2012 RPF Registration Exam
Take-Home Exam

This package contains examples of good answers for questions #1 & #2 that were submitted for the take-home portion of the 2012 RPF registration exam. Although the answers were chosen as the two better answers submitted in 2012, take note of the score each answer received and be advised that answers may contain errors. Please note that the examples do not conform to the criteria and formatting outlined in the exams procedures.

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ASSOCIATION OF BC FOREST PROFESSIONALS

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Question 1

The administration of forest land in BC has historically been delivered through multiple resource ministries and professions.

a) What are the arguments for and against a single resource ministry and a single resource profession?

b) Examine and discuss the roles and responsibilities of professionals and how they might change under these two scenarios (i.e. a single profession and ministry versus multiple professions and ministries)?

Answer 1 (scored 84 marks)

FOR THE BEST MANAGEMENT OF THE NATURAL RESOURCES OF BRITISH COLUMBIA: AN EVALUATION OF MINISTRY AND PROFESSIONAL STRUCTURES

2012 Take-home Exam – Q1

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INTRODUCTION

In British Columbia much has changed both in the physical landscape and how the land is managed since the inception of the Forest Service back in 1912. Half a century later, it became apparent that the resources needed to be more actively managed and that a level of accountability was required, so the Association of BC Professional Foresters (now the Association of BC Forest Professionals) was created in 1947 with exclusive right to both title and practice as provided for under the Foresters Act (ABCFP, 2011). Since their establishment, the BC Forest Service and the ABCFP have been the stalwart ministry and professional association for the management and advocacy of forest related issues.

Present day forest management has become far more complex. There are many different 'players' in the forests and many different expectations and desires from the land base. No longer is society concerned about getting the greatest utility from the forests as simply timber. Rather, the forests and lands are considered for many other values, including mineral and gas exploration, power production, forest utilization (including non-timber forest products), recreation and tourism, First Nations rights and title, and environmental protection. Until very recently there have been a large number of ministries to manage and address the issues of each sector (e.g. Energy and Mines, Aboriginal Relations, Lands, Environment, Forests, and Range). Likewise there have been corresponding professional bodies ensuring that people that work in each sector are competent and accountable (e.g. Foresters, Agrologists, Biologists, and Engineers). However, is having multiple ministries the most effective way to structure the management of varied interests of the same land base? The current government has made significant changes to its structure of ministries with the creation of the Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO) with the stated desire to have a "one land manager" for the province. This concept addresses problems with the prior system but in its

creation will likely create numerous hurdles that need to be addressed – this change needs to be evaluated. In considering the concept of a single resource ministry, a parallel question should also be considered – should the professional associations do the same? That is, should there be a single "land management professional"? The following will consider the pros and cons of each (single ministry and single profession) while keeping in mind the role of the individual professional.

BACKGROUND

Public Lands in BC make up 94% of the landbase (PRTF, 2006) and the management of these lands has been entrusted to various government ministries and resource professionals. The various ministries have each their own specific area of focus as per their namesake (e.g. Agriculture, Energy and Mines, etc.). Most recently, the government has made significant changes in the ministry structures by amalgamating several ministries into one organization. The government's stated intent is to have a "one land manager" allowing for better decision making through integrated management, to be better equipped to managed cumulative effects, and make significant steps in simplifying permitting processes through the "one project, one process" framework (MFLNRO, 2011a). Although this does not form a single resource ministry, it is a significant step in that direction. Aside from the MFLNRO, the other resource ministries include Environment, and Energy and Mines – though many of the operational responsibilities that these ministries have undertaken historically have been moved under the umbrella of MFLNRO (see Appendix I – Summary of Natural Resource Ministry Responsibilities).

The government is not alone in their thinking to streamline the ministries. The Association of BC Forest Professionals (ABCFP) wrote a letter in 2008 to the government stating:

> "Land management in BC consists of separate sectors, agencies and interests, all attempting to influence what occurs on the same land base and often for different reasons that are in

> conflict with each other… with limited or no coordination of objectives or outcomes" (ABCFP, 2008a)

In the Land Based Management Statement that was attached to the letter, the ABCFP concluded that:

> "This simple change in philosophy of lands based management in BC – moving towards common ground – may be the most important decision made in the province of BC this century" (ABCFP, 2008a)

In contrast, Hoberg and Taylor (2010) discuss how previous attempts in creating an integrated resource management team have failed and how current developments are likely to do the same.

The resource professionals also have a very significant role in the management of the public resource. Legislative changes regarding land management have moved from being prescription based to be being results based (e.g.the Forest Practices Code Act to the Forest and Range Practices Act), and these changes place a higher level of accountability on the resource professionals with a strong emphasis on professional reliance. Amongst the professional associations there has been discussion about professional reliance and how professions can work together for the protection of the public interest (PRTF, 2006). The professional associations have built and are continuing to build common ground on what it means to rely on one another.

DISCUSSION

Strength in a Single Ministry Model

A Multi-disciplinary Approach

If done well, a move to a "one land manager" has great potential. A single ministry, with an integrated team of various professionals contributing their various perspectives will allow for more informed / better decisions to be made on the landbase. Central to better decision making is the need for multidisciplinary teams that are able to provide their expertise and opinions from various perspectives. For example, multidisciplinary teams are needed in the development of run of the river power projects, which require the expertise of Biologists (as both terrestrial and aquatic plant and animal communities are impacted), and Engineers (in the safe and sustainable

construction of the facilities), while the role of Foresters, as highlighted by Wise et al (2009), is valued in initial reconnaissance, construction, coordination of other resource professionals. Similarly, the need for multidisciplinary teams, including Foresters, in the development of Oil and Gas was discussed by Ferguson (2009).

Cumulative Effects Management

As the landbase is used for more and more purposes, cumulative effects management becomes a very important issue – one that a single resource ministry is better suited to manage than the fragmented approach of the past. Cumulative effects are impacts on the landbase caused by an accumulation of seemingly benign effects adding up to be greater than the sum of their parts. For example, consider small water licenses along a waterway - each on their own are small and insignificant. However, all of the water licenses together could have significant impacts on the waterway. Another way that cumulative effects impact the land is through different overlapping uses combining to exceed an ecological threshold (FPB, 2011. In the north eastern area of the province, oil and gas development along with road development for logging operations are causing cumulative effects as identified by the local First Nations (FN). At present, the FN concerns have triggered the initiation of a Sustainable Resource Management Plan. However, this is a reactionary measure – the impacts are already being felt (FPB, 2005). With a one ministry model, these impacts could and should be considered at the planning level not after the fact. The Forest Practices Board sees the government's move towards an integrated resource management ministry as a positive step into managing this issue (FPB, 2011). As professionals and the ministry consider mitigating cumulative impacts, they must take a long term view and not become project focused – remembering that it is all of the projects and potential projects in the area that will add up to form cumulative impacts (Duinker, 2006). A one ministry model will allow for cumulative effects to managed and mitigated. However, this will

not happen by default. It must be an intentional purpose of the ministry and the professionals to proactively consider this type of impact on the landscape.

Improved Efficiencies

Prior to the integration of the various ministries, organizations that wished to have access to the landbase would need to work with up to nine various ministries and determine which of over 1200 permits they would need in order to move forward with their projects (MFLNRO, 2011). Movement to a single ministry model greatly reduces this bureaucracy. An example of this is the Mt. Milligan mine development north of Ft. St. James. The "one project, one process" system allowed for clearer communication with the local FN groups – one letter coming from government as compared to 28 under the multi-ministry model - as well as reduced length in consultation (MFLNRO, 2011). As a result of this project, Ft. St. James is BC's second fastest growing community and is expected to continue its growth as the Mt. Milligan project moves towards full capacity (Gagnon, 2012).

One Ministry Challenges

Too Efficient?

The Mt. Milligan Project is a positive example where a project moved through the system quickly and without significant opposition. In contrast, the Prosperity Mine near William's Lake is an example where too quick a process, or possibly a short cut process, can go sideways. With Prosperity Mine the MFLNRO provided permits to cut timber, build roads, and begin drilling operations despite the fact that the Federal Canadian Environmental Agency had not yet made a determination about requirements that would need to be met under the Federal Environmental Assessment Act. As well, the local Tsilhqot'in First Nation continued to be opposed to the project (Stueck, 2011). In this situation something went wrong and it raises questions of professional commitment to consultation (ABCFP, 2008b), and a lack of understanding of the authority of other agencies (i.e. the Canadian Environmental Assessment Agency).

