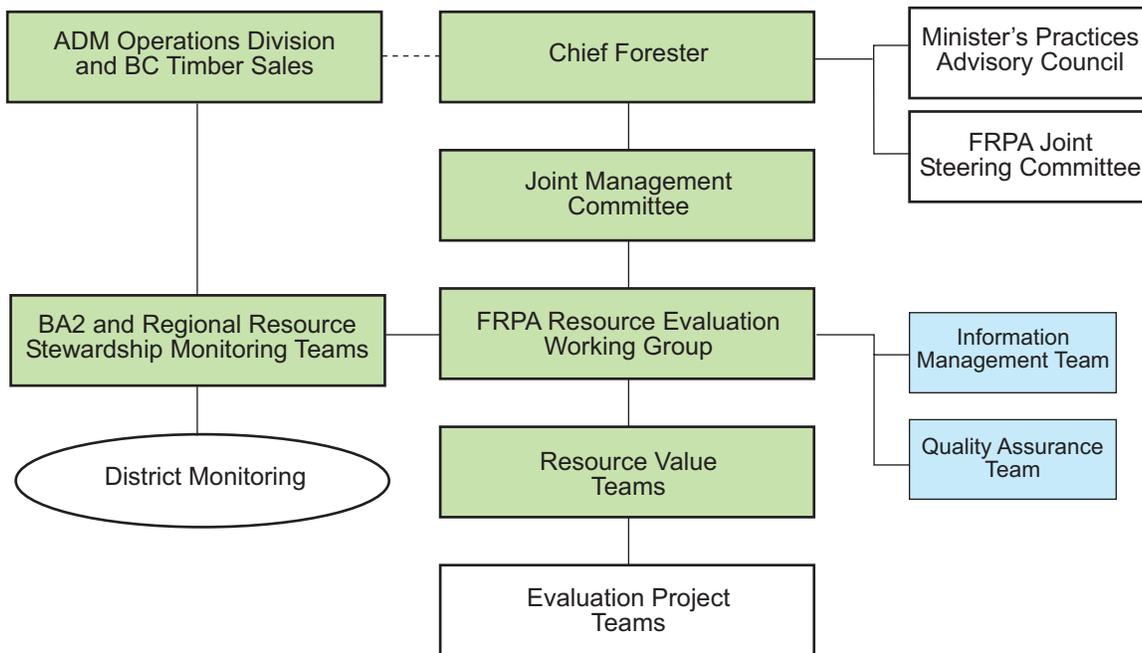
Figure 2. *The overall administrative structure of FREP.*

As seen in Figure 1, resource stewardship monitoring usually involves implementation or effectiveness evaluations. Implementation evaluations measure progress towards a specific goal (e.g., adoption of new practices, policies or guidelines) and determine whether practices were implemented as planned. Effectiveness evaluations determine whether plans and practices are achieving objectives and anticipated outcomes. Validation evaluations are used to assess the assumptions upon which forest management strategies, practices and standards are based. Compliance evaluations examine adherence to legislative requirements and are therefore not part of FREP.

For additional information on the terminology used by FREP, see *Technical Note #2 – FRPA Resource Evaluation Program Terminology* at: www.for.gov.bc.ca/hfp/frep/repository/ FRPA_Evaluator-Tech-n02.pdf.

Table 1 defines the general roles and responsibilities of the people and structures required to implement RSM.

