Ministry of Natural Resources and Forestry

Forest Information Manual

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Policy Division

Crown Forests and Lands Policy Branch

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FOREST INFORMATION MANUAL

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Executive Summary

The Forest Information Manual sets out the mandatory requirements, standards, roles and responsibilities, timelines, and conditions for providing information in respect of Crown forests. The requirements for information set out in the FIM complement the planning and operational requirements of the Forest Management Planning Manual (2017). A series of supplemental Forest Information Manual technical specifications set out the detailed, technical conditions as a requirement of information set out in the Forest Information Manual.

Preparation and implementation of forest management plans in accordance with the *Crown Forest Sustainability Act*, 1994 is a shared responsibility among forest resource licence holders and the Ministry of Natural Resources and Forestry. Associated requirements for information set out in the Forest Information Manual primarily affect licence holders in preparing and implementing these forest management plans for Crown forests and in conducting and reporting on forest operations. The Ministry of Natural Resources and Forestry provides information to licence holders to support plan preparation and implementation, and is also subject to the requirements of the FIM.

The Forest Information Manual sets out the requirements for the provision of forest resources inventories, maps, geospatial data layers, forest operations inspections, forest values, base data, reports and other information required for the purpose of forest management planning and ensuring compliance with the *Crown Forest Sustainability Act* and its regulations.

Résumé

Le Manuel relatif à l'information forestière énonce les exigences, normes, rôles et responsabilités, délais et conditions pour transmettre de l'information relative aux forêts de la Couronne. Les exigences en matière d'information énoncées dans ce manuel complètent les exigences en matière de planification et d'exploitation du Manuel de planification de la gestion forestière (version de 2017). Une série de spécifications techniques additionnelles relatives au Manuel sont en cours de préparation; elles résumeront les critères techniques détaillés exigés en matière d'information dans le Manuel relatif à l'information forestière.

La préparation et la mise en œuvre des plans d'aménagement forestier qui conforme à la Loi de 1994 sur la durabilité des forêts de la Couronne est une responsabilité partagée entre les titulaires de permis forestier et le ministère des Richesses naturelles et des Forêts. Les exigences associées à l'information figurant dans le Manuel relatif à l'information forestière affectent principalement les titulaires de permis forestier pour la préparation et la mise en œuvre de ces plans de gestion forestière pour les forêts de la Couronne et dans la conduite et les rapports sur les opérations forestières. Le ministère des Richesses naturelles et des Forêts (MRNF), qui est responsable de transmettre l'information aux titulaires d'un PAFD pour faciliter la préparation et la mise en œuvre des plans de gestion forestière, est également assujetti aux exigences du Manuel relatif à l'information forestière.

Le Manuel relatif à l'information forestière décrit les exigences relatives à la transmission d'information : inventaires des ressources forestières, cartes, couches de données géospatiales, inspections d'activités forestières, valeur des ressources forestières, données de bases et autres données exigées en vue de planifier la gestion forestière et d'assurer la conformité à la Loi de 1994 sur la durabilité des forêts de la Couronne et à ses règlements.

Foreword

The Policy Framework for Sustainable Forests

The overall context for forest management in Ontario is the Policy Framework for Sustainable Forests that was approved by Cabinet in 1994. The framework sets broad direction for forest policy and makes forest sustainability the primary objective of forest management.

Overview of the Crown Forest Sustainability Act

The *Crown Forest Sustainability Act*, 1994 (CFSA) came into effect on April 1, 1995. The Act is enabling legislation, and provides for the regulation of forest planning, information, operations, licensing, trust funds, processing facilities, remedies and enforcement, and transitional provisions. The CFSA is designed to allow for the management of all forest-based values, while providing for the sustainability of Crown forests. The CFSA defines sustainability as long-term Crown forest health, and reflects the broad direction set out in the Policy Framework for Sustainable Forests.

A Manual Approach to Implementation of the *Crown Forest Sustainability Act*

The CFSA requires the provision of four manuals to guide various aspects of forest management in Ontario. These manuals are prepared in accordance with Section 68 of the Act and are regulated in accordance with Section 69(1) 29:

1. the Forest Management Planning Manual(FMPM);
2. the Forest Information Manual(FIM);
3. the Forest Operations and Silviculture Manual (FOSM); and
4. the Scaling Manual (SM).

The FMPM is the pivotal document that provides direction for all aspects of forest management planning for Crown lands in Ontario within the area of the undertaking, as defined in Schedule 1 of MNRF's Environmental Assessment Act Requirements for Forest Management on Crown Lands in Ontario, (2015) (Declaration Order MNR-75). This FMPM incorporates conditions 1 to 34 and 39(a) of Declaration Order MNR-75.

In accordance with the CFSA, forest sustainability will be determined in accordance with the approach described in the FMPM. The approach requires the identification of measurable indicators in order to assess the effectiveness of activities in achieving management objectives and to assess the sustainability of the forest for the management unit. For the forest management plan (FMP), the determination of

sustainability will be a conclusion that the FMP provides for the long-term Crown forest health on the management unit, and has regard for plant life, animal life, water, soil, air, and social and economic values, including recreational values and heritage values. Management unit annual reports require the monitoring and evaluation of future forest conditions to compare with planned outcomes, which provide a means for continual refinement, redevelopment and improvement of forest management activities.

The FIM describes the information requirements the MNRF has to support forest management. The FIM also provides for the sharing and exchange of forest-related information between the MNRF and Ontario's forest industry.

This Forest Operations and Silviculture Manual (2017) (FOSM) sets out the over-arching principles and accepted approaches for forest management, the standards for forest operations and silvicultural practices, the minimum qualifications for forestry workers, and the procedures for the evaluation of forest management in Ontario.

The SM contains instructions and standards for the measurement of Crown forest resources, provides instructions for the authorized movement of Crown forest resources and sets out the requirements for conducting scaling audits.

Manual Revision

The four manuals are revised, improved, and updated based on experiences in using the manuals, and as new information becomes available. Revisions to the manuals will be made in accordance with the CFSA regulation requiring public review and comment.

Forest Information Manual

The Forest Information Manual (FIM) sets out legal obligations concerning the collection and provision of forest information for the sustainable forest licensee and the Ministry of Natural Resources and Forestry (MNRF). On designated management units which are not managed under a sustainable forest license, the Crown or another designated party is responsible for the preparation and implementation of a forest management plan (FMP). For the purpose of the FIM, the sustainable forest licensee is referenced as the party responsible for preparing and implementing FMPs. Where the requirements of the FIM refer to the sustainable forest licensee, those requirements will apply to the MNRF or the party responsible for the preparation and implementation of a FMP.

FIM is aligned to, and consistent with, the Forest Management Planning Manual (2017) (FMPM).

FIM is the framework for sustainable forest licensees and the MNRF to undertake their roles and to meet their responsibilities of providing and exchanging information for the purpose of forest management planning or to ensure compliance with the *Crown Forest Sustainability Act*, 1994 (CFSA) and its regulations. FIM sets out the requirements, standards, roles and responsibilities, timelines, conditions, and technical specifications for providing information. FIM components are aligned with the planning and operational requirements set out in the FMPM.

The requirements for information consistency, set out in the FIM, provide a solid foundation and framework for exchanging data about Crown forests. The requirements for information consistency assist in making the information available to resource stakeholders and the public in an open and transparent manner.

Implementation of FIM is directed towards improving access to information about Crown forests and increasing the knowledge base of the MNRF. Consistent and timely data and information are an increasingly important resource for assessing the sustainability of Ontario's forests.

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Introduction

The *Crown Forest Sustainability Act* (CFSA) enables forest management activities to occur on Crown lands in Ontario according to an approved forest management plan (FMP) prepared in accordance with the Forest Management Planning Manual (2017) (FMPM). These activities are authorized by the Ministry of Natural Resources and Forestry (MNRF), providing they contribute to the purposes of the CFSA that:

> *...provide for the sustainability of Crown forests and, in accordance with that objective, to manage Crown forests to meet social, economic and environmental needs of present and future generations.*

The Forest Information Manual (FIM) is one of four manuals mandated by the CFSA. FIM sets out the information required by the Minister and sustainable forest licensees with respect to managing and sustaining Crown forests in Ontario in accordance with the CFSA and its regulations. Section 68(6) of the CFSA defines the scope of FIM as follows:

> *The Forest Information Manual may contain provisions respecting information systems, inventories, surveys, tests and studies that may be required by the Minister in respect of Crown forests and respecting information to be provided to the Minister in respect of Crown forests.*

The information set out in FIM is limited to Crown forests. FIM sets out the requirements for creating or collecting information about Crown forests by identifying the types of information systems, inventories, surveys, tests, or studies to be applied or conducted. FIM also sets out the requirements for the provision of information about Crown forests to the Minister of Natural Resources and Forestry.

The basic requirements for much of the information set out in FIM are identified in the FMPM. FIM is a technical document that sets out the details of what this information will consist of and the manner that they are to be exchanged between the sustainable forest licensee and MNRF.

The roles and responsibilities of the sustainable forest licensees and MNRF continue to evolve. Sustainable forest licensees share responsibility for forest management planning and conducting forest operations. Sustainable forest licensees generate and possess considerable information required to support forest management planning. MNRF has a major responsibility of collecting, maintaining and providing forest resources inventory and values information. MNRF continues to protect the public interest and ensures that sustainability of the Crown forests are protected through the land use and forest management planning processes.

A condition of forest resource licences requires that information will be provided to MNRF in accordance with FIM. Authority for the minister to require information is provided by sections 20 and 21 of the CFSA. FIM also sets out the requirements for information to be provided to sustainable forest licensees by MNRF.

The mandatory requirements for information do not restrict or limit the Minister from requesting additional information from sustainable forest resource licensees that may be needed to fulfil the obligations of MNRF under the CFSA.

FIM describes ownership, copyright and intellectual property rights of information about Crown forests consistent with the *Freedom of Information and Protection of Privacy Act* (FIPPA), the *Copyright Act* (CA), subsection 21(2) of the CFSA, and current government policies on information.

FIM requires technical specifications that set out information standards and how information will be provided (FIM technical specifications). FIM technical specifications set out technical information details that may be modified to take advantage of changes in technology, information management processes, and information systems. These changes will not alter the basic information requirements set out in FIM. A formal revision process for FIM technical specifications is provided for later in this Introduction section of FIM.

FIM may not set out all of the information required for forest management planning or ensuring compliance with the CFSA and its regulations. Additional information requirements may be specified in other regulations, manuals or policies.

Organization of the Forest Information Manual

FIM is organized into four major divisions, Parts A, B, C and D, plus five associated FIM technical specifications. The FIM provides a description of the information requirement, references the source of the requirement, describes the rationale for the requirement and, on a general level, discusses the format of the information and the party responsible for providing the information. FIM technical specifications provide the standards (e.g., data attributes, format) for the information requirement, the conditions of provision (e.g., naming conventions, exchange parameters, validation standards), and the implementation and first effective date implications.

Part A deals with information policy. Part A has linkages to and references components of FIM Base and Values Technical Specifications. Part A deals with the following:

(a) ownership;

(b) intellectual property rights;
(c) information issues resolution;
(d) data access, sharing and exchange; and
(e) the data transfer mechanism.

Part B deals with information required during strategic and operational planning, specifically the information requirements associated with preparation and approval of a FMP. Part B has linkages with and references to the FIM Forest Management Planning Technical Specifications, FIM Forest Resources Inventory Technical Specifications and FIM Base and Values Technical Specifications. Part B contains direction in respect of:

(a) values information;
(b) base information;
(c) forest resource inventory; and
(d) forest management planning data layers, maps and documentation.

Part C identifies information requirements for annual forest operations. Part C is linked to and references the FIM Annual Work Schedule Technical Specifications. Part C contains direction on the following:

(a) annual work schedules (AWS); and
(b) forest operations prescriptions.

Part D links with the FIM Annual Report Technical Specifications and sets out information needs for monitoring, reporting, and evaluation. Part D contains direction on the following:

(a) management unit annual reports; and
(b) monitoring and evaluation.

FIM Technical Specifications set out the acceptable formats and methods to create and/or provide the information. FIM technical specifications provide detailed, technical and product specific requirements and describes roles and responsibilities. Also included are implementation details and timelines. FIM technical specifications contain direction on the following:

(a) detailed data attribute descriptions;
(b) acceptable file and media formats;
(c) metadata requirements;
(d) information exchange parameters and protocol; and
(e) validation standards/procedures.

A **Glossary of Terms** forms the last part of FIM.

Audience for the Forest Information Manual

FIM and FIM technical specifications provide direction to information managers, resource analysts, geographic information systems specialists, and information analysts involved in creating and using information about Crown forests. FIM also provides direction to foresters, biologists, forest technicians, forest management planning teams, and others involved in forest management planning, operations or reporting.

FIM technical specifications may also be referenced by information users not directly involved in forest management planning, but who have a need to utilize or have access to the information about Crown forests.

Application of the Forest Information Manual

The intention of FIM and FIM technical specifications is to set out a process to exchange information in a timely fashion, in a standard and consistent format, and generally to improve the exchange of information. Timelines related to the exchange of information set out in the FIM are related to the development and implementation of FMPs.

FIM and the FIM technical specifications set out the minimum standards for information provision and exchange. Sustainable forest licensees are free to provide additional information if they so choose.

Information requirements prescribed in FIM take effect when it is published and available to the public, as set out in subsection 68(10) of the CFSA. Key timelines and effective dates are prescribed in FIM for each information requirement with more specific, detailed first effective dates, phase-in provisions and implementation descriptions included in FIM technical specifications.

Revisions to the Forest Information Manual

The FMPM provides direction for all aspects of forest management planning in Ontario within the area of the undertaking as defined in MNRF-75. The Forest Information Manual complements the FMPM by setting out how the information requirements contained in the FMPM will be met.

The main impetus for revising FIM is to align it with ongoing changes to the other regulated manuals, including the FMPM. Alignment between the FMPM and FIM realizes efficiencies in planning and information requirements, and reduces implementation obstacles and issues of interpretation. On the basis of the close

relationship between these two manuals, future revisions to FIM would ideally be produced on a timeframe similar to a FMPM revision.

Another primary consideration in revising FIM pertains to the experience and knowledge that will be gained through implementing FIM. The exchange of information, and the effectiveness and ease of use of FIM will be monitored to determine if improvements or revisions to FIM are required.

Revisions to FIM technical specifications will ensure that modern and efficient processes and approaches are used in the collection and sharing of information.

Any revisions or new versions of FIM will follow the requirements for reviewing and revising regulations, as set out by the Ontario Government.

FIM Technical Specifications Implementation and Revision

FIM technical specifications provide the details of the process and form of information exchanged between the MNRF and the various stakeholders (i.e., parties) identified in Part A, Section 2.0. FIM has five separate FIM technical specifications, namely:

- FIM Base and Values Technical Specifications
- FIM Forest Management Planning Technical Specifications
- FIM Forest Resources Inventory Technical Specifications
- FIM Annual Work Schedule Technical Specifications
- FIM Annual Report Technical Specifications

FIM Technical Specifications Development and Application

FIM technical specifications are prepared to help with the exchange of information set out in FIM. FIM technical specifications may be revised periodically to consider more effective and efficient ways of managing, transferring, and receiving information. Changes or revisions to FIM technical specifications do not impact the requirements or direction for the exchange of information set out in FIM. A requirement of the FIM is that FIM technical specifications, as revised from time to time, are followed.

FIM technical specifications are effective upon regulation of FIM or as they are developed. The information they reference may be required annually, periodically as associated with the timing and schedule of FMP development, or as scheduled with monitoring, reporting and evaluation. For this reason the use, availability and development schedule of individual specifications will vary.

A list of current FIM technical specifications, and the applicable information products and planning terms that they apply to, will be maintained and available on the Forest Information Portal (FI Portal). The sustainable forest licensee will use FIM technical specifications listed on the FI Portal.

FIM Technical Specifications Revision

Information management and information technologies are constantly evolving. To support continual improvement and to optimize business efficiencies, FIM technical specifications may be reviewed annually. FIM technical specifications are modified by the MNRF to optimize information transfer in an efficient and cost effective manner, to allow for flexibility and innovation, and to ensure data integrity.

To the extent possible, required or suggested changes to the specifications will be completed in concert with a change or revision of the FMPM and FIM. Changes to the specifications can have significant impact on the information systems and processes used by sustainable forest licensees and MNRF. As our reliance on technology and automation increases, so does the impact of change.

Either the sustainable forest licensee or MNRF may propose a change to FIM technical specifications at any time. However, modifications to FIM technical specifications will not normally occur more than once annually.

Changes to FIM technical specifications may be based on, but not limited to, one or more of the following:

(a) changes in information technology (e.g., information management systems) used by sustainable forest licensees or MNRF;

(b) identification of alternative (e.g., more flexible, easier, more efficient, more cost effective) ways to exchange information while still meeting the requirements set out in FIM;

(c) clarification of detailed attribute descriptions. In some cases, proposed changes to detailed attributes may require consideration of changes to, or the effect on, the applicable requirements and standards set out in FIM;

(d) identification of existing or new information requirements from a regulated manual not currently set out in FIM technical specifications;

(e) identification of improvements to standards in relation to validation, error handling, quality control, quality assurance, or verification;

(f) identification of improved security measures and information confirmation, receipt, and notification protocols and procedures; or

(g) changes to file structures, metadata requirements or standards.

Revisions to FIM technical specifications may result in significant change or modification to information systems, or management processes used by either sustainable forest licensees or MNRF (e.g., proposed change to the data exchange format). Or, revisions may be simple in nature, easily instituted, and have minimal impact to either sustainable forest licensees or MNRF (e.g., proposed change to feature attributes).

FIM technical specifications may be revised only if the proposed modifications do not affect the requirements and standards set out within FIM. Any proposed modifications to FIM technical specifications that would cause a change to the requirements for information set out in FIM would first be subject to regulatory modification of FIM.

FIM Technical Specifications Revision – Request and Approval Process

Requests for revisions to FIM technical specifications are directed to the Forest Sustainability and Information Section of the MNRF. All changes and revisions to FIM technical specifications are approved by the Director of the Crown Forests and Lands Policy Branch. The level of detail and supporting rationale for revision requests are determined by significance of the request. Minor, low impact changes are managed internally by the Forest Sustainability and Information Section. Major changes with significant impact will be reviewed and considered in consultation with the forest industry and other MNRF branches and divisions.