Leadership

In organizational restructuring there is always the potential for confusion. In entertaining the one land manager concept, strong leadership is essential. In a parallel situation in the United States, the US Department of Agriculture's Forest Service was looking at restructuring. One of the challenges that was identified was the need for top leadership to "drive the transformation" and that "agency leaders would need to clearly explain the reason for a move so that employees understood the rationale and logic behind it and had incentives to support it" (GAO, 2009). In the BC situation this did not happen (Gage, 2010). However, good leadership can be found with the resource professionals who understand the issues. Resource professionals, like members of the ABCFP, have shown support for this concept (ABCFP, 2008a).

Doing All Things Well

A further challenge to the one ministry model is the ability of that ministry to be effective in all of the areas that it is responsible for. Can a multifaceted ministry do all things well? This will be a challenge. A recent Auditor General's Report "An Audit of the Ministry of Forests, Lands and Natural Resource Operations' Management of Timber" has raised serious concerns about how well the timber resource is being protected. The audit looked specifically at timber resource as it is the most significant source of revenue from the forest and funds generated are used to support many other public services. The auditor general made the following conclusions about the MFLNRO management:

- "The ministry has not clearly defined its timber objectives. Without clearly defining its timber objectives, the ministry cannot ensure that its management practices are effective.
- Existing management practices are insufficient to offset a trend toward future forests having a lower timber supply and less species diversity in some areas.
- The ministry does not appropriately monitor and report its timber results against its timber objectives." (OAGBC, 2012)

This report raises serious concerns about how the Ministry is performing in this one, perhaps most significant, area and as such, concerns are raised as the leadership of these ministries have

been given a much expanded portfolio of items to manage. If the core areas of importance are not being managed well, how well are the other areas being managed? Here we must allow professionals to voice their concerns to management and there must be political will to address the concerns raised by professionals.

Reduced Budgets and Reduced Staffing

The move towards a one land manager needs to have proper support. Consolidating ministry functions and becoming more efficient should not be used as an excuse to reduce funding and staffing. In recent years timber harvesting has been elevated in an effort to utilize the timber impacted by the Mountain Pine Beetle (MPB) outbreak. For the four Timber Supply Areas most impacted by the MPB the annual allowable cuts (AAC) have been lifted as high as 78% above pre-MBP outbreak levels (McGarrity, 2005). This means that there has been much more forest activity occurring on the land base. Hoberg and Taylor (2010) make a striking point that the success or failure of the MFLNRO may be one of capacity not of structure. With the uplift in AAC (and thereby forest activity) there has not been a corresponding uplift in personnel, and there has actually been a 27% reduction in budgets for the resource ministries between 2008 and 2010. If the one ministry model is to be implemented it must be financially supported by government.

The Natural Resource Professionals – Unity in Process, Diversity in Voice

As the concept of a "one land manager" government ministry is starting to take shape through the MFLNRO the question naturally extends to the natural resource professional associations – should there then be a one land management profession. In looking at this question we need to look at who the professional bodies are and what their purposes are. The main four recognized resource management professional associations are: the Association of BC Forest Professionals (ABCFP), Association of Professional Engineers and Geoscientists of BC (APEGBC), the

College of Applied Biologists of BC (CABBC), and BC Institute of Agrologists (BCIA). These four associations each have corresponding Acts that lay out their specific duties and responsibilities.

These professions share some significant areas of common ground in each: there is a commitment to serving the public interest, to practice only in areas of competence and qualification, express their opinion based on facts, commitments to confidentiality and disclosure, professional development, rules around conduct towards clients and colleagues, disciplinary processes, commitment to both respond and report contraventions of applicable law, and a commitment to extend public knowledge (PRTF, 2006). However, the simple fact that these associations have similar processes does not mean that they are similar in focus. In fact, each is very distinct. Table 1 quotes the specific purposed of each of these professions. Commonly, each is committed to the public interest however; the Acts continue on to specify the principle or practices of agrology, applied biological sciences, professional engineering, professional geoscience, and professional forestry (emphasized in Table 1). It is these key terms that make the associations distinct (see Appendix II- Legislated Definitions of the Professions for how each is defined in the corresponding Acts). In considering the idea of a single resource profession we must not lose the emphasis and specific voice that each of the professions has to their areas of expertise.

Agrologists Act
3(2) (a) to uphold and protect the public interest by
(i) preserving and protecting the scientific methods and principles that are the foundation of the agricultural and natural sciences,
(ii) upholding the principles of stewardship that are the foundation of *agrology*,

College of Applied Biology Act
3(2)(a) to uphold and protect the public interest by
(i) preserving and protecting the scientific methods and principles that are the foundation of the *applied biological sciences*,

Engineers and Geoscientists Act
4.1 (1) (a) to uphold and protect the public interest respecting the *practice of professional engineering* and the *practice of professional geoscience*,

Foresters Act
4(2)(a) to uphold the public interest respecting the *practice of professional forestry* …

Table 1: Legislated Purposes of the Professions

Professional Reliance is "The practice of accepting and relying upon the decision and advice of professionals who accept responsibility and can be held accountable for the decisions that have made and the advice that they give" (PRTF, 2006)

Each professional body has stringent enrollment criteria including educational requirements and entrance exams. To

create a single resource profession would simply dilute or make the perspective of these professional bodies ambiguous. It is better that we hear and know the statements and perspectives of Foresters, Biologists, Agrologists and Engineers as specifically theirs and not as a perspective of simply a 'resource management professional'.

There are other issues that also need to be considered when discussing the professions that if we are to all to work with and rely upon each other. Under current legislation, not all of the professions are equal. For example, Foresters and Engineers have the exclusive right to title and to practice. In contrast the Agrologists and Biologists have exclusive right to title but not to practice. This is an import distinction and one that suggests that there are currently people working in resource management roles functioning as Biologists or Agrologists but lacking the professional designation and accountability. In this time of professional reliance, all resource managers should be members of professional associations – it is critical to the accountability component of the structure (see the Professional Reliance definition inset above).

A final concern in the discussion of the professions is that other groups should also be recognized. The BC Association of Professional Archaeologists (BCAPA) is incorporated under the Societies Act and their perspective is often used in the work with First Nations. Members of the Planning Institute of and the Applied Science Technologists and Technicians of BC also work within the resource management field (PRTF, 2006).

CONCLUSIONS AND RECOMMENDATIONS

Members of the public will have far more confidence in a structure in which decision does actually take a full view of the issues at hand. A single ministry is far better suited to addressing desires and overlapping interests that are being demanded of the land, addressing cumulative effects, and generally reducing bureaucracy. Further, knowing that the decision making team is

multidisciplinary addressing and balancing the issues with the specific perspectives of each of the professions - gives confidence that balanced and well thought out decisions are being made.

Recommendations for Government

- Provide clarity through legislation on valuing resource professionals. As legislation continues to emphasize the need for professional reliance it must be clear who the professionals are. Amendments are needed under the Agroloists and College of Applied Biology Acts to give exclusive rights to practice thus ensuring that the public interest is protected in these fields.
- Provide the needed support – specifically ensure that ministries are staffed and have budgets that are strong enough to properly carry out their duties.
- Leadership is required to ensure that the vision is understood and that there is 'buy in' from staff. Government needs to make strong efforts in this area.

Recommendations to Professionals

- Be leaders in your field. As professionals we need to be active, ensuring that we are up to date in our fields of expertise.
- Consider the long term impacts of your decisions and how those decisions will impact other resource users – present and potential.
- Ensure that you understand the current government structures: which ministries are responsible for each duty and how you need to interact with the current structure.
- Continually question how you are best able to uphold the public trust and instill confidence in the public - commit to living out the ethics of your association.
- Commit to working with the members of all professional associations. It is through understanding our different perspectives and learning to rely on one another's opinions and expertise that the best decisions for the public trust will be made.

