



**Forest
Practices
Board**

**Audit of Forestry, Oil and Gas, and
Range Activities in the Kiskatinaw
River Watershed**

Peace Forest District

FPB/ARC/121

December 2010

Table of Contents

Audit Results..... 1

 Background..... 1

 Audit Approach and Scope..... 3

 Planning and Practices Examined..... 4

 Audit Opinions..... 11

Appendix 1: Forest Practices Board Compliance Audit Process..... 12

Audit Results

Background

As part of the Forest Practices Board's 2008 compliance audit program, the Board randomly selected the Peace Forest District as the location for a limited scope compliance audit. To support another Board project,ⁱ the Board chose to focus on soil conservation and water quality practices and associated planning of multiple licensees, in multiple sectors within the Kiskatinaw River watershed (see map on page 2).

The audit examined forestry, oil and gas, and range activities, specifically with respect to soil conservation, water quality and associated planning, in the Kiskatinaw River watershed. This audit involved several licensees:

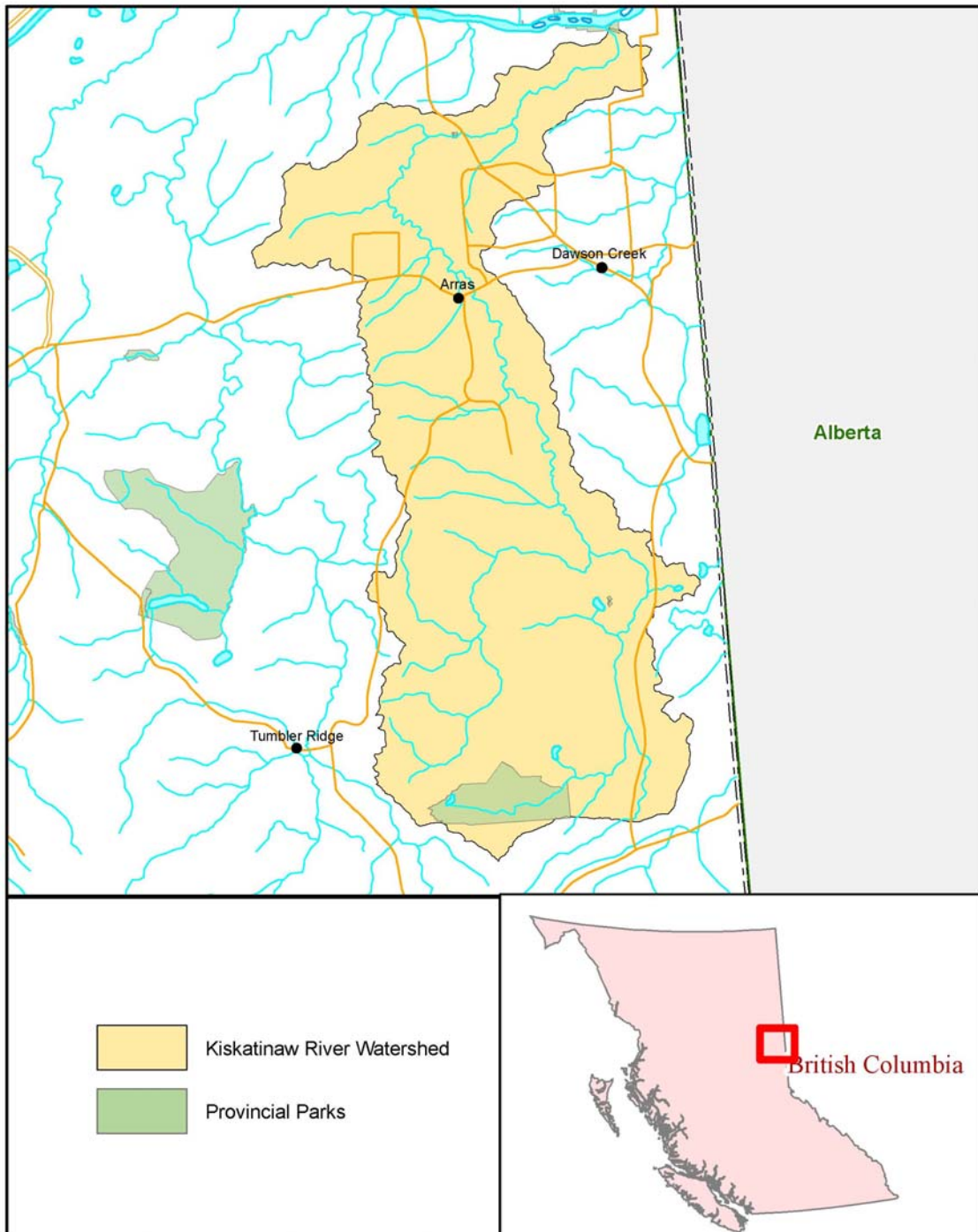
- forestry – Louisiana-Pacific Canada Ltd.
- oil and gas – Apache Canada (formerly BP Energy Canada Ltd.), Shell Canada Ltd. (formerly Duvernay Oil Corporation), and Encana Corporation
- range – Bear Mountain Grazing Association, and three range tenures held by individuals

The Board's audit fieldwork took place over a two-year period. The forestry and range activities were examined in the fall of 2008 and the oil and gas activities were examined in the summer of 2009.