Significant or major change requests should include the following information:

(a) a brief description of the proposed change;

(b) identification of the affected FIM technical specifications;

(c) the applicable conditions identifying why the proposed change is necessary and any associated time constraints;

(d) a description of the significance of the change to the current FIM technical specifications and a list of the affected stakeholders (i.e., parties);

(e) the expected gains or efficiencies of implementing the proposed change;

(f) the predicted cost impacts to sustainable forest licensees and MNRF of the change; and

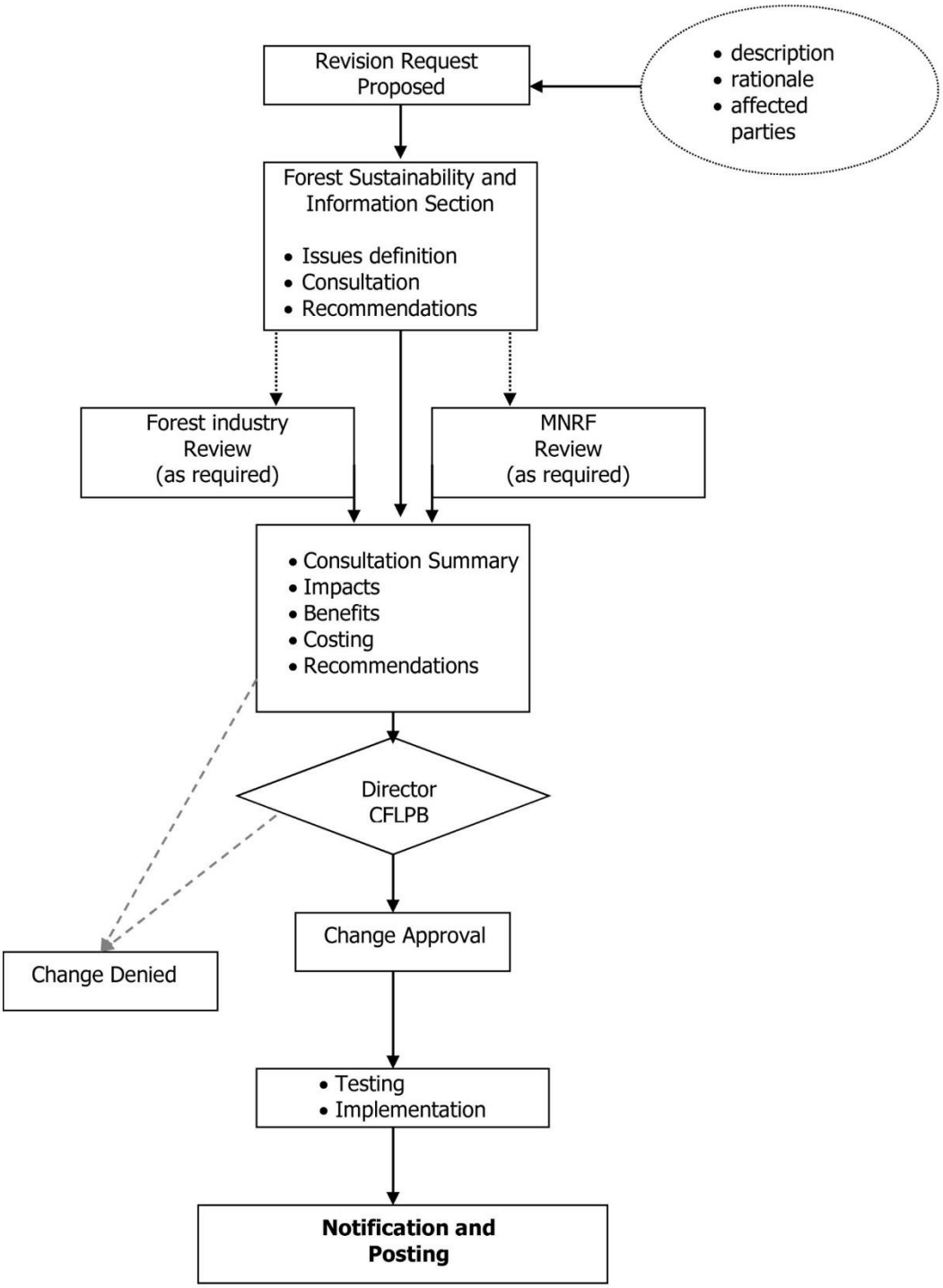
(g) any issues related to implementing the proposed change.

The sustainable forest licensee may assist in identifying all affected parties, setting timeframes for considering changes, developing and testing proposed revisions, and identifying any training and follow-up needs to ensure effective implementation of the revised FIM technical specifications. Consultation with sustainable forest licensees will occur in instances where they would be significantly affected by the change.

Direct notification of the change or revision will be given to the sustainable forest licensee and appropriate MNRF staff. Notification will include the effective dates for the revised FIM technical specifications and an indication of FIM required information governed by the revised specifications. The revised FIM technical specifications will be posted to the FI Portal.

An overview of the revision process is depicted in Figure 1.0.

Figure 1.0 FIM Technical Specifications Revision Process – Summary Overview



Part A Information and Management

1.0 Introduction

Part A sets out procedures and protocol and gives direction and guidance on using and managing FIM required information. Part A also guides sustainable forest licensees and MNRF in managing their relationship and interactions related to data sharing and exchange. Part A clarifies the relationships between the CFSA, the CA, the *Archives and Recordkeeping Act* (ARA) 2006, and FIPPA. Part A also sets out the Ministry of Natural Resources and Forestry's rights to deal with information provided to the Minister in accordance with the FIM and in relation to the legislation.

For the purposes of FIM, information includes data (i.e., collection of facts) and processed data, a grouping or organization of data. Examples of information as regulated by FIM include text, maps, tables, geographic information systems layers, graphs, models, photographs, and digital images. Information set out in FIM may include information in digital or hard-copy form.

FIM sets out the requirements for information about Crown forests for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations. The information required by the MNRF will be prepared by sustainable forest licensees or by other parties as set out in the FIM and will be provided to the ministry. The FIM also provides for the sharing of certain ministry information with sustainable forest licensees.

1.1 Direction from the Crown Forest Sustainability Act

Sections 68, 20 and 21 of the CFSA provide direction for the framework and content of FIM.

Subsection 68(1) of the CFSA requires the minster to prepare a Forest Information Manual. Subsection 68(6) of the CFSA sets out the types of information that FIM may contain:

> *The Forest Information Manual may contain provisions respecting information systems, inventories, surveys, tests and studies that may be required by the Minister in respect of Crown forests and respecting information to be provided to the Minister in respect of Crown forests.*

Sections 20 and 21 of the CFSA set out requirements for sustainable forest licensees to collect and provide the Minister with specified information in accordance with

FIM. Sections 20 and 21 of the CFSA also set out how the Minister may treat information obtained from sustainable forest licensees. For example, under section 20, sustainable forest licensees are required to conduct inventories, surveys, tests, or studies. Under section 21, sustainable forest licensees are to provide information in accordance with FIM required for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations.

Subsection 20(1) of the CFSA states:

> *The Minister may require the holder of a forest resource licence to conduct inventories, surveys, tests or studies in accordance with the Forest Information Manual for the purpose of forest management planning or ensuring compliance with this Act and the regulations.*

For the purposes of FIM, inventories, surveys, tests, or studies may also include inspections, assessments, reports, samples, investigations, or any similar functions related to collecting data and information about Crown forests. The Minister may request that information about Crown forests be collected from other inventories, surveys, tests, or studies be provided to the Minister as directed in subsection 68(6) of the CFSA.

Subsection 20(2) of the CFSA states:

> *If a licensee fails to conduct the inventories, surveys, tests or studies as required, the Minister may cause them to be conducted, and the licensee is liable to the Minister for all costs associated with the conduct of the inventories, surveys, tests or studies.*

All costs of conducting the inventories, surveys, tests, or studies as set out under FIM, are the responsibility of the sustainable forest licensee. If these requirements and responsibilities are not fulfilled, the Minister has the authority to cause the inventories, surveys, tests, or studies to be conducted and the sustainable forest licensee is then liable to the Minister for all associated costs.

Subsection 21(1) of the CFSA states:

> *The Minister may require the holder or former holder of a forest resource licence to provide the Minister with information in accordance with the Forest Information Manual for the purpose of forest management planning or ensuring compliance with this Act and the regulations.*

FIM sets out the information a sustainable forest licensee will provide the Minister that includes information created or used in information systems or created by the requirement to conduct inventories, surveys, tests, or studies, in accordance with

subsection 68(6) or section 20 of the CFSA. Circumstances of non-compliance in providing information set out in FIM are subject to, and will be dealt with, in accordance with Part VII of the CFSA.

Subsection 21(2) of the CFSA states:

> *The Minister may deal with information obtained under this section as if the Minister had created the information.*

The information received by the Minister in accordance with FIM will be treated as if the Minister had created the information.

1.2 Crown's Right to Deal with Information

As the steward of Crown forests, the Minister must be able to deal with information about Crown forests that has been provided to the Minister in accordance with FIM. The Minister must have easy and unfettered access to information about this resource and be able to make this information available to, and accessible by, the public. The Minister must be able to use this information and related works to meet the purpose of the CFSA and to fulfill his/her obligations under the Act.

1.2.1 Information Created and Provided to the Crown

Pursuant to section 21 of the CFSA, the Minister may deal with information provided in accordance with FIM as if the Minister had created the information. Accordingly, the Minister has an unrestricted right to use this information without any approval from or notice to any third party. The planning inventory is an example of information that will be created and provided by sustainable forest licensees in accordance with FIM. The Minister's right described above also applies to information supplied to the Minister by third parties on behalf of sustainable forest licensees for the purpose of fulfilling their information requirements under FIM.

The provider of the information supplied in accordance with FIM will continue to enjoy any rights that it may have in the information, except to the extent of the rights granted to the Minister under the CFSA.

1.2.2 Information Created and Provided by the Crown

The Queen's Printer for Ontario holds and administers copyright and intellectual property rights for information owned by the Crown and certain information obtained by the Minister in accordance with the FIM. The Crown asserts exclusive copyright of information and related works that are created by the Crown using information obtained by the Minister in accordance with FIM.

The Crown owns and asserts exclusive copyright on information that the MNRF creates and provides to sustainable forest licensees. Base information (e.g., lakes, rivers, and provincial/municipal transportation routes) is an example of information that the Crown creates and maintains. The MNRF provides this base information to sustainable forest licensees, but retains sole ownership and copyright of this information. Sustainable forest licensees may use this information for the purpose of fulfilling their licence obligations in accordance with the CFSA and its regulations, or as determined by the Queen's Printer for Ontario.

MNRF policy permits the provision of a base data user's licence for the use and further distribution of base data royalty-free. Sustainable forest licensees receiving base data set out in FIM, and that have requested in writing and received, a base data user's licence, may use base data for purposes beyond forest management planning and compliance with the CFSA. The detail of this privilege and permitted data use is set out in FIM Base and Values Technical Specifications.

1.2.3 Source Information

The MNRF has the responsibilities for auditing, identifying, confirming, monitoring, reporting, evaluating, and approving information set out in the FIM. In meeting this obligation, the MNRF may require access to the source data, records and information used to create and provide information in accordance with the FIM for the purpose of identifying or confirming the quality and accuracy of the information provided. Given reasonable notice, sustainable forest licensees will grant access to source data, records, and information upon request by the MNRF.

The Crown will not claim ownership, copyright or intellectual property rights to source data, records and information that are created or acquired by sustainable forest licensees and are accessed by the MNRF. Copyright and ownership of this information remains with the sustainable forest licensee.

Source data, records and information may include, but are not limited to:

(a) Large scale photography or supplemental aerial photography;
(b) Satellite imagery;
(c) Maps;
(d) Surveys;
(e) Tests;
(f) Studies;
(g) Inspections;
(h) Past and current records;
(i) Pre- or post-operational field cruises;

(j) Permanent or temporary sample plots; and

(k) Any data or information that has been collected and used to create, or support the creation of, information set out in this FIM.

Ownership and copyright of source information may be held by a third party external to the sustainable forest licensee. The Minister will take into consideration the costs of production, and copyright obligations affecting the sustainable forest licensee or other parties, in making decisions regarding requests for access to, or use of source information.

If mutually agreed, the sustainable forest licensee could provide source data if it is the most economical and practical means of providing access. In these cases, ownership and copyright of source data remains with the sustainable forest licensee.

1.2.4 Licence Transfers, Surrenders and Cancellations

Where a SFL is transferred under section 35 of the CFSA or where a SFL is surrendered under section 35.1 of the CFSA, or where a SFL is cancelled under section 41.1 of the CFSA, the holder or former holder of that forest resource licence, a company or entity that is under common ownership, management or control as the holder or former holder of that forest resource licence, a court appointed officer (e.g., a monitor, receiver, bankruptcy trustee, or chief restructuring officer) or a person appointed by a lender to the forest resource licence holder (e.g., a receiver or receiver-manager), as the case may be, will provide the Minister upon request with any information relating to meeting requirements of Parts B, C and D of the FIM, including:

(a) approved or delivered products;

(b) supporting materials, work in progress or completed work that has not yet been provided to the ministry;

(c) the other material or information products required to support forest management planning and ongoing harvesting and renewal programs; or

(d) agreements for ongoing or planned forest management activities.

The Minister may request the assistance of any of the persons or entities described above to obtain any of the information described in this Section if that information is in the custody or control of another person or entity.

1.3 Intellectual Property Rights, Freedom of Information and Classified Data

Intellectual property is the expression and/or organization of ideas, data, and information, and the rights that protect it. Intellectual property rights are protected

by mechanisms that include copyright, patents, trademarks, and other forms of intellectual property protection. Examples of some mechanisms that government uses to protect intellectual property rights are: trademarks, such as the stylized trillium symbol; and copyright statements, such as '© Queen's Printer for Ontario' that appear on government publications, maps, databases, research findings, and photographs.

Access to information and the protection of privacy of individuals associated with information set out in FIM are governed by FIPPA.

FIPPA has two primary purposes:

(a) To provide a right of access to information under the control of institutions in accordance with the principles that:

    (a) information should be available to the public;
    (b) necessary exemptions from the right of access be limited and specific; and
    (c) decisions on the disclosure of government information should be reviewed independently of government.

(b) To protect the privacy of individuals with respect to personal information about themselves held by institutions, and to provide individuals with a right of access to that information.

Access to information set out in FIM may be limited in some instances by MNRF's Protection and Distribution of Provincially Tracked Species Data Policy set out in Part A, Section 1.3.1.

The Minister determines whether information obtained in accordance with the CFSA can be made available to a person making a FIPPA request. In making these determinations, the Minister will comply with the FIPPA. Access decisions made by the Minister may be appealed by the requestor or the affected party (e.g., sustainable forest licensee or other party) to the Information and Privacy Commissioner of Ontario.

In addition, the Minister may restrict access to certain information that, if made available, could cause harm or threaten the existence, integrity or health of a value (e.g., archaeological sites, species at risk).

1.3.1 MNRF Classified Data

The MNRF supports open, easy and equitable access to its information and intellectual property. However, protecting classified data and information is a necessary and valid component of MNRF's mandate.

The Information Security and Privacy Classification Operating Procedures are used by the MNRF to assign a sensitivity classification to its data**.** This policy and operating procedures cover the management of all data and information created by the Ontario Government.

Four possible sensitivity classifications exist – high sensitivity, medium sensitivity, low sensitivity and non-sensitive (i.e., unclassified).

This classification ensures that information is created, acquired, updated, handled, used, transmitted, transported, filed, stored, and destroyed in a manner appropriate to its sensitivity. These security measures ensure the integrity of all records; protect sensitive information from unauthorized access, disclosure or use; and protect valuable information from damage or loss.

The MNRF acknowledges that while classified data will have restrictions on access, this data may be made available for specific purposes on a 'need to know' basis to public and non-public organizations to meet the MNRF's mission of sustainability of resources. Classified data features will be encountered by MNRF and sustainable forest licensees in managing, accessing, harvesting and renewing forest resources. Preparing forest management plans (FMP) and conducting forest operations meets the 'need to know' principle.

The sustainable forest licensee will, along with the MNRF, ensure that classified data features are protected in forest management planning and in conducting forest operations. Detailed direction on classifying, accessing and using sensitive provincially tracked species data is given in the MNRF's Protection and Distribution of Provincially Tracked Species Data Policy. Additional guidance on the use and display of classified values in forest management planning is given in FIM Base and Values Technical Specifications, FIM Forest Management Planning Technical Specifications and FIM Annual Work Schedule Technical Specifications.

Medium sensitive data is only accessible to sustainable forest licensee and MNRF through the issue of access privileges from the data custodian (i.e., section or branch within the MNRF that has stewardship and management responsibility for data). This privilege is usually obtained through participation in data sensitivity training offered by the MNRF. Data sensitivity training may be specific to particular data sets or groupings of data.

1.3.2 Organization of Information

FIM sets a minimum standard for the organization and quality of data to be exchanged between the sustainable forest licensee and MNRF. The organization and quality of information, or the infrastructure and the resources needed to update and maintain information, may differ significantly among sustainable forest licensees. FIM does not set out how a sustainable forest licensee will organize its data or information for their own purposes. The sustainable forest licensee may organize and maintain data or information in whatever form they need, as long as they provide the mandatory information set out in the FIM. The sustainable forest licensee may provide MNRF with information products in addition to those set out in the FIM. If the sustainable forest licensee is providing MNRF with information beyond what is required in FIM and if the information is confidential and public disclosure is likely to cause a harm set out in section 17 of FIPPA, the sustainable forest licensee should identify that information either in a cover letter or by noting this on the documents provided to MNRF. The Minister will respect the intellectual property rights of sustainable forest licensees or other parties with regard to their organization of data or information.

1.4 Procedure to Resolve Information Issues

The procedure described in this section may be applied to resolve issues between sustainable forest licensee or other parties and MNRF regarding requests for information or requirements for information deemed in accordance with the FIM. This procedure is specific to matters related to the FIM and the exchange of information and will not be confused with, or used as an alternative mechanism to the issue resolution procedure set out in the FMPM, Part A, Section 2.4.

This procedure may be applied, but is not limited in application, to the following situations:

(a) requests for different or additional information created by a sustainable forest licensee that are intended to meet the mandatory information requirements set out in the FIM;

(b) requests for information from the MNRF made by sustainable forest licensees or other parties that are deemed in accordance with information set out in the FIM;

(c) requests for access to source data, records and information;

(d) requests for supporting records and information not described by information in the FIM, but that contain information about Crown forests or that are required for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations; or

(e) any issue or dispute regarding the information requirements set out in the FIM.

The issue should initially be dealt with and, where possible, resolved between the initial parties involved. Most information requests will be related to carrying out the business of forest management planning at the local level. The concerned party may be a representative of a sustainable forest licensee, another party, or the MNRF. The concerned party will comply with the following procedure to ensure that the issue has been dealt with fairly, fully, and promptly.

1. The concerned party will identify the issue, provide sufficient detail about how the information request affects their operations, and offer a proposed solution, in writing, to the sustainable forest licensee or an MNRF contact (e.g., Resource Management Supervisor). The sustainable forest licensee, the MNRF contact and the concerned party (i.e., when not one of these two parties), will meet to discuss the issue and attempt to resolve it. The sustainable forest licensee and the MNRF contact may each choose to involve an information management specialist or information systems person employed by their respective organizations to assist with any technical discussions related to the information request or issue. If these discussions do not produce a resolution, either the sustainable forest licensee, the MNRF contact, or the concerned party may communicate the issue, in writing, to the appropriate MNRF district manager or regional director.

2. The MNRF district manager or regional director arranges and attends a meeting of the sustainable forest licensee, the MNRF contact and the concerned party. The MNRF district manager or regional director may choose to involve other specialist or positions from each respective organization to assist with technical discussions.