Table 1. **RSM Roles and responsibilities**

Role	Responsibilities
Sponsors: Chief Forester ADM Operations	• Ensure RSM has clear direction and long-term support. • Ensure RSM deliverables meet the expectations of the Executive and Regional Managers. • Approve the RSM Framework and any future changes. • Facilitate executive communication and liaison between ministries. • Secure sufficient resources (budget and staff) to ensure RSM objectives will be met. • Promote the drafting of legislation and resource objectives in a manner that facilitates monitoring and evaluation.
Regional Resource Stewardship Monitoring Teams (in consultation with the Regional BA 2 teams)	• Determine regional monitoring priorities. • Implement quality assurance and control. • Plan and propose regional and provincial budgets and activities. • Analyze and interpret monitoring and evaluation data. • Identify critical issues and questions for more intensive evaluations. • Facilitate communication and liaison between FREWG and the three regional monitoring working groups. • Participate as members of FREWG. • Participate on FREWG working teams (e.g., quality assurance and information management).
FREWG (in consultation with the Provincial BA2 team)	• Ensure development of the quality assurance framework, standards and protocols. • Manage program communications external to government. • Prepare issues for JMC discussion and decision. • Identify recommended options for changes to legislation, regulations, policies and practices, and, where appropriate, make recommendations to JMC on preferred options. • Implement stakeholder involvement, including coordination and communication within represented groups. • Provide guidance (terms of reference) to the Resource Value Teams. • Prepare the program budget and rank projects for funding. • Recommend annual program priorities for approval by FREP Sponsor, JMC and/or JSC. • Review reports regarding policy implications, and develop options for changes to legislation, policies and guidance for designated decision-makers. • Where necessary, refine FRPA objective statements into measurable desired future conditions that can be evaluated. • Develop or compile a list of specific evaluation and monitoring questions, and recommend the priority rating of these questions to JMC on a yearly basis.

Role	Responsibilities
FREWG (cont.) (in consultation with the Provincial BA2 team)	• Develop and implement a communications plan. • Prepare protocols, including quality assurance, reporting, data management and stakeholder involvement. • Provide documentation to improve future projects (lessons learned). • Produce a report series on the results of the program. • Coordinate reporting across agencies. • Coordinate and synthesize existing monitoring project information and new projects. • Develop RSM protocols in consultation with Resource Value Team Leaders, regional and district staff, and other stakeholders. • Evaluate RSM (meta-evaluation).
District Managers and/or Regional BA2 teams	• Make recommendations to the regional, provincial BA2 teams and FREWG concerning changes to legislation, regulations, policies and practices based on the results of RSM, where appropriate. • Provide input into the development and implementation of RSM. • Ensure internal stakeholder interests are addressed. • Provide support for commitment of staff to conduct RSM. • Decide on district-level monitoring priorities in the context of regional and provincial priorities. • Use the results of RSM in the continuous improvement of local decision-making (e.g., FSP results and strategies, local forest practices, etc.).
District Staff	• Conduct routine monitoring (data collection) of Forest Stewardship Plans, strategies and forest practices. • Provide feedback and advice (based on data analysis generally performed at the regional and/or provincial-level) to district managers to help identify FRPA implementation issues and facilitate continuous improvement of forest practices, FSP results and strategies, forest policy and legislation. • Identify critical issues and questions for more intensive evaluations. **Note:** There will be protocols in place for data collection and reporting the results of RSM. These protocols may include gathering information on alternative practices, and their impact on resource values within a geographical area.

RSM Business Processes

To achieve the purpose and objectives of RSM as set out in this framework, the following business processes will be developed:

- regional and district identification and communication of Forest Stewardship Plan results and strategies for monitoring;

- continuous improvement cycle (including communication to stakeholders) for improving Forest Stewardship Plan results and strategies and FRPA resource value objectives; and

- management of monitoring data and other information.

Regional Stewardship Monitoring Teams, in consultation with regional BA2 teams, FREWG and the provincial BA2 team, will guide the development and implementation of RSM, under the sponsorship of the Chief Forester and ADM Operations. RSM will be given a clear mandate by the ADM Operations and Chief Forester through the approval of this framework. It is expected that senior management will provide ongoing direction, support and decision-making. External stakeholders will be invited to provide input on RSM issues and participate on working groups as needed. Figure 3 illustrates an overview of the high-level business process (business map) for the FRPA Resource Evaluation Program, including the RSM component. The detailed business map can be found on the FREP web site at: http://www.for.gov.bc.ca/hfp/frep/.