APPENDIX I – SUMMARY OF NATURAL RESOURCE MINISTRY RESPONSIBILITIES

Excerpts from http://www.gov.bc.ca/premier/responsibilities/index.html

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

General Responsibilities

- Forest stewardship policy
- Timber supply, inventory and tree improvement
- Pest and disease management policy
- Forest investment
- BC Timber Sales
- Tenures and pricing
- Resource roads and bridges policy
- Crown land administration policy
- Crown land allocation and authorizations
- Forests and range authorizations
- Roads/bridges/engineering
- Independent power production
- Mineral and coal titles
- Mines and minerals permitting and inspections except for major mining projects
- Aquaculture licensing and regulation
- Water use planning and authorizations
- Aboriginal consultation and coordination – natural resource operations
- Resorts and alpine ski developments
- Licensing and permitting for angling, hunting and trapping
- GeoBC and information management
- FrontCounter BC
- Provincial hatchery and stocking program
- Watershed restoration
- Fish, wildlife and habitat management
- Drought management
- Dam and dyke safety and regulation
- Flood plain management
- Pests, disease, invasive plants and species
- Public backcountry and commercial recreation
- Recreation sites and trails
- Archaeology and Heritage Conservation policy and permitting
- Resource management compliance
- Crown land restoration
- Forest investment operations
- Wildfire management

Major Agencies, Boards and Commissions

- Forest Practices Board
- Timber Export Advisory Committee
- Muskwa-Kechika Advisory Board
- Mediation and Arbitration Board
- Assayers Certification Board of Examiners

MINISTRY OF ENVIRONMENT

General Responsibilities

- Parks, wilderness and protected areas
- Air, land and water quality standards
- Pollution prevention and waste management
- Conservation Framework and Species-at-Risk policy
- Species and ecosystem protection policy
- Oceans protection and sustainability
- Water protection and water sustainability policy
- Water and air monitoring and reporting
- Conservation and resource management enforcement
- Climate Action Secretariat
- Environmental Assessment Office
- State of Environment reporting
- Environmental monitoring
- Flood Management
- Environmental Emergency Response

MINISTRY OF ENERGY AND MINES (Minister Responsible for Housing)

General Responsibilities

- Electricity and alternative energy policy
- Oil and gas policy
- Offshore oil and gas policy
- Energy efficiency
- Renewable energy development
- Innovative Clean Energy Fund
- Mines and minerals policy
- Permitting and inspections of major mining projects
- Geological Survey Service
- Housing and homeless policy
- Transition houses
- Building policy
- Safety standards and inspections
- Landlord-tenant dispute resolution

- Liquor control and licensing
- Liquor Distribution Branch
- Gaming policy and enforcement
- Responsible Gambling Strategy

Major Agencies, Boards and Commissions

- BC Hydro and Power Authority
- BC Housing Management Commission
- BC Lottery Corporation
- Building Code Appeal Board
- Building Policy Advisory Committee
- Columbia Power Corporation
- Homeowner Protection Office
- Oil and Gas Commission
- Provincial Rental Housing Corporation
- Safety Standards Appeal Board
- Safety Authority of BC

MINISTRY OF ABORIGINAL RELATIONS AND RECONCILIATION
(MARR was included as some many resource decision require First Nations consultation)

General Responsibilities

- Aboriginal policy and coordination
- Negotiation and implementation of treaty and non-treaty agreements
- Consultation and accommodation policy
- Crown/First Nations relationships
- Partnerships and Community Renewal
- First Citizens' Fund

Major Agencies, Boards and Commissions

- BC Treaty Commission
- First Peoples' Heritage, Language and Culture Council
- Native Economic Development Advisory Board

APPENDIX II – LEGISLATED DEFINITIONS OF THE PROFESSIONS

Excerpts from the Agrologists Act, College of Applied Biology Act, Engineers and Geoscientists Act, and Foresters Act. All Acts are viewable online at: http://www.bclaws.ca

"agrology" means using agricultural and natural sciences and agricultural and resource economics, including collecting or analyzing data or carrying out research or assessments, to design, evaluate, advise on, direct or otherwise provide professional support to

(a) the cultivation, production, improvement, processing or marketing of aquatic or terrestrial plants or animals, or

(b) the classification, management, use, conservation, protection, restoration, reclamation or enhancement of aquatic or terrestrial ecosystems that are affected by, sustain, or have the potential to sustain the cultivation or production of aquatic or terrestrial plants or animals;

"applied biological science" means a biological science, including botany, zoology, ecology, biochemistry and microbiology, if the biological science is applied to the management, use, conservation, protection, restoration, or enhancement of

(a) aquatic or terrestrial ecosystems, or

(b) biological resources within these ecosystems;

"practice of professional engineering" means the carrying on of chemical, civil, electrical, forest, geological, mechanical, metallurgical, mining or structural engineering, and other disciplines of engineering that may be designated by the council and for which university engineering programs have been accredited by the Canadian Engineering Accreditation Board or by a body which, in the opinion of the council, is its equivalent, and includes reporting on, designing, or directing the construction of any works that require for their design, or the supervision of their construction, or the supervision of their maintenance, such experience and technical knowledge as are required under this Act for the admission by examination to membership in the association, and, without limitation, includes reporting on, designing or directing the construction of public utilities, industrial works, railways, bridges, highways, canals, harbour works, river improvements, lighthouses, wet docks, dry docks, floating docks, launch ways, marine ways, steam engines, turbines, pumps, internal combustion engines, airships and airplanes, electrical machinery and apparatus, chemical operations, machinery, and works for the development, transmission or application of power, light and heat, grain elevators, municipal works, irrigation works, sewage disposal works, drainage works, incinerators, hydraulic works, and all other engineering works, and all buildings necessary to the proper housing, installation and operation of the engineering works embraced in this definition;

"practice of professional geoscience" means reporting, advising, acquiring, processing, evaluating, interpreting, surveying, sampling or examining related to any activity that

(a) is directed towards the discovery or development of oil, natural gas, coal, metallic or non-metallic minerals, precious stones, other natural resources or water, or the investigation of surface or sub-surface geological conditions, and

(b) requires the professional application of the principles of geology, geophysics or geochemistry;

"practice of professional forestry" means, for fees or other remuneration, advising on, performing or directing works, services or undertakings which, because of their scope and implications respecting forests, forest lands, forest resources and forest ecosystems, require the specialized education, knowledge, training and experience of a registered member, an enrolled member, a special permit holder or a certificate holder, and includes the following:

(a) planning, advising on, directing, approving methods for, supervising, engaging in and reporting on the inventory, classification, valuation, appraisal, conservation, protection, management, enhancement, harvesting, silviculture and rehabilitation of forests, forest lands, forest resources and forest ecosystems;

(b) the preparation, review, amendment and approval of professional documents;

(c) assessing the impact of professional forestry activities to

(i) verify that those activities have been carried out as planned, directed or advised,

(ii) confirm that the goals, objectives or commitments that relate to those activities have been met, or

(iii) advise or direct corrective action as required to conserve, protect, manage, rehabilitate or enhance the forests, forest lands, forest resources or forest ecosystems;

(d) auditing, examining and verifying the results of activities involving the practice of professional forestry, and the attainment of goals and objectives identified in or under professional documents;

(e) planning, locating and approving forest transportation systems including forest roads;

(f) assessing, estimating and analyzing the capability of forest lands to yield a flow of timber while recognizing public values related to forests, forest lands, forest resources and forest ecosystems;

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Answer 2 (scored 82 marks)

Administration of Forest Land in British Columbia

Single Ministry and Profession versus

Multiple Ministries and Professions

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1.0 INTRODUCTION

The management of forest land in British Columbia (BC) has progressed over time from simply managing timber yield to the current process of integrated forest management, which must consider and account for multiple land and resource uses. This progression has been driven by the changing values over time that society has placed on the forest land and as such, further progression will most likely move towards ecosystem-based management (EBM). As the scope of forest land management increases to include not only timber values, but also to include other values, such as wildlife, biodiversity, recreation and water, a wider range of resource ministries and professionals must be included in the planning and management processes.

Given the above, a natural tendency is to consider whether the administration of forest land is best served by multiple ministries or by a single resource ministry and whether the management of forest land is best served by multiple resource professions or a single resource profession. To evaluate these proposals, this report will present background information on:

- Factors that have influenced changes in the administration of BC forest land over time.
- Arguments for and against multiple ministries or a single resource ministry for administering forest land.
- The roles and responsibilities of professionals, particularly those of registered professional foresters (RPFs) and registered forest technologists (RFTs).

The report will then discuss how the roles and responsibilities of professionals might change under the two administrative scenarios and whether multiple resource professions or a single resource profession is more appropriate.

2.0 BACKGROUND INFORMATION

2.1 History of Forest Land Administration

In order to evaluate whether multiple ministries or a single ministry is more appropriate for administering forest land, factors that influenced administration changes over time must be examined.