3. The MNRF district manager or regional director provides a resolution to the issue normally within 21 days of receipt of those submissions and provides a copy of a written resolution, with reasons, to the affected parties. Written submissions from all parties will be maintained on record by the parties involved.

4. All documentation resulting from the MNRF review will be maintained as reference, and will be used for future reference and consideration when resolving other information issues through this procedure.

The MNRF district manager or regional director develops appropriate rationale to support a resolution or decision at each stage in the issue resolution procedure and considers the following factors as appropriate:

(a) the relevance and importance of the information request to the purpose of forest management planning or ensuring compliance with the CFSA and its regulations. If the information request does not satisfy this test, then the request for information is not valid;

(b) the sensitivity of the information requested (i.e., if released would it pose a threat to the existence, integrity, and health of a value, including land uses);

(c) the implications and provisions of FIPPA, in terms of protecting the interests of the party providing the information and the institution (i.e., government) in control of the information;

(d) the copyright implications (e.g., infringements) on the creator or owner by releasing the requested information. For example, copyright may restrict the ability of a sustainable forest licensee to provide information when they have purchased a copy of, or access rights to, satellite imagery. This factor may also apply to the MNRF. Crown copyright is administered by the Queen's Printer for Ontario, who will be involved in making decisions that affect copyright of information owned by the Crown or information obtained by the Minister in accordance with the FIM;

(e) the potential uses of the information requested. Where possible, discussions regarding the use(s) of the information with the party requesting it should be encouraged in an open and consultative fashion;

(f) the costs of collecting and producing the information and making the information available to the party requesting it. The Ontario Government's policies on managing, pricing, and distributing government intellectual property may provide guidance;

(g) the degree of access needed to meet the information request (e.g., should the information be provided in its original form, in digital or paper form, provided in a lesser or more convenient form, made available for viewing, or returned to the sustainable forest licensee after the ministry has had an opportunity to view it);

(h) available records from previous cases where similar issue resolution procedures have been applied to ensure consistency with previous decisions made by the ministry; and

(i) any other factors or unique circumstances that may influence decisions respecting information requests or information issues.

1.5 Access to Information

MNRF's Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (2015) and the CFSA support an open and consultative planning process that is transparent to the public. The public will normally be provided access to all information set out in FIM, unless otherwise determined by the Minister in

consideration of sensitive information about resource features and values, copyright restrictions, proprietary restrictions, or FIPPA.

Public (i.e., third party) requests for access to information about Crown forests will be handled by the ministry in accordance with its policies relating to data access and sharing and the direction set out in FIM. Information that has been obtained by the Minister in accordance with FIM may include paper and digital information products (e.g., maps, audits, reports, documents, tables, computer files or records, digital spatial information, databases, model runs).

Access to information or provision of information to satisfy public requests may be through open houses, appointments, internet publication and viewing or other such arrangements that allow quick and efficient public access to information.

The Minister may determine the conditions where access to information is provided.

The Minister may also determine how information set out in the FIM may be used by third parties. The Minister may enter into agreements or arrangements with third parties and specify the conditions where third parties may use the information provided to them.

1.5.1 Information Sharing

The Government of Ontario promotes an Open by Default approach to the proactive release of data. It promotes data management practices which enable the proactive and ongoing release of government data which includes FIM prescribed data and information in a manner that is consistent with existing legal obligations, restrictions and requirements, including the ARA, FIPPA, and the *Accessibility for Ontarians with Disabilities Act, 2005* (AODA) or other applicable legislation.

To meet the requirements of AODA, and more specifically the Integrated Accessibility Standards Regulation, the MNRF will provide sustainable forest licensees with guidance and direction in the preparation of AODA compliant information products.

As technology advances and offers practical improvements for the production of AODA compliant FIM information products, FIM technical specifications will be updated to reflect these advancements.

1.6 Records Management

Information provided under FIM, irrespective of media (e.g., paper, digital files), will be managed and maintained in accordance with the ARA:

(a) to ensure that the public records of Ontario are managed, kept and preserved in a useable form for the benefit of present and future generations;
(b) to foster government accountability and transparency by promoting and facilitating good recordkeeping by public bodies; and
(c) to encourage the public use of Ontario's archival records as a vital resource for studying and interpreting the history of the province.

Every public body prepares a records schedule that sets out, for each class of public records that they create or receive, the length of time the records will be retained and the disposition of the records at the end of their retention period. Every public body retains and transfers or otherwise disposes of their public records in accordance with the public body's approved records schedule.

This includes the information set out in FIM, including draft and final FMPs and associated supplementary documentation, FMP extensions, mid-plan checks, FMP amendments, AWSs, and annual reports. Record keeping activities for the information set out in FIM and the ARA are the responsibility of MNRF.

Additional information requirements set out in specific guides, protocols or directives will be managed in accordance with the ARA. Information to support Independent Forest Audits (IFA) is an example where the sustainable forest licensees and MNRF have a duty to retain and provide the information requirements listed in the Independent Forest Audit Process and Protocol, including its Appendices.

The sustainable forest licensees will retain source information or other documents in cases where the information is not set out in FIM or provided to the MNRF.

Access to recorded information is to be ensured in accordance with the requirements of the FIPPA.

1.7 Protocol for Information

The MNRF recognizes the efforts and costs of sustainable forest licensees or other parties to create and maintain certain information set out in the FIM. In acknowledgement of these efforts, this section discusses:

(a) recognition of sustainable forest licensees in creating information set out in the FIM;
(b) disclosure of information use to sustainable forest licensees regarding third party use and users of information;
(c) the original source of information set out in the FIM;
(d) data sharing and data exchange agreements;

(e) information set out in other regulated manuals; and

(f) information partnering and innovation.

1.7.1 Recognition for Creating Information

Sustainable forest licensees may provide a logo that gives credit and recognition of their company, on any information submitted to the Minister. The logo may include a symbol and a name relevant to the sustainable forest licensee who provided the information. The MNRF may also apply its logo, and the government copyright label, to the information or information product.

The logo provided by a sustainable forest licensee will not, in any way, affect how the Minister may use the information obtained in accordance with the FIM.

1.7.2 Disclosure of Information Use

The Minister of Natural Resources and Forestry determines how information obtained in accordance with FIM may be used. FIM does not restrict the Minister's use of information obtained in accordance with the CFSA and its regulations. Sustainable forest licensees or other parties are not restricted as to how they use information that they create and provide to the Minister in accordance with the FIM, except as set out in FIM, Part A, Section 1.2.

The Minister is not required to disclose the use of information obtained in accordance with FIM. Sustainable forest licensees are not required to disclose their use of information that they create and provide to the Minister in accordance with FIM.

The MNRF complies with FIPPA regarding the disclosure of information obtained by the Minister in accordance with FIM, and the disclosure of related information pertaining to the use or users of that information.

1.7.3 Original Source of Information

Information set out in FIM is submitted to the MNRF via the data transfer mechanism (see Part A, Section 2.2). The information submitted and residing in the data transfer mechanism is considered to be the authoritative source of FIM required information.

1.7.4 Data Sharing and Data Exchange Agreements

Existing data sharing or exchange agreements or memoranda of understanding or any parts of agreements that address an exchange or provision of the information set out in FIM will not supersede the requirements and standards for information set out in FIM.

FIM has no effect on information sharing and exchange arrangements or agreements that deal with information not in respect of Crown forests or outside the purpose of forest management planning or ensuring compliance with the CFSA and its regulations.

1.7.5 Information Set Out in Other Regulated Manuals

The information requirements of the other manuals mandated by the CFSA (i.e., the Forest Management Planning Manual, the Forest Operations and Silviculture Manual, and the Scaling Manual) are considered to be information set out in FIM. As such, the requirements to provide the information identified in the other CFSA manuals will be administered in accordance with FIM. Instances of non-compliance in providing information set out in FIM, or information requirements of the other CFSA manuals, are subject to, and will be dealt with according to, Part VII of the CFSA.

1.7.6 Information Partnering and Innovation

Information management is a costly and necessary investment. One of the principles applied in the development and implementation of the FIM is to allow, promote, and foster innovation with respect to the information needed to meet the purpose of the CFSA and its regulations. Sustainable forest licensees, the MNRF, or other parties, as identified in FIM, will prepare and provide the information set out in FIM. Sustainable forest licensees, the MNRF, and other parties are free to establish cooperative arrangements and partnerships to enhance the collection, creation, quality, use, or provision of information for forest management planning or to ensure compliance with the CFSA and its regulations.

2.0 Meeting Information Requirements

2.1 Responsible Parties

Information requirements in FIM support the preparation, approval, implementation, monitoring, and reporting of FMPs and forest operations. Information products set out in FIM are provided predominantly by:

- Sustainable forest licensees
- MNRF

The definitions given in this section provide the scope and range for all parties involved in providing FIM requirements. The differences among the responsible parties are, in some cases, very subtle. To simplify FIM, responsible parties are categorised into two distinct types: the sustainable forest licensee and MNRF. Sustainable Forest Licence (SFL) holders or other licence holders (e.g., forest resource licence, enhanced forest resource licence) with forest management responsibilities will be generalized as the sustainable forest licensee. For the purpose of the FIM, the sustainable forest licensee is referenced as the party responsible for preparing and implementing FMPs.

2.1.1 Sustainable Forest Licensees

Sustainable forest licensees will prepare FMPs on areas of Crown forest falling within their respective SFL. On designated management units that are not managed under an SFL, the Crown or another designated party prepares and implements a FMP. Where the requirements of the FIM refer to the sustainable forest licensee, those requirements apply to the MNRF or the party responsible for the preparation and implementation of a FMP.

Sustainable forest licensees also schedule and conduct forest management operations in accordance with an approved FMP, and report on those operations. As such, sustainable forest licensees will provide the information set out in the FIM. Where the requirements for information identify sustainable forest licensees as the responsible party, those requirements apply to the holder of a licence issued under section 26 of the CFSA.

Sustainable forest licensees will secure information set out in FIM from overlapping licence holders who are issued forest resource licences in accordance with section 38 of the CFSA. Sustainable forest licensees are expected to enter into an agreement with overlapping licence holders regarding the provision of information set out in the FIM in accordance with section 8 of CFSA Regulation 167/95.

2.1.2 Ministry of Natural Resources and Forestry

The MNRF provides information, such as base information, values information or forest resources inventory information, to SFL holders. Where the requirements for information identify the MNRF as the responsible party, those requirements may apply to the MNRF in general or may apply specifically to an MNRF division, branch or section.

2.2 Data Transfer Mechanism – The Forest Information Portal

Information set out in FIM will be provided or exchanged via a data transfer mechanism. FIM recognizes the Forest Information Portal (FI Portal) as the means to transfer, store and retrieve FIM data between the MNRF and sustainable forest licensees.

The FI Portal is continually reviewed, updated and evaluated. The FI Portal is upgraded for technology improvements in hardware and software. Additional functionality is added to increase efficiency, enhance ease of use and to meet emerging business needs. In spite of this rigorous maintenance and on-going development regime, the FI Portal is approaching its end of life. At the time of preparation of the FIM, an examination of the data exchange processes and business needs was underway to determine a strategy for the development of a new portal or alternative approach to data sharing and exchange among the MNRF, the forest industry, stakeholders and the public. Should the strategy propose a data transfer mechanism significantly different from the existing FI Portal, FIM and FIM technical specifications will be amended accordingly.

The data transfer mechanism is the repository for approved copies of the FMP and the annual work schedule (AWS), and for annual report submissions for the management unit. The data transfer mechanism is also the repository for FMP extensions, mid-plan checks, amendments, revisions, changes or appended documents. The approved versions of the documents referenced above and any of the submissions referenced above are made available to the public on the Ontario Government website and are retained per the ARA.

In developing FMPs, FMP extensions, mid-plan checks, or work schedules, and in making amendments or revisions, it is necessary for sustainable forest licensees and the MNRF to exchange information, review proposals and share data. The FI Portal can be used for this type of exchange in advance of the submission of the final FMP, schedule, amendment or revision. Without exception, the approved final FMP, schedule, FMP extension, mid-plan check, amendment or revision will be submitted to the FI Portal. MNRF completes the approval of the submission and publication on the Ontario Government website.

Use of the FI Portal will assist in meeting obligations of complying with records management requirements of the ARA for information set out in FIM. The FI Portal is a repository for current versions of FIM, FIM technical specifications, FIM and FI Portal-related training materials, and other forest planning and information management direction.

The FI Portal is managed and maintained by the MNRF and support is offered through the MNRF. The FI Portal is generally available 24 hours a day, seven days a week. Users include MNRF staff, sustainable forest licensee personnel, Independent Forest Auditors, and forest consultants.

The FI Portal has functionality to ensure the integral and efficient transfer of information. Data transfers can be scheduled to run after normal business hours, interrupted transfers are tracked and restarted where necessary, and upload transfers are not limited by file size. Security is maintained by password protection and by the management of users via their account.

Only in exceptional cases or circumstances where internet line speeds, reliability of power supply, or other limitations could affect efficient and economical transfer of data, parties may mutually agree to provide the information on alternate media or methods (e.g., compact disc, DVD, USB device, surface mail). If sensitive or classified data are included in these transfers, encrypted devices will be used. In these instances it is still mandatory for responsible parties to enter a submission record into the FI Portal indicating that provision of the information is by alternate media for information products set out in FIM. The MNRF subsequently loads this data to the FI Portal and this information will be validated.

2.3 Roles and Responsibilities

The roles and responsibilities of sustainable forest licensees and the MNRF are set out in FIM for each information product. The roles and responsibilities for providing information may be further defined in FIM technical specifications.

Sustainable forest licensees and the MNRF have separate and distinct responsibilities in meeting information product requirements (e.g., MNRF prepares values maps; licensees prepare the planning inventory), or they share responsibilities for some information requirements (e.g., annual report tables). FIM sets out the information that the sustainable forest licensees or the MNRF will provide and the minimum standards that will be met.

In some circumstances the terms of reference and/or project plan associated with the preparation of a FMP (i.e., FMPM, Part A, Sections 1.1.2.1 and 1.1.2.2) may provide direction on roles and responsibilities. The roles and responsibilities may be

adapted to best meet the circumstances of the management unit and maintain the established relationships between the sustainable forest licensee and MNRF.

2.4 Timelines

Many of the timelines for providing information are set out in the FMPM (e.g., management unit annual reports are due November 15 each year). In cases where only an implicit timeline is provided in the FMPM (e.g., sustainable forest licensee will inform the MNRF of the discovery of a new value), FIM or the associated FIM technical specifications will set out the timeline associated with the information product.

Timeline references for providing FIM information are for general reference and direction, and sustainable forest licensees should use best efforts to meet the timelines set out in the FIM.

In some circumstances, timelines may be from the terms of reference and/or project plan associated with the preparation of a FMP (i.e., FMPM, Part A, Sections 1.1.2.1 and 1.1.2.2).

Part B Information for Strategic and Operation Planning

1.0 Introduction

Part B of the Forest Information Manual (FIM) sets out information for preparing forest management plans (FMP) in Ontario. This information supports the development of the long-term management direction (LTMD) for managing Crown forests and the planning of forest operations for the 10-year period of a FMP as per the Forest Management Planning Manual (FMPM), Parts A, B and C.

The information requirements include:

(a) Base information;
(b) Values information;
(c) Forest Resources Inventory (FRI) information;
(d) Planning information;
(e) Electronic forest management planning documents;
(f) Forest management planning maps; and
(g) Information related to information systems used in forest management planning.

Section 2.0 details the requirements for the provision of base information used to support the development of FMPs, forest resource inventories and other spatial information relevant to forest management planning.

Section 3.0 details the requirements to collect, confirm, verify, provide, update, and maintain values information.

Section 4.0 details the requirements for forest resources inventory, specifically the polygon forest information provided by the MNRF in support of FMP development.

Section 5.0 details the requirements for planning and base model inventories; information products provided by sustainable forest licensees and used as the basis for strategic and operational planning of forest management activities. This section also provides the requirements for updating base information and incorporating base information into a forest resources inventory.

Section 6.0 details the requirements for operational planning information, including a series of geospatial data layers used in FMP development, review and approval.

Section 7.0 details the forest management planning mapping requirements and standards.

Section 8.0 details the requirements for electronic submission of FMPs, supplementary documentation, maps, FMP extensions, mid-plan checks, and amendments.

The information in Part B is required periodically at specific stages throughout the forest management planning process and during FMP implementation, monitoring and assessment. The terms of reference and/or project plan of a FMP will identify the duties and responsibilities of specific planning team members to produce strategic and operational planning information in accordance with the FMPM and FIM.

2.0 Base Information

Base features represent the geographic locations and descriptions of topographic, cultural, and cadastral entities of Ontario's landbase. Base features can be natural, physical features, such as lakes, rivers, and wetlands, or they can be features of human influence such as hydro lines, gas pipelines, provincial highways, roads, and railways. Base features include areas that identify subdivisions of land, water, vegetation, environmental features, and other physical and administrative boundaries. Examples of this latter type of base features include forest management units, parks and protected areas, and ownership parcels that identify areas designated for legal, political, tax base, population base, land-use zoning, or management decision purposes.

Base information provides a consistent geographic base fabric for relating other information such as forest resources inventories, wildlife habitat, ecological land classification, values, and other biological information. Base information is also used in various analytical modelling processes, such as viewshed analysis, water movement and flow analysis, road location and transportation network analysis, watershed analysis, landscape diversity analysis, harvest scheduling, and other spatial analyses that require relational analysis of geographic information.

Some base information, such as lakes, rivers, or parks and protected areas may also be treated as values information, as set out in Part B, Section 3.0, for the purposes of forest management planning.

An overview of the requirements for base information, the standards that they are maintained and provided to, the roles and responsibilities of the MNRF and sustainable forest licensees, and the timelines associated with provision are set out in the following sections. The detailed description, information standards, formats and other exchange parameters and procedures are provided in the associated FIM Base and Values Technical Specifications.

2.1 Requirements and Standards for Base Information

The provision and sharing of base information is integral to the preparation of a FMP and the conducting of forest operations. The FMPM sets out the need for base information for the preparation of information products, defining areas of concern, providing databases, conducting analyses and preparing FMPs.

The MNRF provides licensees with base information in digital form for the purpose of forest management planning. Base information can be used for the creation and maintenance of forest resources inventories; planning of operations such as road

location, harvest layout and renewal activities; as context and reference on maps and other information; and for area of concern planning.

Licensees may request base information for these purposes at any time. The MNRF provides the requested information in accordance with the timelines and conditions set out in Part B, Section 2.3. Classified base information is only provided as per Part A, Section 1.3.2.

Licensees will update and provide changes to base information as encountered in planning or conducting operations as set out in FIM (e.g., newly constructed roads, submitted with management unit annual reports as an update to base information).

Base information used in forest management planning and provided to licensees by the MNRF is from Land Information Ontario (LIO). LIO data is obtained from a variety of sources. Base information stored in LIO that is provided by the MNRF is maintained in the MNRF's values information system. Base information is also provided to LIO by other government agencies, non-government organizations and the private sector each of whom use a variety of geographic information systems and tools. Data in LIO is managed in several geographic (i.e., thematic) layers or data classes.

The information standards vary for different types of base information and their associated spatial and descriptive information. The standards for information maintained in LIO are usually set by the data custodian and by the data model that the data class is built on.