FRPA = *Forest and Range Practices Act*
FREWG = FRPA Resource Evaluation Program Working Group
DDM = Delegated Decision Maker

JMC = Joint Management Committee
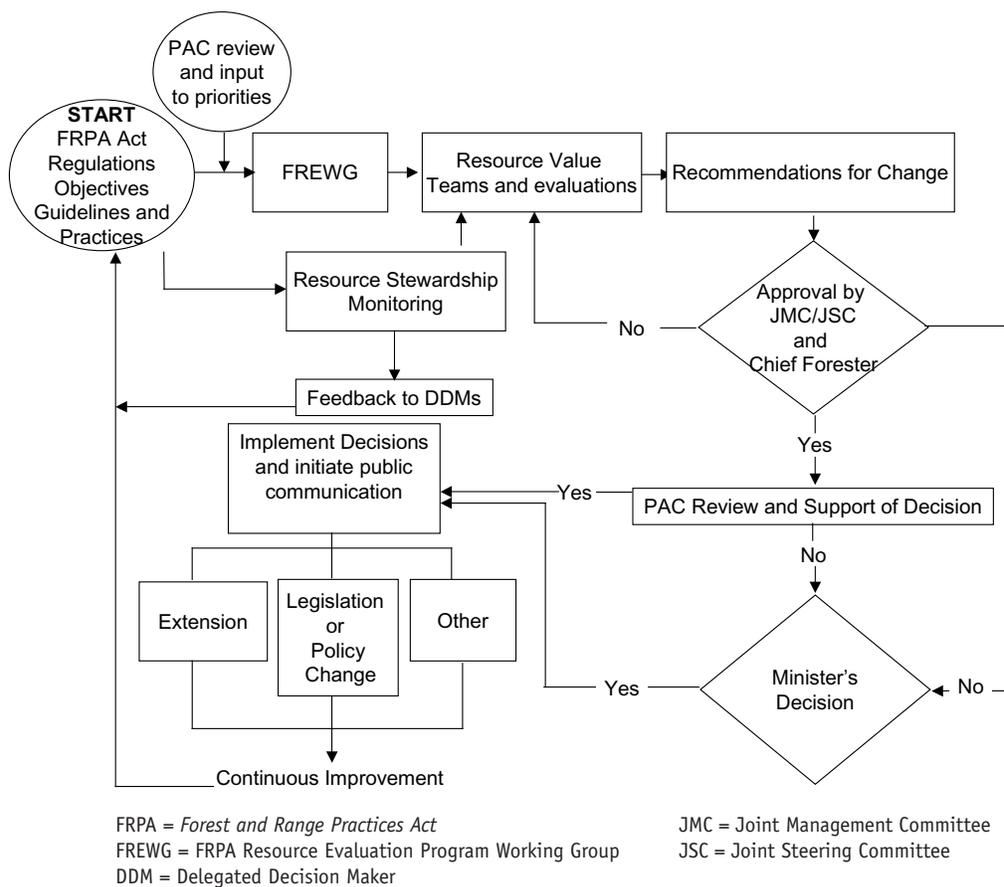JSC = Joint Steering Committee

Figure 3. Overview of the FREP continuous improvement process.

Stakeholders

The Minister of Forests and Range's Forest and Range Practices Advisory Council (PAC)[2] will serve as the primary point of contact for external high-level stakeholder involvement in FREP and RSM. Local stakeholder involvement will be decided on a district-specific basis. The following stakeholders' (internal and external) interests must be considered throughout the program:

Stakeholder	Represented by	Interests, Expectations, Concerns
Local licensees	Individual companies	Monitoring protocols for: • Provide input to professional reliance and accountability; • Ability to provide input into indicators and methodologies. Monitoring data, analysis and results; and • Improve FSP results and strategies.
First Nations		Monitoring protocols for: • Ability to provide input into indicators and methodologies. Monitoring data, analysis and results to: • Determine their acceptance of forest practices.

