

Reclassification

Ministry

Agriculture and Forestry

Describe: Basic Job Details**Position**

Position ID

[Redacted]

Position Name (30 characters)

Remote Sensing Specialist

Current Class

[Redacted]

Requested Class

[Redacted]

Job Focus

[Redacted]

Supervisory Level

[Redacted]

Organizational Structure

Division, Branch/Unit

Forestry, Division, Forest Stewardship & Trade

 Current organizational chart attached?

Supervisor's Position ID

[Redacted]

Supervisor's Position Name (30 characters)

[Redacted]

Supervisor's Current Class

[Redacted]

Design: Identify Job Duties and Value**Changes Since Last Reviewed**

Date yyyy-mm-dd

2014-03-19

Responsibilities Added:

Alberta representative on pan-Canadian National Forest Inventory initiative.

Responsibilities Removed:

Removed research elements to the position moving it out of the Scientific classification to a Program Services.

Job Purpose and Organizational Context

Why the job exists:

The Remote Sensing Specialist is responsible for delivering products and services in support of the Reforestation, Inventory & Biometrics Section (RIBS), Forest Stewardship and Trade Branch (FSTB), of Forestry Division (FD, "the Department"). An accurate and timely understanding of our forest vegetation inventory is crucial to ensure sustainable harvest levels, and the ecological, economic and social values that accompany such a forest management

paradigm. The practice of remote sensing is foundational to our understanding of the land cover, change, and structure of our forest resource.

Under direction of the Senior Resource Analyst (Inventory Lead) the incumbent brings remote sensing expertise to the Division, and plays a key role in ensuring emerging issues and advancement in remote sensing techniques are addressed within the Department's associated policies and standards. The work is completed within the regulatory framework of the Ministry (i.e. Forests Act and Regulations), Ministry and Division business plans, as well as within related policies and procedures. In order to fulfill core FSTB business, the incumbent plays a key specialist role in the support of developing and maintaining associated operational policies, guidelines for implementation, submission templates, and internal standard operating procedures. In some cases, policies overlap with other sections, which requires working collaboratively in order to achieve positive outcomes. Engagement with the forest industry operational delivery foresters, remote sensing specialist counterparts in the Canadian Forest Service (CFS) and academia is all key to the success of integration of remote sensing advancements into Alberta's forest management policies.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Divisional expert in remote sensing technologies. Provides this expertise in support of the Senior Resource Analyst (Inventory Lead) in drafting/revising policies, guidelines, standard operating procedures and technical standards related to the Alberta Forest Vegetation Inventory System and other aspects of the Department's mandate.
 - a. Plays leadership role in the development and interpretation of remote sensing standards related to forest vegetation inventory and updates for forest companies, their consultants, the Department, and Alberta Environment and Protected Areas (EPA) staff.
 - b. Review novel remote sensing specifications submitted within AVI Plans and provide recommendation for approval to Senior Resource Analyst.
 - c. Leverage available remote sensing information to create new up to date information to enhance existing forest cover improving Department inventories.
 - d. Provide remote sensing expertise to the legislated reforestation assessment policies (Reforestation Standard of Alberta - RSA).
 - e. Provide remote sensing expertise to Forest Health and Adaptation Section to help advance forest health (i.e. pest and disease surveys) monitoring initiatives, as needed.
 - f. Liaison with Provincial Geo-spatial Center (PGC) on collection of pertinent remote sensing data, as needed.
2. Provide direct support to and play a leadership role in initiatives for the Department regarding spatial data and remote sensing data management.
 - a. Develop supporting data management tools and system automations to support our forest management regulatory processes.
 - b. Liaise with Forest Resource Improvement Association of Alberta (FRIAA) regarding their data sharing infrastructure to support open access to data collected with Forest Resource Improvement Program (FRIP) funding.
 - c. Liaise with Alberta EPA PGC on matters related to data sharing.
 - d. Support Senior Resource Analyst (Inventory Lead) in establishing data sharing agreements in the context of forest tenure agreements, forest management policy and supporting legislation.
3. Support cross-jurisdictional and external-to-GOA collaborations with forestry data, vegetation inventory,

disturbance monitoring and remote sensing collaborations.