The MNRF determines, in consultation with sustainable forest licensees, the data classes and the attributes needed to support forest management planning and compliance with the CFSA. The MNRF also consults sustainable forest licensees on suitable data exchange formats for base information. Detailed standards for base information are set out in FIM Base and Values Technical Specifications.

Base information may be provided in the form of a complete layer or theme for the management unit. Also, it may be provided as a complete set of information (i.e., all layers or themes) or as individual, specific layers or themes.

2.2 Roles and Responsibilities for Base Information

The MNRF maintains and updates base information used in forest management planning in MNRF's values information system and LIO. The MNRF also provides the best available information to sustainable forest licensees.

The sustainable forest licensee will provide updates to base information through the submission of information products set out in FIM.

Planning teams will determine and utilize the most current base information.

2.3 Timelines and Conditions for Provision of Base Information

MNRF provides sustainable forest licensees with base information to support FMP development and AWS preparation. The MNRF provides sustainable forest licensees with base information on an annual basis and on request in accordance with FIM Base and Values Technical Specifications. If MNRF cannot meet the timelines set out in FIM Base and Values Technical Specifications, MNRF will advise the sustainable forest licensee.

Base information will be provided to sustainable forest licensees in a digital format, and in the agreed-to exchange format, set out in FIM Base and Values Technical Specifications. This document will be revised and published periodically to reflect updates to the numerous digital geospatial layers that contain base information, and to incorporate additional layers/features when necessary.

If a sustainable forest licensee requests MNRF to provide base information in another form or format than set out in FIM technical specifications, MNRF will use best efforts to accommodate the request.

3.0 Values Information

A value is a natural, cultural, First Nation or Métis resource attribute or use of land, including all lakes and streams, which must be considered in forest management planning.

Examples of values include cross-country ski trails, spawning areas, moose calving sites, raptor nests, seed orchards, tourism outpost camps, registered trapline areas, canoe routes, archaeological sites, and evaluated wetlands.

No listing of values can be definitive. For the purposes of forest management planning, it can be any feature, entity or forest condition that could be impacted by forest operations. Base features can be considered values; lakes are an example. The list of values considered in forest management planning varies by forest management unit, landscape features, and stakeholders involved. The lists provided in FIM technical specifications are not all inclusive; they are a guide to the types of values to be considered.

The consideration or identification of values does not equate to values protection or prohibition of operations. Operational prescriptions and conditions are developed for areas of concern associated with all values. These prescriptions and conditions may be reserves (i.e., prohibition of operations), modified operations (i.e., specific conditions or restrictions on operations) or regular operations (i.e., in accordance with silvicultural ground rules (SGR)).

Values information can be provided by any person or party at any time. Information about values normally comes from the MNRF or other government staff; sustainable forest licensees and their operators; non-government organizations; third parties; other resource users; and the public.

The quality of values information is related to the method used to identify and collect the information. The number of identified and confirmed values is expected to increase, and the quality of information about those values is expected to improve, with each successive FMP. The public consultation process set out in the FMPM, Part A, supports the collection and provision of information about values at any time during the development and implementation of a FMP.

FIM Base and Values Technical Specifications list the variety of values to appear on values maps in support of forest management planning.

FIM does not categorize or explicitly define groupings or types of values. For the purposes of FIM, values information requirements apply to all known values.

3.1 Requirements and Standards for Values Information

Values information is an important input to forest management planning and operations. The FMPM Part A, Sections 1.1.8.6, 1.1.8.7 and 1.1.8.8 and Part B, Section 2.1.4 sets out the role of fish and wildlife, and of other resource information or values in contributing to values maps and the development of management objectives.

Part A, Section 1.1.8.9 of the FMPM sets out the requirement for a series of values maps in forest management planning. Values maps provide a summary of the geographic location(s) of known natural resources features, land uses and values that will be considered in forest management planning, and where further information is available. The FMPM indicates that values maps are produced in accordance with FIM.

A value is considered to be a known value when sufficient information to describe its geographic location and its basic features exist. Known values will be considered in forest management planning. The MNRF determines if a value can be treated as a known value based on the available information and in consideration of the standards set out in FIM Base and Values Technical Specifications.

Other sections of the FMPM, namely Part A, Section 1.3.5.1 Operational Prescriptions and Conditions for Areas of Concern, and Part D, Section 3.5.3 Changes to Operational Prescriptions for Areas of Concern also identify requirements for values information.

3.1.1 Role of MNRF

The MNRF collects information about values in accordance with the standards set out in FIM and FIM Base and Values Technical Specifications. Further, the MNRF gives priority to those values that are potentially affected by proposed and optional areas of forest operations for the FMP under preparation.

The MNRF provides the best available values information to planning teams for forest management planning purposes and made available throughout the planning process. The maps and information will include the values within the forest management unit for the FMP that is being written, and values that are adjacent to the forest management unit that may be affected by forest operations.

Values that are displayed on maps and that are considered in forest management planning are supported by further information gathered or created from field visits, inventories, surveys, tests, or studies.

MNRF enters and updates values information received from sustainable forest licensees and other sources into the MNRF's values information database (i.e., using LIO Editor) housed in a corporate data repository or information management system (i.e., Land Information Ontario Data Warehouse).

The MNRF may enter into data collection arrangements with sustainable forest licensees or third parties for the purpose of obtaining values information or for confirming existing values information.

3.1.2 Requirements for Sustainable Forest Licensees

Sustainable forest licensees will identify information for new values, and corrections to information about known values, that are encountered during the implementation of forest management operations and provide this information to the MNRF for values database updating and for consideration in future planning initiatives and operational activities. Sustainable forest licensees are to provide this information to MNRF within the timelines and conditions set out in Part B, Section 3.3, and in detail in FIM Base and Values Technical Specifications.

3.1.3 Requirements for Planning Teams

Planning teams will determine and utilize the most current values information, and determine and utilize updates to values information set out in Part B, Section 3.2 and Section 3.3.

3.1.4 Requirements Respecting Classified Values Information

In some cases, information about certain values such as the location and description of First Nation and Métis values, cultural heritage sites, or habitats of species at risk may be considered as classified data. Refer to Part A, Section 1.3.2 for a description of classified data. In these cases, releasing or portraying this data on maps may pose a threat to the existence, integrity, or health of those values. Classified values will not be made available or accessible to the public. Where the availability of information could be considered as potentially detrimental to the existence of a value, the MNRF determines whether or how the value can be depicted on a values map, and the type and extent of the information that can be provided to members of the planning team and to members of the Local Citizens' Committee (LCC). Where direction on the display of specific classified values in forest management planning is not provided in a related guide (e.g., the Forest Management Guide for Cultural Heritage Values), general direction has been provided in FIM Base and Values Technical Specifications and FIM Forest Management Planning Technical Specifications.

Information protocols or agreements that describe conditions respecting the use or users of classified values information, or restrict the availability of classified values

information, may be established with other agencies such as the Ministry of Tourism, Culture and Sport, or with MNRF's Natural Heritage Information Centre (NHIC), and First Nation or Métis communities. The planning team will ensure that sensitive information about values is protected and used in accordance with any protocols or agreements established between the MNRF and other agencies.

For the purpose of preparing a FMP, the district manager appoints the members on the planning team and establishes a LCC, as described in the FMPM under Part A, Sections 1.1.2 and 1.1.3, respectively. The appointed members of the planning team and the LCC are considered to be agents of the Crown for the purpose of fulfilling their duties in relation to preparing and implementing a FMP. Consequently, they are bound by MNRF's obligations under the FIPPA. Members of the planning team and LCC are also bound by any protocols or agreements that the MNRF establishes with other agencies that describe the conditions that the MNRF agrees to use and protect sensitive information about values.

In the forest management planning process, planning for the protection of values normally requires MNRF and sustainable forest licensee involvement. Therefore, the planning team or specific members of the planning team require access to information, including classified values information, to ensure that roads and areas of concern planning occurs in accordance with Part B, Section 4.2 and Section 4.5 of the FMPM. If the MNRF determines that information about a value cannot be provided to sustainable forest licensees or members of the planning team, the MNRF may instead provide the boundary of the area to be protected and/or any restrictions to forest operations. In these cases, the planning team will protect the provided area through appropriate areas of concern prescriptions and/or conditions.

3.1.5 Requirements Respecting Personal Information

Personal information is defined in Section 2 of FIPPA. The MNRF maintains personal information related to values information, such as a person's name, address, phone numbers, and other personal data associated with land use permits, trapline areas, baitfish areas, and other licensed or recognized natural resource uses. Personal information is considered to be sensitive and will not be displayed on values maps.

The MNRF acquires and declares consent to use personal information for forest management planning purposes from the persons providing their personal information. The MNRF determines whether this information relating to values can be made available to sustainable forest licensees, planning team members, or members of the LCC. The MNRF complies with FIPPA in terms of the treatment and use of personal information related to values information used in forest management planning. Sustainable forest licensees, planning team members, and members of the LCC, as agents of the Crown, will also comply with FIPPA in terms of

their treatment and use of personal information for the purpose of fulfilling their obligations in forest management planning.

3.1.6 Standards for Values Information

The MNRF in consultation with the sustainable forest licensees determines the types of values and the attributes that support forest management planning and compliance with the CFSA. Only a subset of MNRF's natural resources and values information are used in forest management planning. Also, only a limited number of the attributes associated with a given feature will support forest management planning. Many of the attributes of features maintained in MNRF's information system relate to the collection, storage, and management of the natural resources and values database and are not used in forest management planning.

The MNRF also consults sustainable forest licensees on suitable data exchange formats (e.g., a compressed ESRI .e00 file, shapefile, file geodatabase) for values information. Detailed standards for values information are set out in FIM Base and Values Technical Specifications.

The standards identify the minimum information required to treat a value as a known value. This information consists of two parts: a geographic location and a basic description for each feature. Information that meets these standards is considered to be conclusive information required to confirm the presence and characteristics of a value. Information that meets these standards ensures that planning teams have sufficient background information to plan road locations and prepare area of concern prescriptions to protect the existence, integrity, and health of the value. Only known values will be depicted on values maps and considered in forest management planning.

The MNRF determines whether the available information satisfies the minimum standards and is sufficient to treat a value as a known value. The MNRF considers recommendations by the planning team when making decisions about values or when applying the precautionary principle, set out in Part B, Section 3.4.

The standards for the geographic location of values are given in FIM Base and Values Technical Specifications. In meeting the minimum requirements to declare a value as known, the geographic location provided by the MNRF, the sustainable forest licensee or third party should locate the value in relation to existing base features or values (e.g., roads, stream-lake intersections, islands or points, township boundaries, portage trails). Location descriptions could be geographic coordinates, a reference to an attached photo or map, or reference to an accompanying digital spatial data product.

The descriptive features of a value will provide sufficient detail for planning teams to determine the appropriate area of concern prescriptions and conditions to protect the existence, integrity, and health of a value. The descriptive features of a value will consist of the following information:

(a) method, survey type, locational accuracy, or source of information that was used to identify and describe the value;
(b) position title or stakeholder type of person(s) who discovered, collected, and provided information about the value;
(c) date the values information was collected; and
(d) identification of the type of value, specific enough to help with the protection of the value should it be impacted by forest operations.

Meeting these minimum requirements in declaring a value as a known value serves to identify the presence of a value and to afford it protection if necessary. MNRF may complete additional field inspections or data collection to confirm the value and to make a complete entry into the values information database.

3.2 Roles and Responsibilities for Values Information

This section identifies the roles and responsibilities of the sustainable forest licensees and MNRF associated with providing, receiving, and using values information. The terms *identify* and *confirm* represent the processes that are used to distinguish the roles and responsibilities of the sustainable forest licensees and MNRF with respect to collecting and using values information in forest management planning.

The term *identify* is used to describe the roles and responsibilities of the provider of values information. The term *confirm* is used to describe the roles and responsibilities of the MNRF with respect to use and acceptance of the information. Identification precedes confirmation.

The provider collects values information and will identify that the information collected and provided is accurate and meets the standards set out in Part B, Section 3.1. The provider could be the sustainable forest licensee, the MNRF, or a third party.

Sustainable forest licensees often, during the course of operations, identify the presence of values and provide information about those values. Sustainable forest licensees will provide information about new values and corrections to information about known values to the MNRF when these values are encountered during the

implementation of forest management operations. This information will be provided in accordance with Part B, Sections 3.1 and 3.3.

The MNRF confirms that the information received is accurate, meets the standards set out in Part B, Section 3.1, and is sufficient to be used to plan road locations and to develop area of concern prescriptions and conditions. That is, the MNRF determines whether a value can be treated as a known value based on assessing the available information against the standards set out in Part B, Section 3.1.

The MNRF identifies the presence of values, and collects and provides information about those values. Identification of values information can occur at various times throughout FMP preparation or implementation set out by the timelines in Part B, Section 3.3. The MNRF enters and maintains values information in MNRF's values information database (e.g., updating through the Land Information Ontario Editor), and provides updates of this information to sustainable forest licensees and planning teams in accordance with Part B, Section 3.0.

3.3 Timelines and Conditions for Values Information

There are two categories of timelines for providing values information. The first category of timelines is associated with FMP development and implementation; a continual update of values information data holdings. This timeline is set out in Part B, Section 3.3.1. The second category of timelines is associated with values encountered during active forest operations, as set out in Part B, Section 3.3.2. The activity of value identification and confirmation is more stringent in the second category. Also, when prioritizing effort and allocation of resources, a higher priority will go to the collection of values information associated with the second category of timelines.

The timing of forest management operations that may adversely impact values determines when information about those values will be exchanged between the sustainable forest licensees and MNRF. The timelines provided in the following sections should be viewed in conjunction with the specific timelines and details provided in FIM Base and Values Technical Specifications.

In some instances, other guides or locally set agreements or protocols also provide direction on the timing of values information sharing and exchange related to specific values or specific local situations.

3.3.1 Plan Development and Implementation – Values Provision Timeline

Values information is assembled as background information during the preparation of a FMP as set out in Part A, Section 1.1.8 of the FMPM.

New information on values often becomes available during FMP implementation. Where this new information identifies that values may be impacted by active operations, the MNRF provides this information as set out in Section 3.3.2. Otherwise, the MNRF provides this new information through annual values information updates in order for sustainable forest licensees to incorporate changes into amendments or the next AWS.

Sustainable forest licensees will provide information about new values and corrections to information about known values as per FIM Base and Values Technical Specifications.

3.3.2 Active Operations – Values Provision Timeline

Active operations are defined as forest management operations identified in an approved AWS. As per Part D, Section 3.5.3 and Section 3.5.4 of the FMPM, updated information on the location and description of values that were previously unidentified (i.e., new values), incorrectly located, incorrectly described, or that no longer exist, will be exchanged between the sustainable forest licensee and MNRF.

The timelines associated with values information exchange, where active operations are involved, is provided in FIM Base and Values Technical Specifications. The responsibilities and procedures associated with values information sharing and exchange are set out below for those situations that have defined timelines provided in FIM technical specifications.

1) Sustainable forest licensee reports a new value, corrects location or description of previously identified value, or confirms a value no longer exists

Where the sustainable forest licensee identifies that new information about a value (e.g., new value, changed value, non-existent value) will result in the addition or change to an area of concern prescription or condition, the sustainable forest licensee will provide the MNRF with the necessary documentation of the change. The MNRF updates the values database to reflect this change and notifies the sustainable forest licensee when it has occurred.

MNRF confirmation of the value no longer existing is required in instances of values associated with species at risk and where a third party is associated with the value and/or area of concern (e.g., cultural heritage, First Nation, Métis, tourism value).

2) MNRF identifies a new value, corrects location or description of previously identified value, or confirms a value no longer exists

When the MNRF identifies and confirms the location and description of values previously unidentified (i.e., unmapped) or incorrectly located,

> incorrectly described, or that no longer exist, they notify the licensee. The MNRF notification provides enough detail to allow the sustainable forest licensee to assess when operations may be impacted. Subsequently, the sustainable forest licensee notifies the MNRF of the results of their assessment (e.g., timing of the operations and potential impacts). MNRF collects and provides additional information and updates the values database in a timeline reflective of the sustainable forest licensee notification.

The above procedures, and timelines as per FIM Base and Values Technical Specifications, are valid where area of concern planning requirements, as per Part A, Section 1.3.5 and Part B, Section 4.2.1 of the FMPM has been met. In instances where a FMP amendment or a revision to an AWS is required, the above timelines will be adjusted as per the timelines associated with the amendment or revision.

Sustainable forest licensees will provide the MNRF with information about values, set out in FIM Base and Values Technical Specifications, and MNRF provides sustainable forest licensees with information about values for the purpose of forest management planning.

If the provision of information or the location of classified values could threaten the existence, integrity, or health of a value, the Minister may withhold such information. The MNRF, in consultation with the planning team, will determine the kind of protection for such a value.

3.4 Precautionary Principle in Values Identification and Protection

The geographic location and basic description of a value will be available for the value to be considered as a known value. If a value does not have a geographic location, or if the basic description information about the features of a value does not exist or is insufficient to meet the minimum requirements of Section 3.1.6, then the value will not be considered as a known value, and will not normally be considered in forest management planning. In some cases, although the information is incomplete, sufficient information about the general location or partial description of the features of a value may be available. In such cases the MNRF may apply the precautionary principle to ensure that values are protected during forest management planning or implementation of forest management operations.

The precautionary principle is defined as follows:

> *In the absence of conclusive information to confirm the presence or features of a value, this principle requires the consideration of the value in the planning of road locations and area of concern prescriptions in order to ensure that the value is protected, based on the high probability of its*

presence and the potential that it may be affected by forest management operations in a significant and negative way.

The precautionary principle recognizes that some forest management activities may be detrimental to the existence, integrity, and health of some values or may cause irreparable damage to values. The rationale for applying the precautionary principle is to reduce the risks of significantly affecting a value in a negative way, in the absence of conclusive information about a value, by considering values in forest management planning using the best available information about those values.

Members of the planning team will consider the available information and may make recommendations as to whether sufficient information exists to treat the value as a known value. Members of the planning team may also make recommendations regarding the applicability of the precautionary principle and the extent that the precautionary principle should be applied to ensure the protection of the value.

Using planning team recommendations and assessing the available information against the standards set out in Part B, Section 3.1, the MNRF determines the values that will be considered in forest management planning and to what extent the precautionary principle may apply.

The MNRF may exercise reasonable latitude to designate a value as a known value, based on the availability of sufficient information, to ensure that it can be considered in forest management planning. In designating a value as a known value based on applying the precautionary principle, the MNRF provides sustainable forest licensees with this decision, an explanation of the concerns related to potential impacts from forest management, the rationale to support the decision, and the available information about the value. The MNRF makes these decisions and ensures that these decisions are carried out by the planning team.

The precautionary principle is not designed to make sustainable forest licensees become the *de facto* collector of values information. The precautionary principle is not to be applied in circumstances where it is reasonably possible to collect field information that meets the minimum standards of section 3.1.6 to declare that a value should be considered a known value.