1. In 1905, the Licensing Act was passed to enable the BC government to collect more revenue from forest harvesting (Caverhill, 1927). The only administration of forest land was for timber harvesting.
2. The 1910 Royal Commission's Report on Timber resulted in the Forest Act and the establishment of the Forest Service in 1912. This led to the establishment of timber sales, fire protection, land classification for valuable forest resources, waste studies, growth and yield and inventory (Caverhill, 1927 and Mulholland, 1931). The administration of forest land was for timber harvesting and grazing. Grazing was initiated to reduce fire hazards, but also to provide a service to the public. It was recognized at this time that for forest land administration to be successful, it must provide a service to the public (Morso, 1927).
3. The 1945 Royal Commission Report (Sloan report) introduced the concept of sustainable yield management (Orchard, 1953).
4. The 1976 Royal Commission Report (Pearse report) recommended (Pederson, 2003):
5. Accelerated harvesting of old growth forests to take advantage of their high volume. It was anticipated that higher growth rates for second growth would compensate for this.
    a. The expansion of forest land administration objectives to include resource values other than timber.

    The report led to a new Forestry Act and Ministry of Forest Act in 1979, the Forest Service was changed to the Ministry of Forests and a multiple-use planning process

(Land and Resource Management Planning - LRMP) was initiated. Due to public pressure, attempts were made to integrate land use planning with the allowable annual cut (AAC) determination (Pedersen, 2003).

6. The 1991 Forest Resources Commission Report (Peel report) promoted the integration of land use planning into the AAC and determined the previous problems associated with this process were due to the planner's perception that timber harvesting takes precedence over other values in an integrated use plan (Peel, 1991). This led to the timber supply review (TSR) of the AAC determination (Pedersen, 2003).
7. In 1995, the Forest Practices Code of British Columbia Act enacted, introducing a highly prescriptive and cumbersome approach for forest land administration (FPC, 1996). Its intent was to support sustainable forest management while balancing social and economic needs, protecting biodiversity and restoring environmental damage.
8. In 2002, the Ministry of Forests was changed to the Ministry of Forests, Lands and Range (MFLNR). BC Timber Sales was created to support the movement to market-based pricing (BCTS, 2008).The Ministry of Sustainable Resource Management (MSRM) was also created and populated with government departments associated with land use planning, including forest inventory and timber supply analysis. Work began on the Land Resource Data Warehouse (LRDW) to store geographic data to support business requirements for all government sectors, government agencies, business and the public by providing consistency to data across all government sectors (LRDW, 2012).
9. In 2004, the Forest and Range Practices Act (FRPA, 2002), began replacing the FPC. In contrast to the FPC, the FRPA is not prescriptive, but takes a results-based approach to maintain key forest and environmental values (biodiversity, cultural heritage, fish/riparian,

forage, recreation, resource features, soils, timber, visual quality, water and wildlife). The FRPA is heavily dependent on professional reliance and accountability to achieve its objectives. In conjunction with the FRPA, the forest and range evaluation program (FREP, 2005) was introduced. The FREP provides measurable indicators to evaluate the effectiveness of the FRPA in achieving its goals.

10. In 2005, the MSRM changed to the Integrated Land Management Bureau (ILMB) and was moved to the Ministry of Agriculture and Lands. The forest inventory and timber supply components were moved into the MFLNR as Forest Analysis and Inventory Branch. The MSRM reorganization was ineffective and inefficient due to a limited amount of integration, key items were removed from other ministries, cooperation and collaboration were limited, funding was inadequate and clients were unsure of ministerial responsibilities (Bourgeois, 2010).
11. In 2010, the policy sections from the agriculture, energy, environment, forests, lands and mines ministries were removed and merged into a new ministry – the Ministry of Natural Resource Operations (MNRO) (Bourgeois, 2010 and Hoberg and Taylor, 2010). The MNRO was responsible for policy implementation and permit and licencing approval. The reasoning was to streamline government approval processes in order to expedite projects by providing an integrated approach, attract global investment and ensure sound environmental regulations.
12. In 2011, much of the 2010 reorganization was reversed to bring policy and operational components back under one ministry (Hoberg and Taylor, 2011). With this reorganization, the pieces of forestry are reunited in the Ministry of Forests, Land and Natural Resource Operations.

13. Currently, public pressure is pushing the BC government to adopt ecosystem-based management (EBM). In EBM, all resource values are considered and timber harvesting is a by-product of the planning process, not the main driver. The concept and implementation of EBM can accommodate existing land use plans, but may require a shift to area-based management (Butt and McMillan, 2009 and Bourgeois, 2008).

The recurring themes in the changes over time to the administration of forest land are that government initiated changes tend to be revenue and cost based, while land use changes tend to be driven by scientific and public opinion.

2.2 Multiple Ministries versus a Single Ministry

The perceived advantages of a single resource ministry are what led to the 2010 reorganization of ministries (RMCP, 2011). They can be summarized as:

1. Increased coordination and integration of the natural resource sector.
2. Reduction of legal framework and statutes.
3. A single approach to risk management will ensure sound environmental regulations.
4. The same process can be used to approve and administer multiple resource sector projects (one stop shopping).

The disadvantages of a single resource ministry can be taken from the failed MSRM and 2010 reorganization experiences:

1. Resistance to change from traditional ministries.
2. It can be complex to set up and requires sufficient funding for this process.
3. It can cause confusion with clients for a number of years.
4. It can make it more difficult to identify the lead professional organization, complicating the definition of roles and responsibilities for managing overlapping competencies.

5. Single resource uses, such as timber extraction, may lose their independence and there is risk they can become marginalized.
6. It would mostly likely be divided into sections, similar to branches within multiple resource ministries, but with the subdivision being by the previous multiple resource ministries. The leads to the potential that the same problems associated with multiple resource ministries will resurface, but without the oversight to deal with the problems.

The advantages and disadvantages of multiple resource ministries are opposite to the above. The main disadvantage of inconsistency between ministries can be overcome by initiatives, such as the LRDW, to ensure consistency in data and information used for planning and policy decisions.

2.3 Roles and Responsibilities of Professionals

Professional associations responsible for various components of forest land management include:

1. The Association of BC Forest Professionals (ABCFP) licences and governs the professional conduct of its members, as defined in the Foresters Act (2003). The primary duty is to "serve and protect the public interest" and the primary object is to "uphold the public interest respecting the practice of professional forestry".
2. The BC Institute of Agrologists (BCIA) licences and governs the professional conduct of its members, as defined in the Agrologists Act (2003), in support of the public interest. Agrologists are responsible for aquatic or terrestrial plants or animals and their ecosystems (BCIA, 2012).
3. The College of Applied Biology BC (CAB-BC) licences and governs the professional conduct of its members, as defined in the College of Applied Biology Act (2002), for the

protection of the public interest. Biologists are responsible for biological science (botany, zoology, ecology, biochemistry and microbiology) and the application of biological science to terrestrial or aquatic ecosystems or biological resources within these ecosystems.

4. The Association of Professional Engineers and Geoscientists of BC (APEGBC) licences and governs the professional conduct of its members, as defined in the Engineers and Geoscientists Act (1996), for the fulfillment of their duty to the public (APEGBC, 2012). The Division of Engineers and Geoscientists in the Resource Sector (DEGIRS) is a regulated by the APEGBC (DEGRIS, 2012). Engineers and geoscientists are responsible for engineering and geoscience projects. For forest lands, this would include items such as roads, crossings, bridges and terrain stability (APEGBC, 2012).

In all of the professional associations listed above, their main **duty (role)** is to protect the public's interest in any projects or activities their members take part in.

Professionals governed by the ABCFP generally take the lead in management of forest lands, with the input of professionals governed by the other professional bodies. In areas of overlap, memorandums of understanding and/or a joint practice boards between the ABCFP and the other professional associations have been drawn up to provide guidance documents and assign roles and responsibilities. Some examples include:

1. Joint practice board between the ABCFP and APEGBC (ABCFP/APEGBC, 2005a).
2. Guidelines for professional services in the forest sector – crossings (ABCFP/APEGBC, 2005b).
3. Guidelines for professional services in the forest sector – terrain stability assessments (ABCFP/APEGBC, 2010).
4. Guidance communications and the joint ABCFP/CAB committee (ABCFP/CAB, 2008).

Section 9 of the Foresters Act enables the ABCFP to enact bylaws. Under section 9, items 1a(i) and 1(a)iii, the ABCFP has the authority to enact Standards of Practice (bylaw 12) and a Code of Ethics (bylaw 11) to regulate the practice of professional forestry. Together, these two documents define the **responsibilities** of ABCFP members.