- a. Act as primary representative for Alberta on the National Forest Inventory (NFI) collaboration. Support the contribution of NFI data elements on planned time lines in alignment with NFI Canada/Alberta Memorandum of Understanding.
 - b. Liaison with Alberta Biodiversity Monitoring Institute (ABMI), and grant holders in EPA, on matters related to NFI program delivery, human footprint monitoring, and other projects as needed.
 - c. Support Senior Resource Analyst in derivation of forest area and related statistics on an annual (National Forest Database - NFD reporting) or adhoc basis as may be required.
 - d. Support the Director in actioning data gathering and analysis needs identified in the Canadian Council of Forest Ministers (CCFM) Data Task Team (DTT).
 - e. Participate in and give presentations at cross jurisdictional Enhanced Forest Inventory (EFI) community of practice.
4. Maintain professional knowledge in forestry and assume a Department leadership role in the scientific field of remote sensing.
- a. Develop an effective network of key relationships nationally and internationally to maintain state of the art knowledge relating to the integration of forest inventories and forest/land management practices.
 - b. Keep up to speed on the advancements in remote sensing science and technology to assess applicability to Department policy and practice.
 - c. Oversee, steer, and develop the direction of remote sensing data components of the Department.
 - d. Liaise with other Remote Sensing Specialists within the Ministry and across the Natural Resource IRMS Ministries to develop inter-departmental initiatives and working collaborations. Also, represent FSTB interests on inter-departmental committees and provide input to data acquisition specifications and development of new data series for the Branch.
 - e. Support the FRIAA by providing review and input into industry FRIP proposals related to AVI and EFI.
 - f. Liaise with other agencies such as the Canadian Forest Service (CFS) and academia on matters related to remote sensing and geo-spatial data processing.
 - g. Review published papers and reports and participate in relevant workshops, conferences and courses in remote sensing and natural resource management.
5. Effectively manages projects with the scope of the defined work plans, in support of Division and Ministry priorities as defined from time to time.
- a. Defines project needs with client groups through definition of project scope, resources needed, schedules planning and methods for measuring outcomes.
 - b. Monitors project progress and resource usage to ensure that approved project activities are completed timely.
 - c. Prioritizes, plans and negotiates with clients, changes in scheduling and project scope as needed.

Problem Solving

Typical problems solved:

The Ministry's objective is to ensure the benefits Albertans receive from Alberta's public lands and natural resources (forests, rangelands, fish and wildlife) are achieved in a manner that is sustainable, equitable, responsible, and in the public interest. This position directly impacts the ability of FSTB to accomplish its mandate.

A current and accurate forest vegetation inventory is critical for the sustainability of Alberta's timber resource. The forest vegetation inventory, is used in Forest Management Plans as an integral input into timber supply analysis (i.e. the analysis used to determine, for a given area, the types of forest available for management on a sustainable basis).

Rapid advances in remote sensing technology, supporting data sources, software, and computing power mean that our forest tenure holders and inventory service providers are consistently approaching the Department with new methodologies for acquiring inventory products. The Incumbent is positioned to conduct critical assessment of the viability of these approaches, with an awareness of scientific developments in the field, and understanding of emerging practices and policies in other jurisdictions.

As technology advances, the types of remotely sensed data, software and methodologies to manage this data changes. The incumbent needs to keep abreast of developments that may have implications for how the Department delivers vegetation inventories. The incumbent must provide advice to Department management and professional staff, regarding identification and evaluation of information technology alternatives related to remotely sensed data. The incumbent must research new techniques, applications, software and models that will fulfill specific needs regarding natural resource management.

The incumbent must find solutions for best ways to ensure easy access to geo-spatial data within the Department. This must be done in the context of changes in software, evolving computing technology (for example increased use of mobile devices), and user needs and expectations.

Types of guidance available for problem solving:

There is little to no guidance for problem solving beyond that which the incumbent is tasked with developing or is responsible for maintaining. The AVI Standard sets out minimum requirements for forest companies who are developing AVI; however, with rapid changes in remote sensing technology and modeling techniques, unique approaches are frequently considered as part of a company's AVI Plan. The combination of understanding of standard practices, potential emerging technologies, and considerable experience are generally the foundation upon which problem solving is based.

The incumbent works closely with the Senior Resource Analyst, but ultimately is expected to show a great deal of independence when deciding the course of action for remote sensing acquisition and data management solutions. Where required, consultation with RIBS' subject matter experts may be needed to better understand the data need so that the incumbent can decide on an appropriate course of action.

Likewise, the incumbent is given independence in terms of managing priorities and time lines. Where multiple requests for urgent work cannot be met by the available resources, or major new projects would require substantial changes to the current work plan, strategies are discussed with the Senior Resource Analyst or the RIBS Director for priority setting.

Direct or indirect impacts of decisions:

FSTB is the sole business area responsible for determining annual allowable cut levels (i.e. permissible timber harvest levels on provincial Crown lands). Forest vegetation inventory is one of the most important inputs into a timber supply analysis from which a recommended annual allowable cut is output. If the inventory is inaccurate, the resulting harvest levels may prove to be an unsustainable utilization of the timber resource, resulting in significant long term social, economic and ecological impacts to the region and the province. Values related to fish, wildlife, biodiversity, and clean water will all be impacted. Most of the work associated with industry's management plans has a long period of application, usually for the next 10 years before another review is completed and significant changes made, making the need for accuracy even more critical. Vegetations inventories in Alberta are based on remote sensing approaches.