3.5 Predictive Modelling in Values Identification

The MNRF, with the assistance of sustainable forest licensees and other parties, has developed an extensive values information database. However, not all values on Crown forests have been identified. Assisting in the identification of values on Crown lands, predictive models are being applied to identify the location of areas that have a high possibility of containing values based on the presence of specific landscape

features that resemble the location and site conditions of, and have characteristics similar to, known values. Archaeological potential modelling is an example of predictive modelling used in forest management planning. The MNRF approves the application of any predictive models that are used to identify values for the purpose of forest management planning.

Predictive models may be used to provide preliminary identification of potential areas where values are likely to be present. Predictive models need to be re-calibrated to consider new information and to develop better trends or predictions from that information. The results produced from predictive modelling should not be used in isolation of further investigation. Further investigation or analysis may identify the existence of values within the predicted area. The MNRF conducts this investigation or analysis, or causes the investigation or analysis to be conducted.

The MNRF gives priority to investigating or analyzing areas identified by predictive modelling that are located within, or are in close proximity to, proposed areas of forest operations. Based on the results of analysis, the candidate areas identified by predictive modelling will be reviewed and may be revised to identify potential areas.

Potential areas that can be described by further information that meets the standards set out in Part B, Section 3.1, will be treated as known values. The MNRF confirms that potential areas will be treated as known values.

Further investigation or analysis of predictive modelling results cannot always provide the exact location or basic description of the features of a value that may exist within a potential area to the standards set out in Part B, Section 3.1. In this case, the MNRF may apply the precautionary principle to designate potential areas as known values, based on the availability of sufficient information needed to consider the appropriate protection for that value in forest management planning.

The MNRF also determines if the information produced by predictive modelling is considered to be classified information. The MNRF treats classified information in accordance with Part A, Section 1.3.2.

The Forest Management Guide for Cultural Heritage Values provides additional detail, guidance and direction for the identification and protection of archaeological potential values. Other cases of the use of predictive models for values identification may have documentation and direction set out in FIM or FIM Base and Values Technical Specifications.

4.0 POLYGON FOREST

The polygon forest is an information layer that provides a description of the forest, water and other landbase features within a forest management unit. The management unit is delineated and classified based on geographic features and characteristics into homogeneous water and land types called polygons. Polygons have a spatial component (i.e., geographic location) and a tabular component (i.e., description of characteristics).

The polygon forest is one theme of a forest resources inventory composed or built from a collection of individual geographic data layers (e.g., planning or modelling inventories as set out in Section 5.0). Other themes or geographic layers comprising a forest resource inventory could include ownership, transportation or utilities.

Forest inventories are used to support various forest management planning and land-use planning decisions over a wide range of geographic areas. The geographic areas can vary from individual forest stands that represent small areas (i.e., less than a hectare to hundreds of hectares) to forest level, management unit, mill woodshed, and landscape extents that involve very large areas (i.e., thousands or millions of hectares).

The MNRF provides sustainable forest licensees with polygon forest information for all areas within a forest management unit. The polygon forest information contains sufficient information to serve as a base for planning teams to prepare FMPs in accordance with the FMPM. The polygon forest information provides a description of the area within a forest management unit based on actual measurements and collections of forest cover data. The sustainable forest licensee will use the polygon forest in developing FMPs and specifically in the creation of a planning inventory as set out in Part B, Section 5.1.

The following sections set out the requirements, standards, roles and responsibilities, timelines, and conditions for providing spatial and tabular information components of the polygon forest. Further technical details and requirements about the polygon forest are contained in FIM Forest Resources Inventory Technical Specifications**.**

Development and preparation of a polygon forest across the entire area of the undertaking requires several years. Not all planning teams or management units will be provided with a polygon forest before the development of the next FMP. Interim direction on using the best available inventory, where a polygon forest is not available, is provided in the Part B, Section 4.3.

4.1 Requirements and Standards for the Polygon Forest

In preparing the polygon forest, the MNRF uses the best available base data information and, where appropriate, works closely with sustainable forest licensees to incorporate or use information that the sustainable forest licensee has and can be considered more accurate and current.

The polygon forest provides a description of the forest cover (i.e., forest condition) and represents a summation of the results of forest management activities and natural changes that occurred to the forest since the last inventory was produced. The polygon forest also provides a baseline for preparing the next FMP.

The polygon forest contributes to several forest management planning purposes by providing:

(a) updated inventory information based on forest management activities and natural changes that have occurred since the last inventory was provided;

(b) a forest stand-level record of changes to forest description information based on forest management activities and natural disturbances that have occurred over several successive FMPs;

(c) background information (e.g., depicting the forest condition) for the initial stages of preparing a planning inventory and support for the initial development of a new FMP in accordance with the FMPM;

(d) part of the background information used in preparing annual reports, monitoring and assessment evaluations, and other audit or review activities;

(e) a digital record or snapshot of the forest condition that provides a benchmark of the distribution and composition of forest cover at specific points in time. Successive productions of inventory information will provide time-sequenced records of historic forest condition. The accumulation of this information will allow for the continual assessment of landscape changes over successive FMPs and provide direct comparisons of the past and current (i.e., actual) forest condition with future forest condition as predicted in FMPs; and

(f) a direct comparison to annual report information for annual forest management activities and natural changes as they are reflected in updates to forest description information.

The MNRF may also use the polygon forest for other purposes that involve various analyses of forest cover on areas that are broader than a forest management unit (e.g., district, habitat ranges, mill woodshed, watershed, eco-regional, provincial).

The updated information in the polygon forest will be based on a number of information sources such as actual measurements of data from field sampling, aerial

photography, satellite imagery, monitoring surveys, annual report information, and other field surveys or samples. The polygon forest provides complete area coverage based on the boundaries of the forest management unit, and includes Crown and non-Crown lands.

4.2 Roles and Responsibilities for the Polygon Forest

The MNRF uses the best available inventory information for all forested areas within a management unit when producing the polygon forest.

Sustainable forest licensees will verify that the polygon forest provided by the MNRF is complete. Checking for completeness includes, but is not limited to, ensuring that:

(a) the correct spatial and tabular attributes are provided for by the applicable standards;
(b) updates or changes to the base feature information are consistent and applied with the updates to the polygon forest; and
(c) updates adequately reflect the forest condition.

The sustainable forest licensee will notify the MNRF that the information has been checked for completeness and whether the information meets the requirements set out in the FIM. If the information does not meet the requirements set out in FIM and FIM Forest Resources Inventory Technical Specifications, the sustainable forest licensee will provide a description of the errors or the reasons why the information does not meet the requirements. The sustainable forest licensee and MNRF will determine the extent of the corrections and a timeframe that the revisions can be made in. The MNRF reissues a polygon forest.

4.3 Timelines and Conditions for the Polygon Forest

For the purpose of preparing a FMP, sustainable forest licensees will use the most recent inventory provided by the MNRF. In cases where MNRF provides the newer polygon forest, it is provided no later than nine months before the invitation to participate (i.e., FMPM, Part A, Section 2.3.3). In cases where MNRF does not provide the polygon forest to meet this timeline, the sustainable forest licensee will use the most recent inventory provided. The planning team does have the option to use a polygon forest received after the nine month timeline if the planning process can proceed without adverse effects or delays.

The sustainable forest licensee has 3 months after receiving the polygon forest to check the information for completeness.

The polygon forest is described in FIM Forest Resources Inventory Technical Specifications.

5.0 PLANNING AND BASE MODEL INVENTORIES

The planning and base model inventories are used as a basis to prepare and monitor the development of a FMP and to support decisions made in an approved FMP and subsequent work schedules. These inventories are created from the polygon forest or similar product in cases where the polygon forest described in Section 4.0 is not available.

A planning inventory is prepared for each FMP and remains with the FMP from its initial preparation through its implementation to its subsequent evaluation. The timeframe for a planning inventory can extend from 24-30 months before the start of the FMP, for FMP development, to several years after the end of the FMP. Consequently, the normal period of use for a planning inventory associated with a 10-year FMP may extend for a period of approximately 12-15 years. The usefulness of the planning inventory may extend beyond this period in support of Independent Forest Audits and may provide relevant background information when referencing and assessing past FMPs during the development of future FMPs.

The planning inventory contains updated forest description information from forest management activities and natural changes to the forest. The planning inventory also provides forecasted changes to forest description information based on the expected outcomes of planned operations that have not yet been implemented from the currently approved FMP. The forest description component of the planning inventory may also be projected (i.e., grown) to the end of the current FMP.

The base model inventory adds forest classification information, sometimes referred to as management decision information, to the planning inventory. The base model inventory provides the basic information for forest modelling, habitat modelling, and landscape diversity analyses that are applied during the strategic and operational planning stages of developing a FMP.

5.1 Requirements and Standards for the Planning and Base Model Inventories

The requirements for providing planning inventory and base model inventory information are directly related to specific stages in the development of a FMP. The technical detail about the planning inventory and the base model inventory are provided in FIM Forest Management Planning Technical Specifications.

The differences between the two inventories are not related to area classification, but are related to their different purposes, the timelines when each is required, the timing for the inclusion and population of forest classification information and separate component structure versus a combined, single layer entity.

Components of the Planning Inventory

Sustainable forest licensees will create and provide two specific information products in a planning inventory:

1. A **planning composite** layer that will incorporate updated base feature and forest polygon information; and

2. A **forecast information** layer of those harvest operations projected to be implemented in the current FMP.

These two types of information are collectively referred to as the planning inventory. Meeting the requirements to create a planning composite may include minor updating of some base features. Not included in the planning composite, but a component of the planning inventory, is a forecast layer of those harvest operations approved in the current FMP and expected to be completed by the start of the new FMP.

Components of the Base Model Inventory

Sustainable forest licensees will create and provide a base model inventory by combining the planning inventory (i.e., the planning composite and the forecast layer) with:

1. **Forest classification information** representing stand level management decision information (i.e., tabular attributes).

Forest classification information fields (e.g. forest unit, yield, age) will be included in the planning composite tabular information, but may not be populated.

Preparation of the Planning and Base Model Inventories

The process to develop the planning inventory and base model inventory starts with the most recent and best available base features provided in accordance with Part B, Section 2.0 and with the most recent polygon forest provided in accordance with Part B, Section 4.0.

The development of the planning inventory normally includes the following steps:

1. minor updating of base features provided by MNRF;
2. assembling/updating a forest polygon layer using the most recent polygon forest information (e.g., adding updates to the polygon forest based on

forest management activities and natural changes not reflected in the polygon forest);

3. adding changes to forest stand descriptions in the polygon forest based on growth projections to the start of the new plan period;
4. buffering centre-line features;
5. combining all the above into a planning composite;
6. adding forest classification information fields; and
7. preparing a layer of forecasted changes to the forest polygons based on planned harvest operations for the remainder of the currently approved FMP.

The development of the base model inventory normally includes the following steps:

1. adding stand level forest classification information to forested polygons of the planning composite;
2. combining the planning composite and forecast information into a single information product; and
3. updating attributes of the forecast information.

5.1.1 Requirements and Standards for Base Information components of the Inventories

The MNRF provides sustainable forest licensees with the best available base information as set out in Part B, Section 2.0. Base information used in preparing the planning and base model inventories may include:

(a) water;
(b) forest management unit boundaries;
(c) ownership and land tenure;
(d) parks and protected areas;
(e) roads;
(f) railways;
(g) utility lines; and
(h) small rivers and streams.

Depending upon the time between delivery of the base information and the polygon forest and preparation of the planning inventory, it may be necessary to update some of the base information to ensure the best available, most current information is used in the planning inventory. Updates to base information will be provided as per FIM Base and Values Technical Specifications.

A specific requirement exists for the updating of a road base data layer and a road water crossing data layer set out in the Roads and Water Crossings Inventory of Part A, Section 1.1.8.10 of the FMPM. The planning team will confirm and update an inventory or data layer of all roads and road water crossings on the management unit. The updated roads inventory will be used in preparing the planning composite.

5.1.2 Requirements and Standards for the Planning Composite

The planning composite will be created and will contain the updated information current to at least the latest submitted management unit annual report information.

The forest polygons in the planning inventory will be updated based on actual forest management activities and natural changes that occurred during the period of the currently approved FMP. The forest stand description attributes will be updated according to the standards in FIM Forest Management Planning Technical Specifications.

An initial requirement is for sustainable forest licensees to update the polygon forest layer provided by the MNRF. The amount of updating required is dependent upon the amount of time between polygon forest provision and sustainable forest licensee commencement of planning inventory development. The updated polygon forest layer will include updates/changes not reflected in the original polygon forest layer provided by the MNRF. Stand description information will be updated for those productive forest areas that have been affected by forest management activities and natural changes.

The polygon forest may also be projected (i.e., grown) to the end of the current FMP; this includes projected changes to productive forest areas to bring the forest stand description attributes up to the end of the current FMP.

Sustainable forest licensees combine updated base information with the updated polygon forest layer to create the planning composite.

Centre-line base features may be buffered and incorporated into the planning composite. Buffering centre-line features creates polygons that are used to refine the polygon forest information in terms of the actual area occupied by linear features such as roads, railways, utility lines, small rivers, streams, and creeks. The addition of buffered linear features provides a better approximation of the actual forested and non-forested area in a forest management unit.

Projected changes to productive forest areas in the polygon forest primarily affect forest stands that have not been managed or have not been affected by natural changes. Projected changes should only affect the tabular forest stand description

attributes in the polygon forest. Any projected changes to forest stand description attributes will normally be based on accepted growth algorithms. The height attribute may be adjusted using height, age, species composition, and site class information based on regression formula that simulates the results found in yield tables. Growth projection models/algorithms will be supported by growth and development information or analysis of permanent sample plot data.

A requirement exists to provide the SGR with the planning composite – as a component of the planning inventory submitted with the draft and final FMPs. Provision of the SGR reflects a preliminary step in the development of a forest operations prescription – identification of a SGR for all areas of operations as set out in the FMPM Part A, Sections 1.2.4.4 and Section 1.3.5.2. The SGR describes the silvicultural system and types of treatments that may be used to manage forest units for a specific current forest condition to achieve a target future condition.

The standards for the planning composite, spatial and tabular, are set out in FIM Forest Management Planning Technical Specifications. The standards for updating the polygon forest component of the planning composite, spatial and tabular, are also set out in FIM Forest Management Planning Technical Specifications.

5.1.3 Requirements and Standards for the Forecast Information

Sustainable forest licensees will provide forecast information for those forest stands that are planned to receive harvest operations for the current fiscal year and the remaining three to four years of the currently approved FMP.

This forecast information is not incorporated into the planning composite; however it will be compatible, such that the information can be combined and associated with the composite.

The forecast information provides a description of the planned depletion. There will be a minimal number of attributes attached to this layer. The detailed description of the stand structure expected to change as a result of the depletion (e.g., height, stocking, year of origin) will be presented in the base model inventory. Standards for this information are given in FIM Forest Management Planning Technical Specifications.

5.1.4 Requirements and Standards for the Forest Classification Information

The purpose of creating and maintaining forest classification information is to track key forest-level decisions that support the amalgamation and the availability of forest stands for forest management planning purposes at the stand level. This information also provides the basis for determining available harvest area, supports the selection of areas that are eligible for harvest and renewal, and also provides an indication of how stands within a forest unit will be managed in a new FMP.

The requirements for forest classification information apply only to the licensed Crown area on a forest management unit and then only to the productive forest areas within the licensed area. An exception is parks and protected areas that are not licensed but are classified and may contribute to wildlife habitat, old growth or other objectives. Another exception may be unlicensed areas where trees are reserved to the Crown. All water, non-forested, and non-productive forest lands are considered as unavailable for the purpose of forest management planning and are not included as part of the managed Crown forests area for determining the available harvest area by forest unit and, therefore, do not require forest classification information.

Forest classification information is not required at the Invitation to Participate stage. The information will be submitted with the base model inventory and again with the planning inventory with the draft and final FMPs.

Forest classification information is a set of tabular attributes that will be assigned on a stand by stand basis. Forest classification information will be provided as attributes of the base model inventory. An exception is the SGR that is provided on the planning inventory at the draft and final FMP submission. Examples of forest classification attributes are management zone, forest unit, analysis unit, age, age structure, availability indicator, silvicultural system, stage of management and silvicultural intensity.

The standards for creating and updating the forest classification attributes are set out in FIM Forest Management Planning Technical Specifications.

5.2 Roles and Responsibilities for the Planning and Base Model Inventories

Sustainable forest licensees will update information in all components of the planning and base model inventories: the planning composite; the forecast information; and the forest classification information. This update is done to prepare inventories used for FMP development, implementation and assessment.

The MNRF checks information contained in the planning composite and the forecast information layer for completeness. The MNRF reviews the forest classification information for completeness and confirms that all components have been correctly combined into a base model inventory.

Sustainable forest licensees, the MNRF and the planning team share the responsibility of meeting progress checkpoints. Progress checkpoints, set out in Part A, Section 1.1.6 of the FMPM are key steps in the development of a FMP.

The MNRF provides sustainable forest licensees with base information set out in FIM Base and Values Technical Specifications and with the polygon forest set out in FIM Forest Resources Inventory Technical Specifications.

Sustainable forest licensees will provide the MNRF with planning and base model inventory information set out in FIM Forest Management Planning Technical Specifications. These specifications set out the format and detailed data standards for providing these inventories.

5.2.1 Checking for Completeness

The sustainable forest licensee and MNRF check that information provided by either party is complete and meets the requirements of two forest management planning progress checkpoints – the Planning Inventory progress checkpoint and the Base Model Inventory and Base Model progress checkpoint. Inventory information submitted to the FI Portal undergoes a mandatory validation process. The validation process assists ensuring these information products meet the requirements of FIM and the progress checkpoints.

Checking for completeness includes, but is not limited to, ensuring that:

(a) the spatial area in the planning composite and the forecast layer is correctly represented for:
    i. area delineation,
    ii. correct representation of area and spatial features by theme based on the forest management unit area extent,
    iii. no overlapping areas or holes in the planning composite and this does not apply to the forecast layer,
    iv. correct total area, and
    v. correct datum, map projection, and coordinate requirements;

(b) the correct data contents for spatial and tabular attributes required in each layer as provided for by the applicable standards;

(c) the compatibility of the layers (i.e., proper use of coincident or contiguous lines, same geo-referenced map extents based on a forest management unit boundary); and

(d) the correct formats in accordance with the conditions and FIM technical specifications.

The sustainable forest licensee and MNRF determine whether information meets the requirements and standards. These considerations include, but are not limited to, verifying the following planning and base model inventory components at the identified step in FMP development as per the FMPM (shown in brackets). These are shown below.

(a) Planning Composite (Planning Inventory progress checkpoint)

i. the updated polygon forest and the buffered line features have been correctly assembled into a planning composite; and

ii. the planning composite contains sufficient information to support the remaining FMP development process that includes land base summary, forest modelling, habitat supply modelling, landscape diversity analysis, and identification of eligible areas for operations.

(b) Forecast Information (Planning Inventory progress checkpoint)

i. the forecast information represents the remaining three to four years of harvest, and large natural disturbances not yet reported in an annual report, from the current FMP; and

ii. the forecast information will contain sufficient information to support the remaining FMP development process that includes land base summary, forest modelling, habitat supply modelling, landscape diversity analysis, and identification of eligible areas for operations.