The Standards of Practice provide a measure of professional practice. They are subdivided into the components of professional practice that form the basis of the Foresters Act: competence (knowledge, professional care and completeness and correctness), independence, integrity, due diligence (accountability), stewardship and safety (ABCFP, 2010). One application of the Standards of Practice, relevant to this report, is to assist a professional in identifying areas of practice where further education or training is required; justify training opportunities to their supervisors; and assess the quality of peers, employees, consultants, supervisors and new members.

The Code of Ethics "establishes the principles and rules associated with making moral decisions within the practice of professional forestry" (ABCFP, 2009). The Code of Ethics defines the professional forester's obligations to the public, the profession, the client or employer and other members.

3.0 DISCUSSION

While the concept of a single natural resource ministry appears to have the advantages of consistency in policy and risk management that should lead to increased integration and coordination of the resource sector, the MSRM and 2010 reorganization indicate that its implementation is problematic. The main disadvantage associated with multiple ministries can be overcome with initiatives, such as the LRDW, which ensure each ministry is using the same information and data formats. A promising compromise would be to maintain the multiple

ministry structure, but adopt EBM in combination with the flexibility of the FRPA and the effectiveness evaluation of the FREP as a means to integrate and coordinate the multiple uses of the resource sector to accommodate society's changing values of resource use.

It is unlikely either ministry structure would have much of an effect on the roles and responsibilities of professionals. Given that the primary role of all professional associations is to protect the public interest, society's changing values on various uses of the resource sector is more likely to have an effect on the responsibilities of professionals in their role of supporting these changes. As shown in this report, the greatest shifts in how professionals apply their knowledge and skills in resource management have been driven by public demand and not by the government tinkering with the structure and function of various ministries.

The concept of a single resource profession would be even more problematic to implement and administer than a single resource ministry. The current process of professional associations developing joint agreements and defining roles and responsibilities for their members in overlapping areas of resource management is a better solution. This allows each professional association to maintain its identity and avoid becoming marginalized due to changing public demands on resource use. To facilitate this arrangement, professional associations should continue to work together to:

1. Solidify the concept and application of professional reliance and mutual respect between professionals within and between professional associations.
2. Develop and provide guidance on roles and responsibilities in areas of overlap.
3. Expand the concept of standards of practice to coordinate the development of guidelines that are consistent across professions to assess competencies in various aspects of resource management. A model to consider for this is the use of national occupational standards, as is

done by EcoCanada, to define the competencies required to perform in various occupati
or aspects of natural resource management (EcoCanada, 2012). This type of initiative would go a long way in promoting professional reliance and mutual respect.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Society's views on how forest land resources are to be utilized have a greater influence on the responsibilities of professionals than any government tinkering with ministries does. By protecting the public's interest, the roles of professionals remain unaffected.

A multiple ministry approach to the administration of forest land is preferred. This allows individual professional associations to maintain their identity and prevent them from being marginalized in a single resource ministry due to changes in society's views on resource use.

Professional associations should promote professional reliance and mutual respect between members within an association and between different associations. They should also continue to provide guidance on the roles and responsibilities to members of each association in areas of overlap. The standards of practice for all associations should be expanded to describe competencies in a consistent manner using a common template such as the national occupational standards.

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2012 RPF Registration Exam
Take-Home Exam

Question 2

The provision for, and management of, access to natural resources in BC is under review. As part of this review, a new Resource Roads Act is under consideration.

a) Discuss the current framework for, and the issues associated with, access management.

b) Recommend improvements to policy that:

   i. address the public interest, and

   ii. balance the needs of various resource users.

c) Discuss the roles of forest professionals in delivering effective access management to natural resources in BC.

Answer 1 (scored 96 marks)

RESOURCE ROADS AND THE LEGISLATIVE FRAMEWORK:

ISSUES AND CHALLENGES

A Professional Report Submitted in Satisfaction of the ABCFP Take-home Registration Exam Requirements

Completed on: February 29, 2012

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1.0 INTRODUCTION

In British Columbia, natural resource roads (roads) are one of the major land use impacts, but yet are not effectively managed and coordinated (FPB, 2005a). Over the years, with the development of several natural resource sectors, roads have placed an increasing amount of pressures on BC's landscape. The total length of roads in BC almost doubled from 1988 to 2008, resulting in a 25% reduction in roadless areas from 1994 to 2005 (MFLNRO, 2010b).

In BC, the administration of roads is overly complex, inconsistent, lacking adequate planning, and generally ineffective at protecting the environment. As a result, the framework currently in place is unable to adequately address the public interest and balance the needs of the various users. Under the current framework, roads are often built and maintained by industrial users for specific purposes, but frequented by multiple and often conflicting users ranging from industry, government, first nations, community members, tourists, recreationists, and other members of the public (MFLNRO, 2011c).

The over complexity and inconsistency largely occur as a result of roads being administered through a variety of legislation, primarily the Forest Act, Forest and Range Practices Act (FRPA), Land Act, Petroleum and Natural Gas Act (PNGA), and Mine Act, which all regulate specific industries and activities (Rowe, 2011). To add to the complexity, the legislation is administered by different government ministries with agendas that are not necessarily parallel, applying different tenures, cost recovery approaches, and enforcement, environmental, construction, maintenance and safety standards (Zacharatos, 2009). These issues contribute to challenges in coordinating road use, loss in efficiency, and increased costs, user conflict, and footprint (Rowe, 2011).

Extensive research has been conducted on roads and most conclude that access can have both direct and indirect negative impacts on the environment such as water quality, fish, wildlife, biodiversity, and soil productivity (Gucinski et al, 2001). In general, the current legislation is weak in providing adequate environmental protection against roads (Gage, 2011). The legislation does not address the large inventory of backlog roads, which still have landslides occurring from them (FPB, 2005b).

The objectives of this report are to discuss the current resource road framework and issues resulting from it, explore the role of the forest professional in respect to delivering effective access management professional services, and provide recommendations for policy improvements that address the public interest and balance the needs of the various road users.

2.0 BACKGROUND

In March of 2009, the Working Roundtable on Forestry (Roundtable) released a report identifying 29 recommendations needing action to achieve a "vibrant, sustainable, globally competitive forest industry that provides enormous benefits for current and future generations and for strong communities." (MFLNRO, 2009c). As part of the 8th recommendation to "work to streamline transactions between government and industry to support a vigorous, efficient and world-competitive wood processing industry", the Roundtable recognized that the government needed to make changes with the management of forest service roads (FSR) (MFLNRO, 2009c). In recognition of the major issues with the current framework, the provincial and federal governments later announced they were combining to provide $30 million in funding (MFLNRO, 2009b) and more importantly, recently announced a new Resource Road Act "to streamline resource road administration (single act versus six), improve cross-sector cooperation regarding road use and standardize obligations of industrial and commercial road users based on

the principles of professional reliance and results-based legislation" (MFLNRO, 2011b) was being considered by the provincial government.

In an October 2011 press release, Steve Thompson, Minister of MFLNRO, announced an information package about the proposed road policies was available for public review and that "British Columbians are invited to comment on a policy project for better regulation of natural resource roads" (MFLNRO, 2011d). The 4,000 responses received by the government have been summarized and are now available to the public (MFLNRO, 2012d). The overwhelmingly large response clearly indicates this issue is an important one to the public and the various road users.

3.0 DISCUSSION AND ARGUMENT

Before analyzing the current framework and issues associated with roads, a forest professional needs to do so with due consideration of the public interest, user needs, and his/her professional obligations. This is best described in the Association of BC Forest Professionals' (ABCFP) Code of Ethics under section 11.3.5 "to seek to balance the health and sustainability of forests, forest lands, forest resources, and forest ecosystems with the needs of those who derive benefits from, rely on, have ownership of, have rights to, and interact with them." All issues and recommendation identified below have implemented the aforementioned considerations.

3.1 Current Framework

The current access management framework in BC is primarily founded on industrial users wanting to access, develop, and extract natural resources, which generally consists of forest products, precious metals and minerals, crude oil, and natural gas. With the various industries and government ministries involved, roads are regulated by as many as 11 different laws (MFLNRO, 2011c). The Forest Act, FRPA, Land Act, PNGA, and Mine Act are the 5 main pieces of legislation used to administer access management (Rowe, 2011). Upon quick review of

the aforementioned legislation, it is clear the Acts are limited in scope as they each only reg a specific set of activities and users, which are mostly industrial. In addition, the set of legislation merely require industries to consider how other users and environmental, social, and economic values are impacted over the long term, even when roads are deactivated.