A robust understanding and assessment of remote sensing approaches is foundational in determining the rigor of our data assets. This is key in setting standards to ensure minimum acceptable standards are met, ensuring the quality of our key data and facilitating informed forest management decision making.

Key Relationships

Major stakeholders and purpose of interactions:

External

- Formal and informal contact with forest industry representatives to resolve issues relating to AVI and

spatial data submissions in relation to remote sensing methodologies applied.

- Contact with forest industry representatives, university staff and/or consultants to discuss directions and approaches to forest inventory and updates.
- Engagement with the forest industry as part of policy development/updates via Alberta Forest Products Association (AFPA) engagement sessions.
- Participation on NFI collaborators meetings.

Internal:

- Provide recommendations and products used for decision support to FSTB senior and executive management.
- Work across sections as needed to support Divisional or Department initiatives, e.g. adhoc analysis to support action request response and executive briefing for remote sensing data assets or methodologies.
- Works with technical and professional staff and managers in FSTB as well as other Branches within the Department to identify user needs for remote sensing application use/development.
- Works with other remote sensing specialist in other departments within the Government of Alberta to create standardized methodologies, enabling cross-Ministry sharing of data.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Bachelor's Degree (4 year)	Other		

If other, specify:

Forestry, Natural Resource Management, Environmental Sciences, Geomatics, Geography, or equivalent

Job-specific experience, technical competencies, certification and/or training:

Education and Professional Requirements

Bachelor of Science Degree in Forest Management, Natural Resource Management, Environmental Sciences, Geomatics, or Geography from an accredited university; additional specialized remote sensing certification are preferred. Equivalences may be considered.

Experience Requirements

This position requires:

- Extensive knowledge of forest management theory and practice (forest planning, forest mensuration, forest inventory).
- Extensive knowledge of geographic information systems technology, with experience handling and management of big spatial data.
- Extensive knowledge of the full range of remote sensing methodologies and potential data assets as collected by satellite, piloted aircraft (i.e. fixed wing, rotary wing), remotely piloted aircraft systems (RPAS), and terrestrial applications. Expertise should include various sensor types, for example all types of imagery, light detection and ranging (lidar), and radar.
- Knowledge of Alberta forestry legislation including Forest Act, Public Lands Act, Forest and Prairie Protect Act and regulation, Timber Management Regulation, Alberta Vegetation Inventory Standards Version 2.1.5

Key Abilities and Aptitudes:

- The ability to produce computer programs of varying levels of complexity using various types of programming languages (for example Python and R), databases, spreadsheets and statistical software is essential. This position requires the ability to think logically and to create complex models of dynamic forest

conditions.

- Self-directed research skills - to explore professional literature for best practices and to find out how other jurisdictions are handling similar issues.

Key Fields of Knowledge:

- Understand the Alberta forest management policy framework.
- Ability to assess and to incorporate emerging remote sensing knowledge and technologies into forest inventory practices and into policy/guidelines/legislation development.
- A thorough understanding of the forest and vegetation classifications used in Alberta is necessary.
- A thorough knowledge of the Department's program and policy objectives combined with a thorough understanding of industry practices, procedures, issues and trends.

Critical Skills:

- Advanced working knowledge of the MS Office suite of tools is required.
- A very thorough understanding of the field of geomatics as applied to coordinate systems and transformations, survey positioning methodologies, and air photo and satellite imagery capabilities and characteristics is required to develop data models and standards.
- Position utilizes extensive consultative, research, analysis, and problem-solving skills to identify and resolve complex issues with base mapping, data management, statistical interpretation of data, and scientific design principals.
- Requires extremely high proficiency in using various geomatics and statistical based software systems to conduct self guided analysis of complex spatial and temporal data.
- Requires a knowledge and understanding of various programming languages for the creation of custom GIS applications.