(c) Forest Classification Information (Support for Base Model Inventory and Base Model progress checkpoint)

i. the forest classification information is correct and supports the remaining FMP development process that includes land base aggregation, SGR development, forest modelling, habitat supply modelling, landscape diversity analysis, identification of eligible areas for operations, and selection of areas of operations and road construction areas; and

ii. the combination of the planning composite, the forecast information and the forest classification information is correct and integral.

(d) Submission of Revised Information (Submission at draft and final FMP – Revisions Made)

i. the planning inventory information provided with the final FMP accurately reflects the approved FMP in all planning inventory aspects (i.e., planning composite and the forecast layer); and

ii. the planning inventory and base model inventory support decisions made in the approved FMP.

The MNRF notifies the sustainable forest licensee that the information has been checked for completeness and whether the information meets the requirements set

out in FIM. If the information does not meet the requirements set out in FIM and FIM Forest Management Planning Technical Specifications, the MNRF provides a description of the errors or the reasons why the information does not meet the requirements. The sustainable forest licensee and MNRF determine the extent of the corrections and a timeframe that the revisions can be made within. The objective is to correct and resubmit the information such that it does not affect the completion of the new FMP.

5.3 Timelines and Conditions for the Planning and Base Model Inventories

Sustainable forest licensees will provide all of the planning inventory information to meet the planning inventory progress checkpoint. The planning inventory, with forest classification information added, is submitted also with the draft FMP and final FMP. The final FMP submission of the planning inventory does not necessarily represent an update to the product submitted at draft plan; rather it is submitted for file retention purposes and assists the MNRF in meeting its requirements set out in the ARA.

Sustainable forest licensees will provide all of the base model inventory information to meet the base model inventory and base model progress checkpoint stage of FMP development. The base model inventory is submitted also with the final FMP. The final FMP submission of the base model inventory does not necessarily represent an update to the product submitted to meet the progress checkpoint; rather it is submitted for file retention purposes and assists the MNRF in meeting its requirements set out in the ARA.

The sustainable forest licensee and MNRF allow for a period of review and revision in advance of the progress checkpoints. The FMP terms of reference and/or project plan may set out the timelines associated with the review and approval process.

6.0 OPERATIONAL PLANNING INFORMATION

Operational planning information is a component of a draft FMP and the final FMP. The operational planning information represents the results of planning and summarizes decisions made in respect of forest operations. This information identifies all forest operations including planned harvest, forest operations prescriptions, areas of concern, planned road corridors, operational road boundaries, renewal and maintenance areas, existing roads and road use management strategies, and existing road water crossings.

6.1 Requirements and Standards for Operational Planning Information

6.1.1 Requirements and Standards for Planned Harvest

The planned harvest information identifies areas selected for harvest for the 10-year period of the new FMP as per the FMPM, Part A, Section 1.3.3.1, Part B, Section 3.7.2 and 4.3. A requirement exists to provide planned harvest information distinguished by distinct harvest categories. These categories include:

(a) regular harvest;
(b) contingency harvest;
(c) salvage harvest;
(d) bridging harvest operations; and
(e) second-pass harvest operations.

The planned harvest information will be submitted as digital geospatial data and contain spatial and tabular attributes. The information contained in this layer will correspond to Areas Selected for Operations Maps that are required for the public consultation process in accordance with the FMPM.

Typical attributes of the planned harvest layer would contain information to identify such things as harvest category, silvicultural system, and harvest block identifier. The planned harvest layer will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.2 Requirements and Standards for Areas of Concern

Requirements for areas of concern are set out in the FMPM, Part A, Sections 1.3.5 and Part B, Sections 4.2. All areas of concern within harvest, renewal and maintenance areas, primary and branch road corridors, operational road boundaries, and aggregate extraction areas for the 10-year period are to be included in this information requirement. All areas of concern that intersect an existing forestry aggregate pit, landing or a road that is the responsibility of the sustainable

forest licensee or existing roads that will be used for forest management purposes, are also to be included in this information requirement.

Areas of concern for renewal and maintenance areas are normally only required for modified operations (e.g., timing and aesthetic restrictions) or where the identification of a value has occurred subsequent to the area being harvested and the value may be impacted by renewal and maintenance activities. Exceptions may be for areas selected for stand improvement activities and naturally depleted areas where applicable area of concern prescriptions and conditions were not previously developed.

For areas identified for bridging operations and second-pass harvest operations, the areas of concern have already been identified in the current FMP documentation. The areas of concern will be included in table FMP-10 and will be displayed on operations maps.

The description of planned areas of concern will contain the identification of the area of concern or area of concern group that links to table FMP-10.

The areas of concern layer contains spatial and tabular attributes and meets the requirements in Part B, Section 4.2. The information contained in this layer will also correspond to Areas Selected for Operations Maps that are required for the public consultation process in accordance with the FMPM.

Typical attributes of the areas of concern layer would contain an area of concern or area of concern group identifier and area of concern type (i.e., reserve or modified). The areas of concern information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.3 Requirements and Standards for Planned Road Corridors

Sustainable forest licensees will provide a layer that identifies the corridor locations for planned construction of primary and branch forest access roads for the 10-year period of the new FMP.

The planned road corridors information contains planned primary and branch road corridors, as per the FMPM, Part A, Sections 1.2.6, 1.3.6.1 and 1.3.6.2, and Part B, Sections 4.5.1. The planned road corridors information includes planned primary and branch road corridors for the 10-year period of the FMP. An area of concern where a road may be constructed within a primary or branch road corridor will be identified for the 10-year plan period.

Typical attributes of the road corridor layer would contain information to identify such things as road type, road identifier, and use management strategy.

The roads features maintained in this layer are comprised of polygon spatial features only. The planned road corridor information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.4 Requirements and Standards for Aggregate Extraction Areas

Sustainable forest licensees will provide a layer that identifies the aggregate extraction areas for the 10-year period of the new FMP. The aggregate extraction areas will delineate aggregate extraction areas as per the FMPM, Part A, Section 1.3.6.6 and Part B, Section 4.5.7.

The aggregate extraction areas information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.5 Requirements and Standards for Operational Road Boundaries

The areas where new operational roads are permitted are defined as operational road boundaries as per Part A, Section 1.3.6.4 and Part B, Section 4.5.2 of the FMPM. An operational road boundary identifies the perimeter of the harvest area and the area from an existing road or planned road corridor to the harvest area.

The planned operational road boundaries information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.6 Requirements and Standards for Planned Renewal and Maintenance

The renewal and maintenance information provides the areas selected for renewal and maintenance operations as per Part A, Section 1.3.3.3 and Part B, Sections 4.4 of the FMPM. The renewal and maintenance information is comprised of all areas meeting the following criteria:

(a) planned harvest areas;
(b) previously depleted areas from the current or past FMPs that are not yet renewed;
(c) naturally disturbed areas; and
(d) previously renewed areas requiring maintenance.

The renewal and maintenance information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.7 Requirements and Standards for Existing Roads Use Management

Includes all existing roads where the sustainable forest licensee has responsibility and other existing roads that will be used for forest management purposes. This layer identifies planned maintenance and monitoring for the 10-year plan period.

This layer also identifies existing and planned access control for the 10-year plan period. This layer identifies planned decommissioning. Responsibility for water crossings may vary from the associated road. This information is required as per the FMPM Part A, Sections 1.3.6.5, 1.3.6.7 and Part B, Section 4.5.5.

This layer is used to identify the linear road segments that are planned to be impacted by road access controls or road maintenance activities during the 10-year plan period. Similarly, all roads or road networks planned for decommissioning during the 10-year plan period are to be provided; this could include activities planned for roads outside of SFL responsibility (e.g., SFL maintenance of a municipal road).

The road use management information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.8 Requirements and Standards for Existing Road Water Crossings

Includes all existing road water crossings where the sustainable forest licensee has responsibility and other existing roads that will be used for forest management purposes. This layer identifies planned maintenance and monitoring for the 10-year plan period. This layer also identifies existing and planned access control for the 10-year plan period. This layer identifies planned decommissioning. Responsibility for roads may vary from the associated road water crossings. This information is required as per the FMPM Part A, Sections 1.3.6.5 and 1.3.6.7 and Part B, Sections 4.5.5 and 4.5.6.

This layer is used to identify the point locations that are planned to be impacted by road water crossing access controls or road water crossing maintenance activities during the 10-year plan period. Similarly, all road water crossings planned for decommissioning during the 10-year plan period are to be provided; this could include activities planned for road water crossings outside of SFL responsibility (e.g., SFL maintenance of a municipal road water crossing).

The road water crossing information will be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.2 Roles and Responsibilities for Operational Planning Information

The sustainable forest licensee will prepare and submit operational planning information required by this section.

The MNRF verifies that the operational planning information meets the standards defined in FIM Forest Management Planning Technical Specifications and is consistent with the information contained in the FMP documentation.

6.3 Timelines and Conditions for Operational Planning Information

Operational planning information is required for the 10-year FMP. The operational planning information is submitted at draft and final FMP submission.

Sustainable forest licensees will provide the MNRF with operational planning information set out in FIM Forest Management Planning Technical Specifications. These specifications set out the format and detailed data standards for providing operational planning information.

7.0 Forest Management Planning Maps

FIM sets out that the sustainable forest licensee and MNRF will provide maps to assist public understanding of forest management planning. These maps will be easy to read and their format will be standardized across the Area of the Undertaking. FMPs and the associated maps have an audience beyond local stakeholders. Standardization of maps is crucial in supporting the publication of this information on the Ontario Government website. Any document that is posted on the Ontario Government website will be compliant with section 14 of the Integrated Accessibility Standards Regulation (IASR). In the case of maps, sustainable forest licensees will provide additional details for readers that are unable to read the maps. Sustainable forest licensees will create and provide the maps as set out in FIM technical specifications.

7.1 Requirements and Standards for FMP Maps

The mapped information evolves as planning teams progress through the forest management planning process. Many maps are updated and enhanced to reflect the input received and decisions made. Therefore, some maps will be submitted at more than one stage. Irrespective of changes to the maps, they may be submitted or made available to support public consultation or other forest management planning processes. Ultimately, the final maps are included in the approved FMP.

The effort of reviewing and approving maps may be easier by using the digital geospatial data. MNRF staff that review FMP documents or use them for updating information will now use the digital geospatial data for these purposes. In circumstances where a paper map is required for internal MNRF use, the MNRF may produce these from the digital spatial data set out in the FIM.

Mapping requirements will be continually examined for efficiency in production. Where possible, emphasis on meeting the information requirement, public consultation or business requirement will be through the use of submitted digital spatial data.

The map products can be grouped into four categories.

i. Strategic and Operational Planning Maps – provide information relevant to the 10-year period when a FMP is written. Examples include:

(a) Public Notice Map;
(b) Index Map;
(c) Values Maps;
(d) First Nation and Métis Values Maps;
(e) Landscape Pattern Map(s);

(f) Preferred and Optional Harvest Areas Map;
(g) Areas Selected for Operations Maps; and
(h) FMP Summary Map.

ii. Annual Operations Maps – provide information relevant to the AWS. Examples include:

(a) Annual Work Schedule Operations Maps;
(b) Annual Work Schedule Summary Map;
(c) Prescribed Burn Operations Map;
(d) Aerial Herbicide Project Map; and
(e) Aerial Insecticide Project Map.

iii. Report Maps – provide information relevant to the annual report. Examples include:

(a) Annual Report Summary Map

iv. Other Maps Used for Forest Management Planning Purposes – Not all of the maps that may be used during the preparation or implementation of FMPs are listed above or detailed in FIM technical specifications. Planning teams and/or sustainable forest licensees may create and utilize additional map products for the purpose of preparing a FMP. Other maps may also be set out by guides and other manuals relevant to the preparation and implementation of the FMP. The planning team will determine the requirement for provision of other map products and information used in forest management planning. These decisions should be identified in the terms of reference and/or project plan for the FMP. FIM recommends that these maps follow one of the chosen three FIM scales; particularly if they are posted on the Ontario Government website.

7.1.1 Map Format and Content

This section together with FIM technical specifications will set out the format and content of map products that are required by the FIM [e.g., Encapsulated Post Script (eps), Portable Document Format (pdf)]. In some circumstances, paper copy maps for public display may also be required.

The mandatory information requirements for each map are provided in the associated FIM technical specifications and other guides and manuals. The mapping requirements in FIM are set out in the associated FIM technical specifications. The four FIM technical specifications that provide for mapping requirements are FIM Forest Management Planning Technical Specifications, FIM Base and Values Technical Specifications, FIM Annual Work Schedule Technical Specifications and FIM Annual Report Technical Specifications.

7.1.2 Map Scale

Each map produced for inclusion in the FMP will be prepared according to one of three map scale ranges: operational, composite or summary.

Operational Map Scale Range

Acceptable operational scales range from 1:10,000 to 1:50,000. Operational scale maps are also referred to as large scale maps. The operational scale is primarily influenced by the grid structure and size commonly used on the management unit. Use of a grid can provide a convenient and appropriate scale for portraying base features, forest resources inventory information, values, and other resource information or features that requires a reasonable degree of detail.

Composite Map Scale Range

Acceptable composite scales range from 1:50,000 to 1:250,000. Composite scale maps are also referred to as small scale maps. The composite scale chosen will allow for easy, clear interpretation of map themes and ease of reproduction. The scale chosen for these small scale maps should be one that minimizes the number of maps or plotter sheets required to display an entire management unit.

Summary Map Scale Range

Acceptable summary map scales generally allow for portrayal of the target area on an 11 x 17” or 8.5 x 11” sheet of paper and allow for the appropriate resolution of information and ease of reproduction. These very small scale maps are designed and created for public distribution.

The map product requirements, set out in FIM technical specifications, identify a map scale range as operational, composite, or summary. Planning teams will determine one scale from each of the operational and composite scale ranges and then apply the chosen map scale to each map required at that map scale. For example, if 1:100,000 is the chosen map scale from the composite scale range, then all composite maps will be produced at a scale of 1:100,000. Maps required at a summary scale can be produced at any of the acceptable summary scales.

7.1.3 Map Surround Components

All maps will have a similar map surround. Maps produced for forest management planning purposes that are not displayed at forest management planning information centres, are still considered available for public viewing and external distribution and therefore will conform to the map surround standards provided for

in this section. Where particular features of these map surround standards do not apply to a map, it will be noted in FIM technical specifications. Map surround components are as follows:

(a) logo – Ontario Government logo or forest company logo, or combination, as appropriate;
(b) title block – includes the forest management unit name, the 10-year plan period, and the map name. The naming standard for the map is indicated in the detailed map descriptions;
(c) index map – indicates the extent of the area shown on the map in relation to a larger area. Composite maps will show their extent in relation to the rest of Ontario. Operational scale maps (i.e., 1:10,000-1:50,000) will show their extent in relation to the forest management unit;
(d) legend – provides a list of map symbols used for theme and base features;
(e) disclaimer – required for safeguarding against liability on the part of the MNRF or the sustainable forest licensee. A disclaimer is of particular importance with the take-home summary maps;
(f) scale bar/statement – provides the relationship between map distance and true distance (i.e., ground);
(g) map publication date – indicates the version or current edition of the map;
(h) copyright – indicates who maintains ownership of the data/information or a contact name for more information on copyright applicable to the map data;
(i) datum – identifies the projection and datum of map information;
(j) notes – includes general information not provided elsewhere, such as sources for data used to create the map and contact names;
(k) north arrow – grid north direction indicator. This information is not required if map is oriented with north to the top of page; and
(l) border – map frame.

7.1.4 Map Symbology

Standard symbols are to be used for portraying values on FMP maps. The standards for symbols used on values maps are provided for in FIM Base and Values Technical Specifications. The sustainable forest licensees and MNRF will use the values symbology set out in FIM Base and Values Technical Specifications for all values maps, or maps that portray values information that are used for the purpose of forest management planning.

The intention with standard symbology is to provide clear, consistent and unambiguous portrayal of values on all maps of the FMP. In circumstances where the standard values symbology is in conflict with other map symbology, adjustments will be made to reduce the conflict. Planning teams are directed to adhere to the

standard and ensure that maps clearly and unambiguously convey the intended message.

FIM does not set out standards for the symbology on other maps used for forest management planning purposes. Consequently, planning teams will determine the map symbols that will be applied on all other maps used for these purposes. Map symbology will be selected based on the clear portrayal of map features with consideration for reproducibility and display on computer monitors.

7.2 Roles and Responsibilities for FMP Maps

MNRF and sustainable forest licensees share responsibility for preparing maps to support forest management planning. The sustainable forest licensee will prepare all maps except the values maps. The planning team may designate specific members of the team to prepare specific maps. The sustainable forest licensee and MNRF will prepare and provide maps and information to support public consultation.

Part A, Section 1.1.8.9 of the FMPM indicates that values information will be continually updated as information is assembled during the production and implementation of the FMP. At each specific public consultation stage of the planning process, where significant changes to the values information data has occurred, updated values maps will be available. The values maps will be maintained at the appropriate MNRF office.

7.2.1 Sensitive and Confidential Map Information

In most cases, the requirements for the maps and related information set out in Part B, Section 7.1 are part of the open public consultation process for forest management planning on Crown lands. However, some maps and related information may contain sensitive or confidential information that, if made available, could threaten the existence, integrity, or health of natural resources or uses (e.g., values), or may expose confidential or personal information. The MNRF may make decisions regarding the map portrayal of sensitive or confidential information in accordance with Part B, Section 3.1.4 and 3.1.5.

7.3 Timelines and Conditions for FMP Maps

The timelines for provision of strategic and operational planning maps are directly related to the maps and information that will be available for each stage in the public consultation process set out in Part A, Section 1.3 of the FMPM. The annual operations maps are required with submission of the AWS. Upon approval, the Prescribed Burn Operations map and Aerial Spray project maps are available with the AWS. The insect pest management maps are required for the planning of the insect pest management program and related public consultation opportunities. The

report map is required with the submission of the annual report. The planning team will determine the timelines for the provision of other maps used for forest management planning purposes.

Table 2 identifies the timelines for strategic and operational planning maps relative to each stage of the forest management planning process. The timeline in the table represents the earliest or initial point when the map will be produced. Subsequent to initial production, all maps and updated versions of the maps are to be available at each remaining stage.

Sustainable forest licensees and the MNRF will prepare and provide the maps set out by the requirements and standards in Part B, Section 7.1, in accordance with FIM Forest Management Planning Technical Specifications, FIM Base and Values Technical Specifications, FIM Annual Work Schedule Technical Specifications and FIM Annual Report Technical Specifications.

Table 2. Timelines for Strategic and Operational Planning Maps

Stage	Description
Stage One Invitation to Participate	Public Notice Map Landscape Pattern Map(s) Values Maps
Stage Two Review of Proposed Long-Term Management Direction	First Nation and Métis Values Maps Preferred and Optional Harvest Areas Map FMP Summary Map *Plus maps listed in Stage One*
Stage Three Information Centre: Review of Proposed Operations	Areas Selected For Operations Maps *Plus maps listed in Stages One and Two*
Stage Four Information Centre: Review of Draft FMP	Index Map (for the Ontario Government website display purposes) *Plus maps listed in Stages One, Two and Three*
Stage Five Inspection of the MNRF Approved FMP	*All maps listed in all previous stages*

8.0 Forest Management Planning Documentation

To improve the efficiency in production, dissemination and storage of FMP documents, FIM provides for the submission of these documents in an accessible digital format. A submission via the FI Portal will meet the requirements for FMP submission.