3.2 Issues and Challenges

Some of the main issues currently associated with BC's access management framework are; overly complex and complicated, inconsistency (Zacharatos, 2009), lack of adequate planning (Rowe, 2011) and inadequate protection of the environment (Gage, 2011). The primary root causes of the aforementioned are primarily why the BC government is currently seeking to consolidate the legislation into one Act; too many laws, too industry and activity specific, and administered by too many ministries and organizations (MFLNRO, 2011b).

3.2.1 Root Causes

Currently, eleven different pieces of legislation regulate resource roads and each regulate a specific industry and activity. For example, under section 115(1) of the Forest Act, only some agreement holders can apply for road permits, a form of rights to crown timber under section 11 of the Forest Act. The Forest Act does allow for "industrial use" of resource roads by other non-forest sector industries, but only on FSR and for its use not construction. In addition, road related provisions under Division 2 of FRPA, which focuses on the protection of the environment, is not designed to regulate all resource roads as it "does not apply to roads constructed or maintained under the Community Charter, the Highway Act, the Transportation Act, the Land Act, the Local Government Act or the Pipeline Act" (FRPA section 22(1)). In addition, FRPA section 22(2) is only applicable to a list of 4 circumstances, the broadest being "in a Provincial Forest". It is safe to conclude that these two pieces of legislation are very

specific to one industry and due to missed coordination opportunities with other industries i unable to adequately address the public interest and provide an overall protection of the environment by increasing the footprint of roads on the landscape. Another example is the PNGA. Under section 1 of the Petroleum Development Road Regulation, which permit the construction and operation of a petroleum development road, but are only applicable "to facilitate exploration for, and the winning, extraction and removal of petroleum and natural gas." To add to the complexity, these laws are administered by several organizations. For example, the Forest Act and FRPA are administered and enforced by the MFLNRO, while the Ministry of Energy and Mines looks after the mining, oil, and gas sectors and administer the Mines Act and PNGA. Other ministries are also involved in the administration of roads, such as the Ministry of Transportation and Infrastructure, which can allow for roads to connect to highways. Even ministries can have a dichotomy of organizations involved in the administration of roads. For example, under the MFLNRO, BC Timber Sales can allow construction, use, and maintenance of some roads while the Conformance and Enforcement branch is responsible for enforcing the Forest Act and FRPA. Without listing all organizations, it is clear that too many groups are involved in the administration of roads. Having only one ministry involved would greatly reduce the complexity, lack of coordination, and administrative costs making it easier to implement consistent and enforceable environmental standards better suited to address the public interest.

3.2.2 Inconsistency

The current road framework is plagued with inconsistencies. Varying standard levels in regards to road safety, maintenance, construction, deactivation, conformance and enforcement, user fees, and tenure (Zacharatos, 2009) have resulted due to the multitude of legislation, industry, and ministries involved. Inconsistencies are an important issue because they ultimately

impact user needs and the public interest, which consists of social, economic, and environm values (ABCFP, 2002), by holding some users to higher standards and others to lower standards. Safety while using roads is one of the needs users need to be assured of. With the road environment, which includes the design in respect to traffic volumes and vehicle types, being one of the road safety aspects (Arcand, 2011), inconsistent standards undoubtedly exposes various user, industrial and the public, to higher risks.

As for the public interest, specifically the economic value, the forest sector has an unfair advantage over other industries because of government subsidization. Under the Coast Appraisal Manual (CAM), costs for road development can be estimated under section 5.3 and under section 5.1(b) "may be used in the calculation of a tenure obligation adjustment in the appraisal or reappraisal of a cutting authority area". The CAM also allows adjustments for road management and use charges. This subsidy is essentially indirectly realized by other industries when they use previously built roads (Gage, 2011), but the forest sector does realize an advantage.

Consolidating the roads legislation would significantly eliminate inconsistencies by establishing a single Act with consistent and adequate environmental standards for all developers and users.

3.2.3 Overly Complicated and Complex

As a result of all the numerous organizations and legislation involved in the management of roads, the current framework is overly complicated and complex (Zacharatos, 2009). This issue increases costs, inefficiency, and unpredictability (MFLNRO, 2011a) to the primary and secondary users. An example is when users need to apply for more than one permit through more than one ministry in order to get authorization to construct or use a road. A road that includes a junction with a controlled highway and FSR requires at least three different permits

from at least two different ministries. To minimize costs and increase efficiency, a consolid framework should allow for users to only require submitting one application to one ministry (MFLNRO, 2011c). This would also better serve the public and the users by benefiting from the increased coordination realized with only one ministry involved.

3.2.4 Inadequate Protection of the Environment

With the exemption of FRPA, the increase in road density combined with the current legislation framework is weak when it comes to providing adequate protection to the environment. Forest roads alone increase by an annual rate of 3,150km (Nelson, 2011) and the amount of stream crossings have increased by 66,844 to a total of 488,674 from 2000 to 2005 (MFML, 2010b). One of the issues with the increasing road footprint on the landscape is that the current framework does not address the backlog road inventory (FPB, 2005a).

The significant impact that roads can have on the environment is clear and documented in several reports. In fact, roads impact the environment within their effective widths, which can be far beyond the actual road widths (Gucinski et al, 2001). The effective width can promote the spread of invasive plants by disturbing soils and changing light conditions (Daigle, 2010). Also, increased road densities directly increases human and grizzly bear conflict resulting in decreased grizzly bear survival (Boyce, et al, 2009). Daigle (2010) also reports significant direct and indirect environmental impacts, which include increased wildlife road kills and injuries, altered timing and intensity of stream peak and low flows, increased number of landslides impacting water quality, and restricted fish passage.

The current framework also lacks assigning adequate liability for environmental damage (Gage, 2011). Even when the user responsible for the road is defined, the damage can be difficult to prove, especially when non measurable statements are used in the legislation, such as

under FRPA section 46(1.1) "A person,…must not engage in any activity on Crown land that results in damage to the environment". Such statements also lead to difficulties with enforcement. The lack of accountability and effective enforcement also results because of the lack of a public watchdog responsible for all roads, not just one sector (Gage, 2011). For example, the Forest Practices Board (FPB) is responsible for investigating and reporting on practices, but only applies to activities falling under FRPA and the Wildlife Act.

To minimize the impact of roads on the environment, BC needs a legislative framework that includes scientifically based, clear, and measurable standards that allows officials to effectively determine compliance. Also, the range of activities under the umbrella of the FPB needs to be expanded to include all those that are linked to natural resources.

3.2.5 Lack of Adequate Planning

The framework currently in place lacks adequate minimum requirements for an effective planning process. It lacks objectives and a consultation process with First Nations and other users that apply to all roads. In a response to the road project discussion paper, Gage (2011) indicated that the current planning process does not adequately consider the needs of other users and the environment. Land Use Plans that are currently in place lack giving the consideration and attention roads deserve, given the impact they can have on the environment and forest ecosystems. Due to the lack of planning, cumulative impacts on the environment are not properly considered and a lack of coordination occurs resulting in over construction, increased user conflicts, roads become too user specific, and over fragmentation of the landbase and wilderness areas is realized (Nelson, 2011). Without the proper planning and coordination supporting access management, an overall increased footprint on the landbase results.

The legislative framework needs to establish a well-defined planning process that includes scientifically based objectives and targets and consultation requirements (Gage, 2011). This needs to be supported and preceded by Higher Level Plans (HLP) that adequately address roads. For example, HLPs should identify targets, such as maximum percentage of permanent access structures allowed over a watershed based on its associated values and sensitivities.

3.3 The Role of Forest Professionals

Road access can be beneficial or detrimental to society and the challenge is to manage them while balancing economic, social, and environmental values (Rowe, 2011). Given this task and the obligation of the forest professional under ABCFP bylaw 11.3.1 “to advocate and practice good stewardship of forest land based on sound ecological principles to sustain its ability to provide those values that have been assigned by society”, providing professional services specific to roads, despite the industry, should be one of the roles of the forest professional.