Human Relations Skills:

- Relationship building is an important skill that the position holder must use to develop win/win relationships.
- Excellent written communication, verbal communication, and interpersonal skills to optimize the contribution and participation of key stakeholders (individuals and groups).
- Excellent presentation skills to convey complex information in a meaningful way to differing levels and types of audiences. From very technical to academics to laypeople, particularly regarding complex topics like forest growth estimation.
- Ability to work effectively in a team setting and able to organize and lead project teams and committees to achieve work objectives.
- Aptitude for problem solving and decision-making, as well as mature judgment, tact, and diplomacy.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level					Level Definition	Examples of how this level best represents the job
	A	B	C	D	E		

<p>Systems Thinking</p>	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	<p>Takes a long-term view towards organization's objectives and how to achieve them:</p> <ul style="list-style-type: none"> • Takes holistic long-term view of challenges and opportunities • Anticipates outcomes and potential impacts, seeks stakeholder perspectives • Works towards actions and plans aligned with APS values • Works with others to identify areas for collaboration 	<p>Detailed knowledge of how changes in remote sensing methodologies will impact various stakeholders and proactively addressing it through collaboration is essential to this role.</p> <p>Identifying trends in the advancement of technology to anticipate how our standards may need to be updated.</p> <p>This position is also responsible for working with a variety of stakeholders to gather information for the development of policy instruments such as directives and standards.</p>
<p>Creative Problem Solving</p>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<p>Works in open teams to share ideas and process issues:</p> <ul style="list-style-type: none"> • Uses wide range of techniques to break down problems • Allows others to think creatively and voice ideas • Brings the right people together to solve issues • Identifies new solutions for the organization 	<p>Decisions on the appropriate technical approach to take in responding to requests for assistance are made by the position daily.</p> <p>The incumbent needs to understand the remote sensing data and tools that are used to manage the data to meaningfully develop and implement process improvements.</p> <p>The incumbent has core programs and data that they are directly responsible, but is also expected to help solve remote sensing and spatial data related challenges for others across the Department.</p>

<p>Agility</p>	<p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/></p>	<p>Proactively incorporates change into processes:</p> <ul style="list-style-type: none"> • Creates opportunities for improvement • Is aware of and adapts to changing priorities • Remains objective under pressure and supports others to manage their emotions • Proactively explains impact of change on roles, and integrates change in existing work • Readily adapts plans and practices 	<p>Remote sensing technology is rapidly evolving. Forest stakeholders have a range of information needs related to both fibre and non-fibre issues, at scales ranging from landscapes, to stands, to individual trees. Many stakeholders disagree on potential solutions. The ability to identify opportunities and acknowledge limitations of approaches is critical for this position.</p> <p>This position frequently makes recommendations for changes to directives and standards to assist in modernizing business processes related to remote sensing.</p> <p>Changes to direction and priorities occur frequently. This position must be able to redirect their focus and time quickly to meet timelines.</p>
<p>Build Collaborative Environments</p>	<p><input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>Collaborates across functional areas and proactively addresses conflict:</p> <ul style="list-style-type: none"> • Encourages broad thinking on projects, and works to eliminate barriers to progress • Facilitates communication and collaboration • Anticipates and reduces conflict at the outset • Credits others and gets talent recognized • Promotes collaboration and commitment 	<p>This position requires extensive collaboration with a broad audience. Strong communication skills are required to discuss complex issues, while respecting alternate points of view.</p> <p>Alternate views exist on how best to approach remote sensing methodologies, technology and program enhancement. This position must gather this feedback, assess feasibility, and enhance/develop applicable policy instruments while maintaining positive working relationships.</p> <p>Demonstrated expertise in the area of remote sensing</p>

			and forest inventory, and a broad understanding of forestry as a whole, establishes credibility with all stakeholders, both internal and external.
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Benchmarks

List 1-2 potential comparable Government of Alberta: [Benchmark](#)

Forest Management Planner - NR8 - 058NR04

Like the lead planner the Remote Sensing Specialist leads its discipline of work coordinating multidisciplinary input requires significant analytical and problem-solving skills. There is a requirement to evaluate numerous variable/ issues such as conflicting technical opinions on approaches to remote sensing, operational issues relating to inventory and updates, scientific standards and compliance with legislation and department objectives. This position is considered the lead expert in the field for the Department.

Business Analyst, ITMS - PS4 - 024PS69

Like the ITMS Business Analyst position this position plays a key role in pro-actively engaging ministries and stakeholders to ensure the effective implementation of its scope of work in the interest of the department. Involved in the development of new and innovative approaches to remote sensing, and must anticipate and react to emerging technologies to support new policy initiatives and business requirements. Position requires a more enhanced level of creativity to deal with the more complex problems and issues. Being the sole Remote Sensing Specialist within this unit, the position is looked upon to identify, define and analyze alternative courses of action without readily available assistance from other areas.

Assign

The signatures below indicate that all parties have read and agree that the job description accurately reflects the work assigned and required in the organization.

_____ Employee Name	_____ Date yyyy-mm-dd	_____ Employee Signature
_____ Supervisor / Manager Name	_____ Date yyyy-mm-dd	_____ Supervisor / Manager Signature
_____ Director / Executive Director Name	_____ Date yyyy-mm-dd	_____ Director / Executive Director Signature
_____ ADM Name	_____ Date yyyy-mm-dd	