Additional benefits associated with a digital submission of FMPs and supplementary documentation include reduced printing and storage costs, availability of a highly accessible forum for public review, and improved efficiency in management and utilization of forest planning information.

The sustainable forest licensee will meet public consultation requirements of the forest management planning process by providing information in an accessible digital format. The MNRF publishes forest management planning documentation on the Ontario Government website to help provide an efficient means of carrying out public consultation on forest management. The site provides the public with the text, tables and map components of FMPs. To facilitate public consultation, any document that is posted on the Ontario Government website will be compliant with section 14 of the IASR.

8.1 Requirements and Standards for FMP Documentation

8.1.1 FMP Documentation

All FMP documents, including FMPs, FMP extensions, mid-plan checks, amendments, AWSs, revisions, annual reports and changes to values documentation will be submitted in an accessible digital format.

The exchange format for the electronic FMP documents will be a common and widely used format that will aid in web publishing of these documents in an accessible format and permit an efficient exchange. The detailed technical standards are given in FIM Forest Management Planning Technical Specifications, FIM Annual Work Schedule Technical Specifications and FIM Annual Report Technical Specifications. These standards/specifications include naming conventions for the series of files that will be necessary to complete a submission of an entire FMP. The file naming convention and structure standards will accommodate the information management requirement of linking FMP extensions, mid-plan checks, amendments, revisions or changes to values documentation to the original FMP submissions.

Draft and final FMPs require signing and sealing of the title, certification and approval page as per Part B, Section 8.0 of the FMPM. FIM Forest Management Planning Technical Specifications provide for the process of meeting this requirement when submitting electronic documentation.

8.1.2 Other Public Consultation Documentation

Preliminary versions of FMP documentation required for public consultation opportunities, Part A, Section 2.3 of the FMPM, may or may not be exchanged in a digital format.

The sustainable forest licensees and MNRF will exchange components of this public consultation documentation in advance of the actual FMPM timeline to permit paper copy production where required, or to permit incorporation into other documents.

Standards for the other public consultation documentation should follow the standards for FMP documentation and information. Alternate formats may be suitable for some of the documentation and the planning team may determine standards beyond those set out in FIM Forest Management Planning Technical Specifications.

8.2 Roles and Responsibilities for FMP Documentation

The specific roles and responsibilities associated with producing any FMP document are not altered or superseded by a requirement to provide it digitally. In most cases it is the responsibility of the sustainable forest licensee to submit the electronic FMP documents. The MNRF arranges the dissemination of, and access to, documents submitted via the FI Portal. The MNRF carries the added responsibility in managing the FI Portal documents and information to ensure that the proper, official copies are published on the Ontario Government website for the appropriate timeframes.

Some components/products of the FMP are normally the responsibility of the MNRF to prepare or have prepared, such as the values maps, Statement of Environmental Values Consideration Document, Local Citizens' Committee Report, and First Nation and Métis consultation summaries.

Sustainable forest licensees and MNRF will exchange required components in advance of the actual FMPM timeline to permit paper copy production, where required, or to permit incorporation into other documents.

The sustainable forest licensees and MNRF may provide other public consultation documentation (e.g., large scale values maps) available to the public. Note that this additional or extra public consultation documentation is not be submitted with the draft or final FMP.

8.3 Timelines and Conditions for FMP Documentation

Generally, no timeline associated with specific FMP documents is altered by the requirement to submit digitally. The two exceptions are where MNRF is to provide information components to the sustainable forest licensee for inclusion into the submission, and where the sustainable forest licensee will provide information components to MNRF for display purposes at an information centre.

The MNRF produces components and provides them to the sustainable forest licensee in advance of the scheduled submission date for the information in order for the components to be incorporated into the submission product.

Part C Information for Annual Operations

1.0 Introduction

This part identifies the information requirements for the planning, scheduling and monitoring of annual forest operations. The information requirements are for the development of forest operations prescriptions and the preparation of an annual work schedule (AWS) as set out in Part D of the Forest Management Planning Manual (FMPM).

The FMPM Part D also sets out the information requirements for two types of forest operations where detailed project planning and approval is required before their implementation; prescribed burning and aerial application of pesticides, FMPM Part D, Sections 4.0 and 5.0, respectively. The FMPM requires these operational project plans to be available with the AWS.

2.0 Information for Annual Work Schedules

Sustainable forest licensees will provide the information as set out in Part D of the FMPM for the preparation and submission of the AWS. Forest Information Manual (FIM) Annual Work Schedule Technical Specifications provide for the current AWS information requirements.

2.1 Requirements and Standards for AWS Information

The FMPM Part D requirements set out the development and submission of an AWS. The AWS is typically used by the sustainable forest licensee and MNRF staff for scheduling operations and for public inspection. The AWS information does not have the same level of province-wide reporting as management unit annual reports, nor the same broad appeal for public review and comment as associated with forest management plan (FMP) development.

AWS information is designed to achieve efficiencies in meeting the requirements set out in the FMPM, to provide a level of standardization to the information, and to minimize restrictions and impediments to operations. Also, as with FMPs and annual reports, standardization is mandatory to enable publication of AWS information on the Ontario Government website. Any document that is posted on the Ontario Government website will be compliant with section 14 of the IASR.

All AWS components, including text, tables, maps, geospatial data layers, revisions, changes to values, and appended documentation will be submitted in an accessible digital format via the data transfer mechanism. The AWS is provided as set out in FIM Annual Work Schedule Technical Specifications.

2.1.1 AWS Text and Tables

The exchange format for AWS text and tables will be a common and widely used format that will aid in web publishing of these documents in an accessible digital format and permit an efficient exchange. The detailed technical standards are given in FIM Annual Work Schedule Technical Specifications. These standards/specifications include naming conventions for the series of files that will be necessary to complete a submission of an entire AWS. The file naming convention and structure standards will accommodate the information management requirement of connecting revisions and changes to values documentation to the original AWS submission.

An AWS and any required revisions will be certified by a registered professional forester, FMPM, Part D, Section 3.2. FIM Annual Work Schedule Technical Specifications set out the process of meeting this certification requirement when submitting electronic documentation. For any required AWS deemed revisions (FMPM Part D Section 3.5.4.1) the certification requirements in this section do not apply.

2.1.2 AWS Maps

In addition to text and table components, an AWS submission also includes maps. The number and type of maps may include an Index Map of the forest management unit, AWS Operations Maps, and AWS Summary Map.

Map products will be provided as set out in Part B, Section 7.0 of FIM and in FIM technical specifications [e.g., Encapsulated Post Script (eps); Portable Document Format (pdf)]. The mandatory information requirements for each map are provided in FIM Annual Work Schedule Technical Specifications.

2.1.3 AWS Scheduling Layers

Geospatial data layers will meet AWS requirements. These layers may be subsets of information included with the FMP submission or a resubmission of the FMP layers. In both cases they will require attribution related to the AWS. An example of the attribution is given below in the layers or grouping of layers described in Sections i through x below.

i. Scheduled Harvest Operations

The areas scheduled for harvest are required as per the FMPM Part D, Section 3.3.1. This requirement provides detail on the harvest operations, such as block identifier, harvest category, and silvicultural system for each area scheduled for harvest in the AWS; this includes fuelwood operations.

ii. Areas of Concern in Scheduled Operations

The operational prescriptions for areas of concern (AOCs) associated with the areas scheduled for harvest and maintenance activities, road activities and aggregate extraction areas, and the conditions for areas of concern associated with the areas scheduled for forestry aggregate pits, landings and roads are required as per the FMPM Part D, Section 3.3. The layer identifies an AOC ID and the AOC type.

iii. Scheduled Road Corridors

The one kilometre-wide corridors for new primary and branch roads that will be constructed during the year are submitted as per the FMPM Part D, Section 3.3.3. Typical attribution includes road class and activity (e.g., maintenance, access controls, decommissioning).

iv. Scheduled Aggregate Extraction Areas

This layer identifies aggregate extraction areas as per FMPM Part D, Section 3.3.4. Typical attribution includes aggregate extraction area identifier.

v. Scheduled Existing Road Activities

Existing roads or road networks that will be maintained, monitored, access controlled, or decommissioned during the year are submitted as per the FMPM Part D, Section 3.3.3.

vi. Scheduled Operational Road Boundaries

Areas where new operational roads may be constructed during the year are submitted as per the FMPM Part D, Section 3.3.3. Typical attribution includes an operational road boundaries identifier.

vii. Scheduled Renewal and Maintenance Operations

Areas scheduled for renewal and maintenance (i.e., tending and protection) will be identified per the FMPM Part D, Section 3.3.2. This information, consisting of a series of layers, similar to the annual report layers, includes the treatment method (e.g., site preparation, planting, seeding and tending).

vii. Scheduled Water Crossing Activities

This layer indicates the locations of water crossings scheduled to be constructed as per the FMPM Part D, Section 3.3.3. Also shown are water crossings to be decommissioned or transferred to the MNRF. Typical attribution includes the construction year, decommissioning type and a crossing indentifier.

ix. Forestry Aggregate Pit Locations

Existing Forestry Aggregate pit locations that will be used for construction and maintenance of roads during the year are provided as per the FMPM Part D, Section 3.3.4. Typical attributes include a pit identifier, pit opening date, and a pit closure date or Category 9 application date.

x. Scheduled Residual Areas

The scheduled residual patches layer is required if stand level residual requirements were identified in the FMP to be addressed during the implementation of operations as per FMPM Part D, Section 3.3.1. Attributes include a residual patch identifier.

2.1.4 Forest Operations Prescriptions Information

Forest operations prescriptions and silvicultural activities for a given area of operations will be maintained by the sustainable forest licensee as part of their information records. The information will be maintained for each area within an area of operations.

A forest operations prescription for an area is not normally required to be submitted as a complete, comprehensive package. However, at the request of the MNRF the sustainable forest licensee will provide access to, or provision of, information relating to the forest operations prescription for the purposes of monitoring, compliance and auditing.

Existing requirements for silvicultural monitoring, as set out in the Forest Operations and Silviculture Manual (FOSM), are largely met by meeting the information requirements of FIM. The regeneration standards discussed in FOSM provides guidance regarding the linkages between silvicultural objective setting, assessing the effectiveness of silvicultural treatments and forest operations prescriptions, and tracking and reporting of silvicultural monitoring at the site, forest, management unit, and provincial levels.

2.1.5 Additional and Appended Documents

Prescribed burn plans and aerial pesticide project plans will be part of and available with the AWS for the year when they are scheduled. The prescribed burn plans are submitted separately from the AWS through the FI Portal but are available together on the Ontario Government website. These documents require a certified approval page that is provided as per FIM Annual Work Schedule Technical Specifications.

Prescribed burn plans are prepared as directed by the FMPM Part D, Section 4.0. Aerial pesticide project descriptions and plans are prepared as directed by the FMPM Part D, Section 5.0. Aerial insecticide projects can only occur after the requirements for an insect pest management program have been completed, as set out in the FMPM Part D, Section 6.0.

The documents described in this section are similar to many of the documents associated with FMPs or AWSs and are available for public inspection. Therefore, when preparing these documents, the sustainable forest licensees or MNRF will

refer to FIM Annual Work Schedule Technical Specifications and FIM Forest Management Planning Technical Specifications for general guidance and direction in preparing this type of documentation. FIM Part B, Section 8.0 that contains general direction on mapping in support of forest management planning, is another source of guidance in preparing these additional and appended documents. Preparing these documents in accordance with FIM and FIM technical specifications will assist in maintaining a consistent approach and standard for all forest planning-related documents. Preparing these documents in accordance with FIM and FIM technical specifications will also ensure the ability for integration of the various information and documentation.

2.1.6 AWS Revisions and Changes to Values

Revisions are to be available with the AWS as per the FMPM Part D, Section 3.5.1. FMPM Part D, Sections 3.5.3 and 3.5.4 set out the documentation requirements for submitting information required for all changes to values that do not require an AWS revision (e.g., updated information on the location and description of values).

Information associated with AWS revisions and changes to values is generally small in volume compared to that of a full AWS or FMP submission. Direction on submitting this information appears in FIM Annual Work Schedule Technical Specifications and/or FIM Base and Values Technical Specifications.

2.1.7 Water Crossing Review

The MNRF reviews the location and conditions of construction and provides the results to the sustainable forest licensee for inclusion in table AWS-1 as set out in the FMPM Part D, Section 3.2.5.1. Completion of this table is the joint responsibility of sustainable forest licensee and MNRF. A process for the exchange of the required information to meet this table requirement is set out in FIM Annual Work Schedule Technical Specifications. Additional direction on this information item is available in the Forestry Water Crossing Protocol.

2.1.8 AWS Documents

AWS documents will be submitted in the same exchange format used in meeting the requirements of an FMP submission as set out in FIM Part B, Section 8.0. The detailed technical standards are set out in FIM Annual Work Schedule Technical Specifications. These FIM technical specifications will provide for the format and include naming conventions for the series of files that will be necessary to complete a submission of the AWS. The file naming convention and structure standards will accommodate the information management requirement of linking revisions and appended documents to the original AWS submission.

2.2 Roles and Responsibilities for AWS Information

The sustainable forest licensee will prepare and provide the electronic AWS documents. The specific and detailed responsibilities are set out in FIM Annual Work Schedule Technical Specifications.

2.3 Timelines and Conditions for AWS Information

As per the FMPM, a sustainable forest licensee is required to submit an AWS to the MNRF before January 1. MNRF will provide the sustainable forest licensee with information to be included in the AWS by November 15.

Refer to the FMPM Part D and FIM Annual Work Schedule Technical Specifications for specific direction on timelines related to AWS components.

Part D Information for Reporting, Monitoring and Evaluation

1.0 Introduction

This part discusses the requirements for information related to monitoring, reporting and evaluation of forest management activities, including forest operations compliance information, roads and water crossings monitoring, exceptions monitoring, and silvicultural monitoring information. Reporting, monitoring and evaluation information is required at various times during and after the 10-year period of a forest management plan (FMP).

Section 2.0 identifies the information required to support the preparation of management unit annual reports in accordance with Part E of the Forest Management Planning Manual (FMPM). The annual report includes results of monitoring activities (e.g., forest operations inspections, assessments of regeneration).

Section 3.0 identifies requirements to provide information collected from forest inspections in accordance with the Forest Compliance Handbook and the MNRF's compliance information system.

Section 4.0 discusses silvicultural monitoring information.

2.0 Annual Report Information

2.1 Requirements and Standards for Annual Report Information

An annual report will be prepared for each forest management unit as set out in Part E of the FMPM. Annual reports are prepared for a one-year period starting April 1 and ending March 31 of the following year and contain information on forest management activities and natural events occurring during that period. The sustainable forest licensee will prepare and submit the annual report. The FMPM sets out additional requirements that apply for year five and final year annual reports.

Reporting on forest management activities, specifically the actual treatments applied and results of these treatments, as expressed in the reporting of assessments of regeneration, completes the forest operations prescription and permits monitoring and assessment to be undertaken.

The FMPM also specifies that the MNRF provides certain information to sustainable forest licensees each year for their use in fulfilling their annual report requirements.

The MNRF provides sustainable forest licensees with information on forest operations inspections, natural disturbances, and harvest volume utilization for the annual report period. The MNRF provides content input for the annual report tables that record volume utilization and compliance inspection information. The MNRF provides natural disturbance information in the form of geospatial data layers. These layers identify the gross area affected by the type of natural disturbance and provide sustainable forest licensees with a preliminary area where further investigation is required to identify the actual net depleted areas. Sustainable forest licensees will identify the actual net area depleted by natural causes and provide this information in their annual report submission.

As with FMPs and AWSs, standardization is mandatory to enable publication of annual report information on the Ontario Government website. Any document that is posted on the Ontario Government website will be compliant with section 14 of the IASR.

All annual report components, including text, tables, maps and geospatial data layers will be submitted by the sustainable forest licensee in an accessible digital format via the data transfer mechanism. Sustainable forest licensees will create and provide the annual report as set out in FIM Annual Report Technical Specifications.

2.1.1 Annual Report Text and Tables

The exchange format for annual report text and tables will be a common and widely used format that will aid in web publishing of these documents in an accessible format and permit an efficient exchange. The detailed technical standards are given in the Forest Information Manual (FIM) Annual Report Technical Specifications. These specifications include naming conventions for the series of files that will be necessary to complete a submission of an annual report.

An annual report will be certified by a registered professional forester, FMPM, Part E, Section 2.1.1. FIM Annual Report Technical Specifications provide for the process of meeting this certification requirement when submitting electronic documentation.

2.1.2 Annual Report Map

In addition to text and table components, an annual report submission also includes an Annual Report Map. The map product will be provided as set out in Part B, Section 7.0 of FIM and in the FIM technical specifications [e.g., Encapsulated Post Script (eps) format; Portable Document Format (pdf) format]. The mandatory information requirements for the map are provided in FIM Annual Report Technical Specifications.

2.1.3 Annual Report Layers

The annual report geospatial data layers identify the geographic location and extent (i.e., area) of forest management activities and natural changes that occurred during the previous fiscal year of operations. Each of these layers contains a set of associated tabular attributes that provide further description and definition of the spatial features. These layers may be used to update base feature information (e.g., roads). The information that is reported geospatially is described below in Section i through viii.

i. Areas of Natural Disturbance

The areas of natural disturbance layer identifies the areas of net stand replacing natural disturbance as per the FMPM, Part E, Section 2.4.2. Examples of natural disturbance attribution include depletion forest unit, age class, estimated volume, and disturbance type.

ii. Areas of Harvest Disturbance

The areas of harvest disturbance layer identifies the areas of harvest operations as required by the FMPM, Part E, Section 2.4.1 Examples of harvest attribution include block identifier, trial areas, depletion forest unit, target forest unit, target yield, stage of management, silvicultural ground rule (SGR), AOC identifier, silvicultural system, harvest method, logging method and harvest category.

iii. Areas of Renewal and Maintenance

The areas of renewal and maintenance layer identifies the areas of renewal, tending and protection activities as required by the FMPM, Part E, Section 2.4.3. Typical attribution includes treatment method.

iv. Road and Water Crossing Construction and Use

The road and water crossing construction and use layer identifies road construction and use management, water crossing construction, monitoring or decommissioning as required by the FMPM, Part E, Section 2.4.4. Typical attribution includes a road identifier, class, activity, crossing identifier, and crossing type.

v. Assessment of Regeneration

The assessment of regeneration layer identifies the assessments of regeneration as per the FMPM, Part E, Section 2.4.6. Typical attribution includes disturbance group, year of disturbance, forest unit at the time of disturbance, SGR, target forest unit, regeneration indicator, forest unit, species composition, height, and indicator of site occupancy.

vi. SGR Changes

The SGR change layer identifies changes to the SGR since it was first reported in the harvest disturbance layer or changed in this layer in a previous reporting year.

vii. Forestry Aggregate Pits

The forestry aggregate pits layer identifies Forestry Aggregate pits.

viii. Slash Management

The slash and chip layer identifies site preparation activities that need to be distinguished from other forms of site preparation as they are distinct treatments. Typical attribution includes slash piling, chip piling, slash burning, onsite mechanical processing, and removal offsite for processing.