Links and Dependencies

RSM is an integrated component of FREP and linked with the work of several other agencies, including the Forest Practices Board (FPB), the Ministry of Environment (MoE), and the Ministry of Agriculture and Lands (MAL). In addition, RSM is linked with licensee forest certification and professional reliance. Identification and analysis of these linkages is important to ensure budget and staff resources are spent in an efficient and effective manner.

The independent compliance audits and special investigations conducted by the Forest Practices Board determine if rules and strategies have been followed, but they may also evaluate how effective forest practices were in achieving intended results. Activities of the Board can help identify critical or emerging issues, and can therefore be helpful in setting monitoring priorities. The Board has previously partnered with the work of FREP in the development and testing of monitoring and evaluation indicators.

The Ministry of Environment is a partner in FREP, but also has a broader evaluation strategy and mandate, including monitoring protected areas and urban areas for conservation values. A close link with MoE staff will ensure maximizing partnership opportunities and avoiding duplication of efforts. There will likely be monitoring activities at the district- or regional-level that MoE will assume the responsibility for (e.g., wildlife checklists).

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2   Membership in PAC includes representatives from the BC Cattlemen's Association; Forest Caucus, BC Environmental Network; Natural Resource Committee, Union of BC Municipalities; Federation of BC Woodlot Associations; First Nations Summit Task Group; Central Interior Logger's Association; Industrial Wood and Allied Workers of Canada; Council of Tourism Associations; and major licensees.

Both forest certification and RSM use indicators to conduct their monitoring activities. Forest certification systems use a wide variety of indicators to monitor the processes and practices used to achieve sustainable forest management, and to assess the performance of forest management regimes. Rarely does forest certification actually measure the extent to which particular resources are being maintained; whereas RSM focuses on assessing the effectiveness of forest practices in managing specific resource values. There is some potential for collaboration between RSM and forest certification in establishing baseline information and ecosystem-specific threshold interpretations for the maintenance of individual resource values. Through the development of value-specific indicators and monitoring protocols, as well as the reporting of results and lessons learned, RSM may provide valuable contributions to future forest certification methodologies.

Milestones and Deliverables

Major milestones for RSM in 2005 include:

Resource Stewardship Monitoring Milestones	Date
Contents of "RSM Framework" agreed upon by regional working groups	June 15, 2005
Submission of framework for approval by Program Sponsor	June 15, 2005
Approval of framework by Program Sponsor	August 30, 2005
Approved process for determining monitoring (sampling) population and sample sites from the population (e.g., stratified random sampling)	June 30, 2005
Approved (version 1) continuous improvement cycle (including communication to stakeholders) for improving Forest Stewardship Plan results and strategies and FRPA resource value objectives	July 30, 2005
Development of an RSM implementation strategy for key resource values in 2005/06	June 1, 2005
Begin RSM data collection	June 30, 2005
Completion of development and delivery of training to support RSM in 2005/06	July 8, 2005
Implementation plan and budget submission for 2006/07	September 2005

Resources

As with the development and delivery of FREP as a whole, there are significant resource challenges associated with the development and implementation of RSM. Both funding and staff time are very limited. As a result, implementation of RSM will be phased in over the next several years.

Limiting implementation phase-in to stand-level biodiversity and riparian in 2005/06 will allow the ministry to develop both operational capacity and knowledge over the short term, while providing for continued development and refinement of the checklists for the remaining resource values. In 2005, each region will participate with a minimum target of four or five districts per region (on a voluntary/incentive basis). Support funding (linked to Internal Performance Measures) will be provided to districts, where necessary, to provide contract support, access and/or equipment purchases. The target number of cutblocks by resource value is 10–15 per participating district.