Under the current framework, forest professional primarily provide professional services to the forest sector and at a lesser extent provide professional services for roads to other natural resource sectors (ABCFP, 2011), but should play a significantly larger role. Of all the professionals involved in the natural resource sectors and based on the education, training, and experience requirements of each, forest professionals are best suited to play a lead role in access management because they have the best overall combined comprehensive knowledge and understanding of roads, transportation methods, crossings, and forest ecosystems. Other professionals, such as Registered Professional Biologists and Professional Engineers, have this type of knowledge, but tends to be more specific and focused.

The roads legislative framework needs to recognize the expertise of the forest professional and all other members of the forestry team, just like FRPA, by creating a results based framework that relies on the professional expertise of these members.

4.0 CONCLUSION AND RECOMMENDATIONS

The framework for BC's access management is currently being reviewed by the provincial government in order to better address the public interest and user needs. The framework is primarily based on industry wanting road access to develop and extract natural resources. As a result, several ministries and industry specific legislation are involved. Altogether, this has led to an overly complex and inconsistent framework lacking adequate planning and sufficient protection of the environment. These combined issues contribute to a lack of coordination between users increasing conflict, environmental footprint, and costs.

Forest professionals have the best overall combined knowledge of roads, crossings, and forest ecosystems to play a lead role in access management.

The following are recommended policy improvements required to better address the public interest and balance the needs of the various resource users:

1. The government needs to continue pursuing a consolidated road acts and framework,
2. The new framework should only involve one ministry and one Act, and
3. The new legislation needs to establish:
    a) consistent standards that are applicable to all users and that are clear, measurable, enforceable, and scientifically based,
    b) a public watchdog responsible for reporting on all roads,
    c) well defined planning and consultation requirements with objectives and targets, and
    d) a results based framework relying on the expertise of resource professionals.

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Answer 2 (scored 96 marks)

RESOURCE ROAD MANAGEMENT IN BRITISH COLUMBIA

ISSUES AND OPPORTUNITIES FOR IMPROVEMENT

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February 29, 2012

I declare that this paper contains my own original work.

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1.0 INTRODUCTION

In the province of British Columbia approximately 450,000 kilometers of road provide access to resource industries such as forestry, mining, and oil and gas; commercial operations such as guiding outfitters and wilderness lodges; and the general public[1]. The extent of resource roads[2] has dramatically increased over the last two decades (FPB 2005). With the rapid expansion of the oil and gas and mining industries, and the continuing salvage of trees killed by mountain pine beetle (*Dendrochtonous ponderosae* Hopk.), the extent is expected to grow. As more roads are developed, more people are using these roads, often at the same time for unrelated activities (MFLNRO 20011b). This has not only put added pressure on our forests, but also on the government and forest professionals who manage our forested landbase. The pressure to fulfill the social, environmental and economic needs of society is greater than ever, and doing so continues to challenge access management in the province.

The challenges associated with access management are many. B.C.'s resource roads are currently governed by a complex array of legislation administered by separate provincial government organizations. The result is substantially different tenures with varying levels of enforcement and inconsistent standards for the use, construction, maintenance and deactivation (MFLNRO 2011a). This has created inconsistencies, inefficiencies, and a lack of cooperative planning between all users. In 2008 an attempt to change resource road legislation was met with significant opposition and the proposed act (Bill 30) was not passed. The provincial Government is again attempting to revise the existing legislative framework through the Natural Resource

[1] The "public" for the purpose of this paper, includes individuals, groups and communities (ABCFP 2002).
[2] Resource roads, for the purpose of this paper, include roads utilized by motorized vehicles on Crown land, and any road on private land that has been authorized by government. Resource roads do not include: public roads (highway, municipal, federal); roads covered by a *Mines Act* permit, or private roads (NRRA 2011).

Road Act Project (NRRA), bringing with it a new set of opportunities and challenges.

There are a number of issues that need to be addressed with regards to the current provisions for, management of, and access to resource roads in B.C. These include resource road governance; standards for construction, maintenance and deactivation; compliance and enforcement (C&E); public access; and safety. This paper will discuss these issues, the role of the forest professional, and will recommend key changes to policy that are required to address these issues while upholding the public interest and balancing the needs of all resource users.

2.0 BACKGROUND

Resource roads in British Columbia are currently administered through provisions found in up to 11 different laws, most of which regulate a separate resource industry or activity, primarily forestry, mining, and oil and gas (MFLNRO 2011). While resource roads provide many social and economic benefits to society, there are often negative consequences to the environment and its users. Roads can affect wildlife, soil, riparian habitat and aquatic ecosystems, can aid in spreading invasive plants and insects and disease, and increase the amount of carbon dioxide emissions (Daigle 2010). Travel on resources roads can also be deadly. Resource roads claim an average of 4 lives per year and numerous injuries to industry workers alone in the province (WorkSafeBC 2009).

Resource roads provide access to more than just industrial users. Commercial businesses such as guiding outfitters and trappers, and the general public, often recreationalist, utilize resources roads and the access it provides. Resource roads also provide access to remote communities and residence, and benefit remote First Nations communities by increasing access to urban centers, and creating opportunities for employment. It is the public who owns Crown land, and therefore they are entitled to use resource roads at no cost but are subject to all laws

that are in place to protect the environment and user safety. It is the government and forest professionals who manage Crown land (including resource roads) on the public's behalf.

In an attempt to make improvements for all resource road users, the existing resource road legislative framework is being revisited (MFLNRO 2011). The Natural Resource Road Project was revealed to the public October 2011 by the Ministry of Forest, Lands and Natural Resource Operations (MFLNRO) in a joint effort from all natural resource sector ministries and agencies (MFLNRO 2011d). The goal of the project is to eliminate inconsistencies in the management and administration of resource roads by establishing a single regulatory framework and common requirements and responsibilities for the use, construction, maintenance and management of resource roads in the province (MFLNRO 2011).

3.0 DISCUSSION

3.1 Issues with Current Resource Road Policy and Regulations

The current resource road legislative framework in B.C. has many issues that need to be addressed. The following section will focus on a few issues that affect the social, economic and environmental values and objectives of various resource users, including the public interest.

3.1.1 Resource Road Governance

Resource roads are currently governed under multiple acts and supporting legislation which means different tenures, varied levels of enforcement, inconsistent standards in construction, maintenance, deactivation, and use, and general confusion among users and regulators (MFLNRO 2011a). The issues discussed below will demonstrate how inconsistencies within the current regime create opportunities for unwanted environmental impacts, injuries and fatalities, economic burdens, user conflicts, and access restrictions.

As each industry has its own administration, rights and obligations, a lack of cooperative

planning amongst government, industry and other road users creates barriers to efficient road management. Examples include: multiple roads built by different industries to access the same area; oil pads built in wildlife tree patches (ABCFP 2007); and roads deactivated after one use, and then opened up again for another. These examples negatively affect the environment, and are not cost effective ways of doing business, especially as budgets continue to be cut.

3.1.2 Standards for Construction, Maintenance, and Deactivation

There are three different issues that fall under this category that affect worker safety, the environment, and the public interest. The first is the fact that although standards, regulations and best practices currently exist, the environmental and safety obligations vary between industries; a contradiction to good forest stewardship and an opportunity for confusion when it comes to safety. Secondly, road design and construction are not always meeting specific standards such as machine limitations (e.g. curve radius, slope), load size and weight (off-highway vs. highway), or considering location. For example, a road built on a steep slope in a hypermaritime climate will require greater attention to grades and curve radius and to surface flow and drainage compared to a road used for the same purpose in the central interior plateau. These last two points demonstrate the need for greater diligence and competency by land managers, and an increase in C&E across the landbase. Thirdly; there is a lack of long term access planning. Effort is needed to ensure that standards for the design, construction, level of maintenance and deactivation take into account the long term use of the road, the level of use, and the type of use. This would provide a greater opportunity to meet specific user needs, and would provide greater incentive for cost-sharing agreements and the transferring of maintenance obligations.

3.1.3 Compliance and Enforcement

Poorly constructed and maintained roads and bridges not only create safety hazards for

users, but also lead to negative environmental impacts such as landslides, stream sedimentation and blockage to fish passage (FPC 2011). As different industries are governed under separate acts and regulations, levels of C&E with regards to environmental protection varies across the landscape. Although this is a concern, the bigger problem is the current lack of environmental C&E on industry and recreational users as a whole, one of the many negative outcomes of government budget cuts over the past decade. C&E for road rules and safety is also lacking, and confusion exists as to when provisions under the *Motor Vehicle Act* apply on resource roads. Road rules need to be as clear and understood as any other roadway and have the same penalties for non-compliance. Another issue is that government is responsible for ensuring C&E on roads it is responsible for, creating a conflict of interest because C&E is a government program.