The geospatial data layers are used for provincial-level reporting. Layers from individual management units are combined to provide a province-wide summary of management activities and natural disturbances.

All annual report information is exchanged in digital format. The standards for exchanging annual report information are set out in FIM Annual Report Technical Specifications where MNRF provides annual report support information to sustainable forest licensees and the sustainable forest licensees will submit the management unit annual report to the MNRF. The FI Portal is used as the exchange mechanism for digital annual report information.

2.1.4 Annual Report Documents

Annual report documents will be submitted in the same exchange format used in meeting the requirements of an FMP submission as set out in FIM Part B, Section 8.0. The detailed technical standards are given in FIM Annual Report Technical Specifications. These FIM technical specifications will provide for the format and include naming conventions for the series of files that will be necessary to complete a submission of the annual report. The file naming convention and structure standards will enable the publication of the Annual Report information on the Ontario Government website.

2.2 Roles and Responsibilities for Annual Report Information

The FMPM specifies that the MNRF provides certain information to sustainable forest licensees each year for use in fulfilling their annual report requirements. The MNRF provides sustainable forest licensees with information on forest operations inspections, natural disturbances and harvest volume utilization.

Sustainable forest licensees will ensure that the information provided by the MNRF is checked for completeness. The sustainable forest licensees will notify the MNRF of any discrepancies between information provided by the MNRF and similar data, records, and information that are maintained by the sustainable forest licensee.

Discrepancies in annual report information will be resolved before the submission of the annual report.

Sustainable forest licensees will prepare and submit complete annual reports that incorporate the required information provided by MNRF.

The MNRF will have the opportunity to review the annual report for completeness and accuracy and to validate it against FIM Annual Report Technical Specifications. The MNRF will provide the results of the review to the plan author. Year five and final year management unit annual reports will be reviewed and approved by the MNRF. The status of report submissions and notice of review results is provided via the FI Portal.

2.3 Timelines and Conditions for Annual Report Information

An annual report is prepared and submitted by the sustainable forest licensee for a one-year period (i.e., April 1 to March 31), and will be submitted by November 15 each year. MNRF provides information as set out in Part D, Section 2.1, to the sustainable forest licensee by September 15 each year. Natural disturbance information, specifically fire disturbance, insect and disease related disturbance, and abiotic disturbance related to wind, ice storm or other events, are provided by MNRF on April 1 of each year.

As set out in Part E, Section 4.1 of the FMPM, the MNRF reviews the sustainable forest licensee submitted annual report for completeness and provides review results to the sustainable forest licensee within 30 days of receipt of the annual report. The sustainable forest licensee will address the comments resulting from the MNRF review and, if necessary, the sustainable forest licensee will submit a revised annual report on the later of February 15 or 60 days from receipt of MNRF review comments.

As set out in Part E, Section 4.2 of the FMPM, the MNRF reviews the sustainable forest licensee submitted year five and final year annual reports for completeness and provides review results to the sustainable forest licensee within 30 days commencing November 15 or within 30 days from the submission date, if received after November 15. The sustainable forest licensee will address the comments resulting from MNRF review and, if necessary, the sustainable forest licensee will submit a revised annual report for approval on the later of February 15 or 60 days from receipt of MNRF review comments.

Sustainable forest licensees and the MNRF will provide annual report information in accordance with FIM Annual Report Technical Specifications.

3.0 Forest Operations Compliance Information

Sustainable forest licensees will perform compliance planning, monitoring, inspection, and reporting. MNRF performs audits or spot checks of company inspections, verifies all reported instances of non-compliance, and determines enforcement actions and applicable remedies. The Forest Compliance Handbook provides for the various policies and procedures that govern forest compliance business and operational requirements for the forest operations compliance program and incorporates the former Guideline for Forest Industry Compliance Planning and all the requirements it imposed.

One of the primary goals of the forest operations compliance program is to provide a standard process and format for recording observations from individual forest operations inspections. Sustainable forest licensees will prepare a 10-year strategic compliance component in their FMP in accordance with Part B, Section 4.7.1 of the FMPM and the Forest Compliance Handbook. Each year, sustainable forest licensees will prepare an annual component of the strategic compliance plan to be included with the AWS as set out in Part D, Section 3.2.7 of the FMPM.

Sustainable forest licensees will conduct forest operations inspections as per an approved strategic compliance plan. Compliance planning identifies methods and intensities of inspections, and the frequency and circumstances that sustainable forest licensees will conduct forest operations inspections and submit reports of those inspections to the MNRF.

The MNRF also does compliance planning for the purposes of monitoring and auditing forest operations and dealing with the results of compliance inspections conducted by sustainable forest licensees. All reports of non-compliance that are provided by a sustainable forest licensee will be verified by the MNRF. The MNRF identifies actions required for every report of non-compliance.

Forest operations inspection reports are available for public inspection. The MNRF may make decisions regarding the availability of certain information contained in a forest operations inspection report based on the confidentiality or sensitivity of that information with respect to the FIPPA or to ensure the protection of values.

3.1 Requirements and Standards for Forest Operations Compliance Information

Sustainable forest licensees will conduct monitoring that includes inspecting and reporting on all forest operations carried out on Crown forests and will provide a report to the MNRF in digital form in accordance with the Forest Compliance Handbook. The Forest Compliance Handbook also provides for the process for the conduct of forest operations inspections and the requirement to provide a report in

each case. The digital information required in a forest operations inspection report will be provided to the MNRF office responsible for approving and monitoring the implementation of forest management operations conducted by the sustainable forest licensee.

The MNRF similarly provides sustainable forest licensees with forest operations inspection information. The MNRF maintains all forest operations compliance information produced by sustainable forest licensees and the MNRF in the MNRF's compliance information system.

The requirement to provide digital forest operations inspection information complements the direction in the following documents:

(a) Forest Compliance Handbook – all policies and procedures related to the MNRF's compliance information system;
(b) approved compliance plans and their implementation through FMPs and AWSs; and
(c) conditions in Sustainable Forest Licenses that pertain to the collection and provision of forest operations compliance inspection information.

Sustainable forest licensees will provide operations inspections information to the MNRF in accordance with the Forest Compliance Handbook. MNRF provides forest operations inspection information to sustainable forest licensees in accordance with the Forest Compliance Handbook. Additionally, standards for operations inspections information are dictated by MNRF's compliance information system.

3.2 Roles and Responsibilities for Forest Operations Compliance Information

Sustainable forest licensees will complete an inspection of forest operations and provide a digital report. For each forest operations inspection, sustainable forest licensees will confirm that the mandatory data requirements and standards have been met as set out in FIM, Part D, Sections 3.1.

The MNRF reviews the digital information provided by sustainable forest licensees for completeness. The check for completeness and verification may consist of, but is not limited to, the following:

(a) the comments and rationale that are provided as part of the forest operations inspection report information are sufficient to evaluate each instance of non-compliance;

(b) the forest operations inspection information has been received in accordance with the compliance component of the approved company FMP and in accordance with the timelines in the Forest Compliance Handbook;

(c) the reference and location to source data, information and records that have been used in the preparation of the forest operations inspection report information, is complete and traceable; and

(d) verification, in some cases, of the ground observations and the information related to those observations.

The MNRF completes forest operations inspections reports for inspections they conduct and provides the digital information to the sustainable forest licensee.

3.3 Timelines and Conditions for Forest Operations Compliance Information

The timeline for providing forest operations inspection report information described in this section applies to sustainable forest licensees and the MNRF. Forest operations inspection reports will be provided at different times depending on the following direction:

(a) the frequency and timelines (i.e., inspection schedules) described in the company and/or district compliance planning and strategies identified in the approved FMP, and in the approved AWS related to submission of forest operations inspection reports; and

(b) the timelines set out in the Forest Compliance Handbook – specific to Directive FOR 07 03 04 and FOR 07 03 05 or their successors.

Forest operations inspections information is specified in the Forest Compliance Handbook and the MNRF's compliance information system.

4.0 Silvicultural Monitoring Information

4.1 Requirements and Standards for Silvicultural Monitoring Information

The requirement to develop a monitoring program is defined in the FMPM, Part B, Section 4.7.3, and Part A, Section 1.3.8. The program is to be described in the FMP. FIM provides a framework for the information to support a monitoring program as many of the information requirements to support a monitoring plan are met by existing FIM requirements.

The results of the assessments of regeneration will be recorded in the annual report. The information collected during implementation of the program will support the review of renewal and maintenance activities set out in Part E, Section 3.3 of the

FMPM. The information supports an adaptive management approach to forest management.

The FOSM defines the information to be collected and survey methodologies to be used during monitoring.

4.2 Roles and Responsibilities for Silvicultural Monitoring Information

The sustainable forest licensee will develop a monitoring program for the management unit, record it in the FMP as per the FMPM, and implement the program. The sustainable forest licensee will also maintain all records of information gathered during implementation of the monitoring program, and use this information in annual reporting and in future FMP development.

The MNRF reviews the monitoring program as part of the approval process for the FMP.

The MNRF may provide additional information to the sustainable forest licensee regarding the results of the assessments of regeneration and will provide the information when assessment results have been rejected.

4.3 Timelines and Conditions for Silvicultural Monitoring Information

The timeline associated with provision of silvicultural monitoring information is linked to the annual reporting timelines and to FMP development timelines.

Technical guidance and other direction in meeting silvicultural monitoring requirements are available in the FMPM and the FIM Annual Report Technical Specification. The processes and timelines will be explicitly outlined in FOSM and its associated policies.

GLOSSARY OF TERMS

Definition Source

Definitions taken fully, modified or adapted from an already existing source, note the source following the definition – [source]. Sources are abbreviated as follows:

AGI	On-line dictionary of GIS terms by the Association for Geographic Information and the University of Edinburgh Department of Geography (http://www.geo.ed.ac.uk/agidict/welcome.html).
ESRI	On-line GIS Dictionary at Environmental Systems Research Institute (ESRI) Support Center website (http://support.esri.com).
FITC	Forestry Canada, 1988. Forest Inventory Terms in Canada. Canadian Forest Inventory Committee, Forestry Canada.
FIPPA	*Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31
ISAC	Province of Ontario, Information Security Advisory Council.
ISO	International Standards Organization.
OpenGIS	On-line glossary at Open Geospatial Consortium, Inc. website (http://www.opengeospatial.org/resource/glossary).
U GIS	ESRI. 1992. Understanding GIS: The Arc/Info Method.

Definition/Term

Attribute
Nonspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station. [Source: ESRI]

Base Features
Base features represent the geographic locations and descriptions of topographic, cultural, and cadastral entities of Ontario's landbase. Base features can be natural, physical features, such as lakes, rivers, and wetlands, or they can be features of

human influence such as hydro lines, gas pipelines, provincial highways, roads, and railways. Base features include areas that identify subdivisions of land, water, vegetation, environmental features, and other physical and administrative boundaries. Examples of this latter type of base features include forest management units and ownership parcels that identify areas designated for legal, political, tax base, population base, land-use zoning, or management decision purposes.

Buffer
A polygon enclosing a point, line, or polygon at a specified distance. [Source: ESRI]

Data
Any collection of related facts arranged in a particular format; often, the basic elements of information that are produced, stored, or processed by a computer. [Source: ESRI]

Data Attribute
See *Attribute*

Datum
The reference specifications of a measurement system, usually a system of coordinate positions on a surface (a horizontal datum) or heights above or below a surface (a vertical datum). [Source: ESRI]

Digital Data / Digital Information
Data / information represented in a computer compatible format. [Source: modified AGI]

Electronic Information
See *Digital Data / Digital Information*

Forest Information Portal (FI Portal)
The Forest Information Portal is an extranet (an internet site with user name and password security restrictions) available to MNRF and the licensees for the sharing, distribution and exchange of forest information and data.

Forest Management Planning Manual (FMPM)
The Forest Management Planning Manual refers to the July 2017 version of the manual prepared in accordance with Section (68) of the *Crown Forest Sustainability Act*. This FMPM provides direction for all aspects of forest management planning for Crown lands in Ontario.

Forest Management Unit
An area of Crown forest designated under section 7 of the *Crown Forest Sustainability Act*, 1994.

Forest Resources Inventory
The Forest Resources Inventory (FRI) is a spatial product that provides description of all areas within a forest management unit and provides a snapshot in time of the characteristics of water and land base geography.

Geographic Information / Geographic Data
Information describing the location and attributes of things, including their shapes and representation. Geographic data is the composite of spatial data and attribute data. [Source: ESRI]

Geographic Information System (GIS)
(1) An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed. [Source: ESRI]

(2) A computer system for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface. [Source: modified AGI]

Geographically Referenced
Refers to the condition of data for which “positional” information is available, enabling the geographical position of the data to be established and communicated. The normal functioning of a geographic information system requires the existence of geographically referenced data in a spatial data base and a means of manipulating these data. [Source: FITC]

Geo-referenced
See *Geographically Referenced*

Geospatial Data
See *Geographic Information / Geographic Data*

Information
Information comes from data that have been processed (e.g., synthesized, organized, selected, sorted) to provide products that can be used in decision making. Information includes numerical data, text, drawings, designs, maps, photographs, video and audio recordings, and ideas.

Information Management
The application of a set of management disciplines for the purposes of managing all of the data and information and related technological, physical and human resources relevant to the business of the organization. [Source: ISAC]

Information System
A system (manual or automated or computerized) which enables the processing and dissemination of information. [Source: modified ISO]

Intellectual Property
Data, information and their related intellectual property rights, including: text, brochures, books, tables, software, maps, photographs, research findings, and new plant strains.

Intellectual Property Rights
Intellectual property rights include copyright, patent, trademark, and other forms of intellectual property protection.

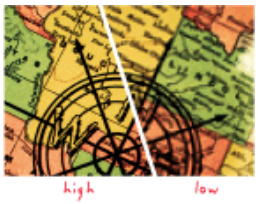
Known Value
A value is a natural, cultural, First Nation or Métis resource attribute or use of land, including all lakes and streams, which must be considered in forest management planning. A value is considered to be a known value when sufficient information exists to describe its geographic location and its basic features.

Layer
A reference to a spatial data source, such as a shapefile, coverage, geodatabase feature class, or raster image. [Source: modified ESRI]

Map Projection
A mathematical model that transforms the locations of feature on the Earth's surface to locations on a two-dimensional surface. Because the Earth is three-dimensional, some method must be used to depict a map in two dimensions. Some projections preserve shape; others preserve accuracy of area, distance, or direction. Map projections project the Earth's surface onto a flat plane. However, any such representation distorts some parameter of the Earth's surface be it distance, area, shape, or direction. [Source: U GIS]

MNRF
"MNRF" means the Ministry of Natural Resources and Forestry, or the ministry of the Minister that has been assigned to undertake responsibility for the *Crown Forest Sustainability Act*.

Resolution



(1) The detail with which a map depicts the location and shape of geographic features. The larger the map scale, the higher the possible resolution. As scale decreases, resolution diminishes and feature boundaries must be smoothed, simplified, or not shown at all; for example, small areas may have to be represented as points.
(2) The dimensions represented by each cell or pixel in a raster.
(3) The smallest spacing between two display elements, expressed as dots per inch, pixels per line, or lines per millimeter. [Source: ESRI]

Map Scale

The relationship between distance on a map and the corresponding distance on the earth's surface. Map scale is often recorded as a representative fraction such as 1:1,000,000 (1 unit on the map represents a million units on the earth's surface) or 1:24,000 (1 unit on the map represents 24,000 units on the earth's surface. The terms 'large' and 'small' refer to the relative magnitude of the representative fraction. Since 1/1,000,000 is a smaller fraction than 1/24,000, the former is said to be a smaller scale. Small scales are often used to map large areas because each map unit covers a larger earth distance. Large-scale maps are employed for detailed maps of smaller areas. [Source: OpenGIS]

Metadata

Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data). [Source: ESRI]

Personal Information

Personal information means recorded information about an identifiable individual, including:
(a) information relating to the race, national or ethnic origin, colour, religion, age, sex, sexual orientation or marital or family status of the individual,
(b) information relating to the education or the medical, psychiatric, psychological, criminal or employment history of the individual or information relating to financial transactions in which the individual has been involved,
(c) any identifying number, symbol or other particular assigned to the individual,
(d) the address, telephone number, fingerprints or blood type of the individual,

(e) the personal opinions or views of the individual except where they relate to another individual,
(f) correspondence sent to an institution by the individual that is implicitly or explicitly of a private or confidential nature, and replies to that correspondence that would reveal the contents of the original correspondence,
(g) the views or opinions of another individual about the individual, and
(h) the individual's name where it appears with other personal information relating to the individual or where the disclosure of the name would reveal other personal information about the individual; ("renseignements personnels") [Source: FIPPA]

Planning Inventory
The planning inventory is a specific forest resources inventory product required for the preparation, implementation and monitoring of a FMP. The planning inventory is prepared for each specific plan and stays with the perspective FMP for the life of that FMP. The planning inventory is a generic term that encompasses the following information components: planning composite and the forecast layer.

Polygon
A closed shape defined by a connected sequence of x and y coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique. [Source: ESRI]; A feature used to represent areas. [Source: AGI]

Polygon Forest
The polygon forest is an information layer that provides a description of the forest, water and other landbase features within a forest management unit. The management unit is delineated and classified based on geographic features and characteristics into homogeneous water and land types called polygons. Polygons have a spatial component (geographic location) and a tabular component (description of characteristics).

Precautionary Principle
In the absence of conclusive information to confirm the presence or features of a value, this principle requires the consideration of the value in the planning of road locations and area of concern prescriptions in order to ensure that the value is protected, based on the high probability of its presence and the potential that it may be affected by forest management operations in a significant and negative way.

Quality Assurance
All the planned and systematic activities implemented within the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfill requirements of quality. [Source: ISO]

Quality Control
Comprises the operational techniques and activities that are used to fulfill requirements of quality and quality assurance. [Source: modified ISO]

Records
A record is any information however recorded, whether in printed form, on film, by electronic means or otherwise and includes:
(a) correspondence, memorandum, a book, a plan, a map, a drawing, a diagram, a pictorial or a graphic work, a photograph, a film, a microfilm, a sound recording, a videotape, a machine-readable record, any other documentary material regardless of physical form or characteristics, and any copy thereof; and
(b) subject to the regulations, any record that is capable of being produced from a machine readable record under the control of an institution by means of computer hardware and software or any other information storage equipment and technical expertise normally used by the institution. [Source: FIPPA]

Scale
See *Map Scale*

Standard
Measurable parameters established for use as a rule or basis for comparison in measuring or judging quantity, quality, value, capacity, or other characteristics.

Tabular Data/Information
Descriptive information, usually alphanumeric, that is stored in rows and columns in a database and can be linked to spatial data. [Source: ESRI]
See *Attribute*

Theme
See *Layer*

Value
Values are features, benefits, or conditions of the forest that are linked to a geographic area, that are of interest from various points of view, and that must be considered in forest management planning.
See *Known Value*