The FRPA Resource Evaluation Working Group will be preparing a draft Treasury Board submission in 2005 requesting additional funding and FTE support for the implementation of the RSM program. This draft submission will be presented to Tim Sheldan, Assistant Deputy Minister, Operations Division and Jim Snetsinger, Chief Forester in the fall, for consideration and approval to proceed with the submission to Treasury Board.

Principles of Site Selection

There are a number of statistical design principles that were used to develop a site selection protocol for resource stewardship monitoring. These principles ensure that the data we collect and analyze can be used at multiple scales (district, region and province) with statistical validity and credibility. This protocol can be found at: http://www.for.gov. bc.ca/hfp/frep/.

Random Sampling[3]

The sites sampled under RSM in 2005 will be selected using simple random sampling (without replacement) within each pre-defined stratum. The primary reasons for using random selection include:

• Sampling result is objective and defensible;

• Sampling errors can be estimated so that confidence limits can be calculated; and

• Determining sample size requirements can be done objectively.

Sample Sizes

The number of sites sampled within each stratum can vary depending upon available resources, variability in the data, or the expectation of problem sites. For 2005, this value is set at 15 sites per district, although a district may choose to sample more sites. It is possible to determine optimal sample sizes given a variety of assumptions; however, this will not be undertaken until after the 2005 RSM data analysis is completed.

Targeted Sampling

In some cases, districts may also wish to do some targeted sampling of specific geographic areas, licensees, or other criteria in order to meet immediate operational needs. Targeted sampling has limited value within formal RSM if it does not provide information about the state of the population within a whole district, a region, or the province. It may provide some indication of worst case scenarios, but the targeting itself indicates that we know where policy/practices are most likely breaking down. If we only sample targeted sites, we might miss identifying circumstances where the policy/practices don't work for reasons we did not anticipate.

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3   For more discussion on this topic, see *FPRA Evaluator, Technical Note #3 – Why the Units We Select Should be Randomly Selected* at: http://www.for.gov.bc.ca/hfp/frep/repository/FRPA_Evaluator-Tech-n03.pdf.

Data collected through targeted sampling will not be incorporated into the RSM database unless the following conditions are met:

- The target population is one or more of the defined strata for that resource value. This means that the data collected can be appropriately weighted and included during data analysis.

- Sites within the target population or strata are randomly selected with known probability.

Resource Stewardship Monitoring Management

Resource Stewardship Monitoring in each region will be coordinated through the Regional Resource Stewardship Monitoring Teams in consultation with Regional BA2 teams and FREWG (and the provincial BA2 team). Each region will be represented on FREWG with two members. Regional monitoring teams will hold scheduled meetings where progress will be reported, tasks assigned and issues raised.

Information and Data Management

Resource value checklists, monitoring data, analyses and reports will be stored on the RSM web page, along with RSM protocols (e.g., quality assurance protocol, site selection protocol, etc.). See http://www.for.gov.bc.ca/hfp/frep/7_rsmp.html.

Quality Assurance

A framework for all quality assurance aspects of FREP, including RSM, is currently under development. A working group consisting of regional stewardship team members and FREWG is leading this initiative. For more information, contact Thomas Chen at Thomas. Chen@gems6.gov.bc.ca.

Communications

Communications between FREWG and the regional monitoring teams will be managed through cross-team membership and the posting of minutes, action items and other communications items on the Forest Practices Branch and regional FTP servers. Other communications deliverables, such as reports, extension notes, discussion papers and technical notes, will be published on the FREP/RSM web site at http://www.for.gov.bc.ca/hfp/frep/.

A communications plan for FREP has been developed and is posted on the FREP web site. The key communications principles for FREP are:

- All evaluation program reports will be objective and impartial;

- Approved final reports will be available to the public; and

- Reporting of evaluation findings will be conducted cooperatively between appropriate agencies.

Risk Management

Funding and manpower are expected to be the main risks for the initial stages of RSM. The design of the program involves internal and external stakeholders to ensure the program addresses current resource evaluation issues. A risk of disapproval or impasse from stakeholders also exists.