This brings up the importance of having an independent public agency or "watchdog" for auditing resource industries operating on Crown land such as the Forest Practices Board[3] (FPB). A public watchdog not only has the authority to audit, but to investigate complaints. This ensures a high level of compliance and fosters continual improvement. A public watchdog also ensures that the public interests are being met and gives the global marketplace confidence that B.C. continues to be a world leader in sustainable environmental management (FPB 2011).

3.1.4 Public Access

As owners of B.C.'s Crown land, the public counts on resource roads to be dependable and safe, and to be available for their use. Access restrictions and a lack of process to voice and address their concerns are common issues expressed by the public. Through the "streamlining" of the Forest Practices Code, the requirement to have an access management plan was scrapped

[3] FPB is an independent watchdog that is mandated to carry out periodic independent audits of forest practices which include road construction, maintenance, and deactivation. The FPB also audits road practices of oil and gas and mining companies, IPP's and others (FPB 2011).

(Rowe 2011). Licencees are obligated to make Forest Stewardship Plans (FSP) available for public review and comment, they are not obligated however to address public concerns regarding road access unless the concern is tied to an existing government objective found in a higher level plan (HLP) (FPB 2005). In the 1980's, the Coordinated Access Management Plan (CAMP) was developed by the Ministry of Forest providing a mechanism for First Nations and the public's access concerns to be addressed at a higher level of planning, and providing agreed upon direction at the operational level (Rowe 2009). This type of process provides a much needed bottom-up approach to planning which ensures the public's interest are being met.

A gap in the current regulatory framework is the lack of regulation, guidance and standards surrounding when access restrictions and road deactivation should and should not occur. This is where a CAMP would be beneficial as it is guided by HLP's including Land and Resource Management Plans (LRMP) and Land Use Plans (LUP) which incorporate the *Species at Risked Act* (SARA) objectives, and objectives set by government to ensure sensitive ecosystems and wildlife populations are protected. CAMP's define users and use, indentifies zoning and access control points, and provides agreed upon standards of maintenance, and deactivation, and access restrictions (Rowe 2009). This planning process provides land managers with the tools they need for effective access management, while also reducing conflicts between users and licencees. Although the CAMP process is needed, a lack of funding and resources has seen little effort going into HLP's as of late, a concern for all road users and land managers.

3.1.5 Safety

There are two aspects to safety on resources roads: industrial and public. Industry expansion, inefficiencies with current policy and regulation, and lack of understanding by inexperienced resource road users has increased the risk of serious injuries and fatalities for

industry workers and the public (Kccsoft 2011). Current resource road legislation lacks regulations that obligate permit holders to maintain a road with considerations for public use and safety. Roads are not required to be brushed and road widths do not consider the level of public use, creating a hazard for heavily used roads where vehicles are often not equipped with radios.

Safety objectives are harder to achieve with the current level of variation in road management between and within industries. A new legislative framework will provide an opportunity to establish a safety regime that is as consistent and transparent as the *Motor Vehicle Act* and one that is consistent with existing legislation governing safety such as WorkSafeBC. WorkSafeBC has recognized the need for more stringent rules and regulations and recently published documents outlining stakeholder obligations for resource road safety. Now it is up to all stakeholders and employees to ensure their obligations are understood and complied with. Resource managers must ensure that all designated maintainers have the knowhow in road construction and maintenance, and therefore provisions need to be in place to ensure that standards are being met, workers are competent, and an adequate safety program is in place which includes up to date standard operating procedures (Bendickson 2011). The three factors cited in most single vehicle incidents on resource roads: Steep grades, tight curves, and insufficient widths (Bendickson 2011), can all be avoided through an improved safety regime.

3.3 The Role of the Forest Professional

Forest professionals play a critical role in delivering effective access management to B.C.'s natural resources. As registered members of the Association of B.C. Forest Professionals (ABCFP), forest professionals are ethically and morally bound to ensure that the public's environmental, social, and economic objectives are met (ABCFP 2008). Bound by standards of professional practice, it is the role of the forest professional to make sure that operational plans

including road and bridge designs adhere to regulations and meet specific standards such as use and machine limitations all while taking the necessary precautions to mitigate negative environmental impacts and ensuring the safety of workers and the public (ABCFP 2008). Forest professionals must recognize when a plan or design is outside his/her level or expertise/scope of practice, and if so must consult with knowledgeable peers or specialists such as engineers and geoscientists (ABCFP 2008). A level of accuracy needs to be assured for road layout surveys and bridge designs, and for supervisors implementing operational plans. It is not only unsafe for roads not to meet design specifications, but it is also costly when roads need to be reconstructed.

The reliance on forest professionals to deliver effective access management does not come without its issues. As operational budgets continue to be cut, added pressure is put on professionals to keep costs down, indirectly discouraging the need for additional expertise which goes against holding the public interest above the interests of the employer. The competency of forest professional must be continually challenged and its importance recognized to ensure a high standard of practice and accountability. As the proposed NRRA will reflect a results-based regime continuing competency and an adequate level of quality assurance will be crucial.

4.0 RECOMMENDATIONS AND CONCLUSION

Although this paper only touched upon a few of the issues related to the provisions for, access to, and management of B.C.'s resource roads, it is clear that a new legislative framework is needed that balances the needs of various resource users and addresses the public interest. To that end, the following recommendations need to be addressed if improvements to resource road policy are to be realized, and for the proposed NRRA to be successful:

Resource Road Governance - Resource road legislation needs to be consolidated and streamlined from several different acts and regulations into one single piece of legislation that

covers the administration, construction, maintenance, deactivation, and access rights and responsibilities for resource roads on Crown land. All licensees and permit holders need to have the same rights and obligations (including government) in order to increase the overall fairness for those sharing the landbase. Better planning and coordination through a cooperative planning process is also needed between industries, government regulators, and non-industrial users to enhance competitive advantage and create a more efficient business environment.

Standards for Construction, Maintenance, and Deactivation –Design, construction, maintenance and deactivation must consider the level of use, the type of use, and the potential for future use, including deactivation standards that allow for different levels of access and maintenance plans that are based on level of use. Greater compliance in meeting machine limitations in the design and implementation process is also needed to improve worker and road user safety. New legislation must ensure that environmental and safety obligations are the same no matter what resource activity is being carried out.

Compliance and Enforcement – A single C&E program needs to be established for all resource road users to ensure rules and regulations are consistent. C&E needs to increase not only on the environmental side, but also with public and worker safety. The use of a public watchdog such as the FPB should continue and include all industries and government.

Safety – New resource road policy must establish a foundation that fosters the safety of all users and workers that is in line with existing legislation governing safety. A system must be in place to ensure all workers and road users, no matter where they are in the province are aware of the rules of the road, their roles and responsibilities and are competent on the road and in their job.

Inventory – Resource road inventory needs to be current, accurate, and provide adequate levels of information to road users (e.g. level of deactivation, radio frequencies, designated maintainer

information etc.). For resource road inventory to improve there also needs to be information sharing and reporting requirements.

Public Access – Coordinated access management planning is needed (e.g. CAMP) so that public concerns can be addressed, access priorities can be established, and sensitive areas can be identified. Incentives are needed for licencees/permit holders to continue to maintain roads for public use such as stumpage reduction or through non-tributary cost allowances.

Role of the Forest Professional - Forest professionals must continue to ensure due diligence and competency in the work that they do. To that end, it is critical the forest professionals are aware of practice guidelines that exist for guidance with particular issues (e.g. bridge design and terrain stability); utilize tools such as the MFLNRO Engineering Manual that outlines mandatory requirements and best practices; stay current with policy and regulation; and ensure competency in all areas of practice through continual self-assessments and peer reviews, regular practice reviews conducted by the ABCFP, and through the Non-Discipline Professional Accountability Process - all part of the ABCFP's continuing competency program (ABCFP 2003).

Improvements to road policy and regulations will only be seen when a sufficient level of planning is in place to support it. Government needs to support access management across the landbase, and an adequate planning process needs to be in place all the way through to legislation. The onus will then be on forest professionals to ensure not only that they meet all legal obligations, but that they are competent to do so. It is this professional accountability and changes to the legislative framework that will ensure the public interests are being met and that all resource industries have a consistent and fair framework in place that fosters a more efficient business environment, all the while increasing the level of safety and minimizing our footprint on the environment.

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