Audit Area - Kiskatinaw River Watershed

The Kiskatinaw River supplies drinking water for the city of Dawson Creek. The Kiskatinaw River originates in the foothills of the Rocky Mountains, near Tumbler Ridge, and flows approximately 200 kilometres north before joining the Peace River at the Alberta border in northeast British Columbia. The watershed drains 4,098 square kilometres. The audit focused on the area upstream (south) of the city intake (near the Highway 97 bridge at Arras), which represented 2,825 square kilometres of the watershed, of which 2,630 square kilometres is Crown land.

Audit of Forestry, Oil and Gas, and Range Activities in the Kiskatinaw River Watershed



Legislation

The use of Crown land for forestry is regulated by the *Forest Act* and the *Forest and Range Practices Act* (FRPA). The *Forest Act* provides the authority to grant tenure agreements to allow forest companies, communities and individuals the right to harvest timber in public forests through tenure agreements with the provincial government. Forest companies most often are issued a long-term tenure, such as a major licence (i.e., tree farm licence or a forest licence). These licences may cover a specific geographic operating area or set out an allowable annual cut volume to be harvested over a period of time.

The use of Crown land for natural gas exploration and development was regulated during the audit period by the *Oil and Gas Commission Act*, the *Pipeline Act* and the *Petroleum and Natural Gas Act*.ⁱⁱ However, the *Forest Act* provides authority to grant an occupant licence to cut, or a master licence to cut, which is the approval granted to oil and gas companies to allow them to clear the land to conduct their activities. Activities under licences to cut were regulated by FRPA and the *Forest Practices Code of British Columbia Act* (the Code).

The use of Crown land as range for livestock is regulated by the *Range Act* and FRPA. The *Range Act* provides the authority to grant range agreements, including permits and licences. These agreements include things like the tenure area and the amount of forage that can be consumed by livestock on Crown land.

FRPA provides the necessary authority for government to manage the Crown land forest and range resource. Water and soil are 2 of the 11 subjectsⁱⁱⁱ referenced in FRPA for which the government may set objectives, and major licensees must specify results or strategies consistent with the objectives, or commit to certain default requirements. It is important to note that occupant licences to cut or master licences to cut are only subject to some practice requirements, and do not need to specify results or strategies for objectives.

Audit Approach and Scope

The audit examined compliance with legislated requirements for forest and range planning and practices, with a focus on the two identified subjects; soil conservation and water quality.^{iv} The audit focused on those practices and the associated planning within the Kiskatinaw River watershed for the period October 1, 2005, to the final day of field work in October 2008 (forest and range), and June 2009 (oil and gas).

These activities were assessed for compliance with FRPA and related regulations, as well as certain transitional requirements of the Code.

The Board's audit reference manual, *Compliance Audit Reference Manual, Version 6.0, May 2003*, and the addendums to the manual for the 2008 and 2009 audit seasons, set out the standards and procedures that were used to carry out the audit.

Objectives Set by Government

There are no approved land use objective orders that are applicable to the audit area. However, there is a strategic level plan that provided guidance for the auditees to March 2009. The March 1999 *Dawson Creek Land and Resource Management Plan* (LRMP) addressed soil conservation and water through general management direction. This direction outlined objectives and strategies for soil conservation and water.

Soil Conservation

Soils are considered fundamental to the sustainability of forest, forage, and agricultural resources, and the overall objective is to conserve soil productivity on forest, range, and agricultural lands. One strategy is to conserve soil productivity through the implementation of regulations (previously the Code, now FRPA) and government guidelines for conserving forest soils, including watershed and terrain stability assessments.

Water

The three stated objectives for water are:

1. Sustain and manage water supplies for domestic water users.
2. Sustain and manage, where possible and appropriate, the natural stream flow regime for identified watercourses including timing of flow, water quality and quantity, recognizing the natural hydrologic processes are beyond the control of resource managers.
3. Manage land and resource developments to sustain water quality and quantity.

There are a number of strategies associated with water in the Dawson Creek LRMP. One stated strategy is to include the intent of the *Kiskatinaw Integrated Watershed Management Plan* in landscape and operational planning to sustain and manage water quality and quantity, within the Kiskatinaw River Community Domestic Water Supply Area.

Planning and Practices Examined

Forestry Activities

Louisiana-Pacific Canada Ltd.

Louisiana-Pacific Canada Ltd. (LP), under Forest Licence A60064, was the most active licensee operating within this watershed at the time of the audit and was selected for audit for this reason, not on the basis of location or past performance. Road and harvesting activities and associated planning for the period October 1, 2005, to October 19, 2008, within the Kiskatinaw River watershed were included in the scope of this audit.



Figure 1. A cutblock with decked wood destined for the mill and an active wellsite and pipeline right-of-way.

The auditors examined planning and practices associated with LP's activities, which included:

- harvesting of 44 blocks
- 44 kilometres of road construction, of which 36 kilometres were considered in-block roads
- 36 kilometres of road deactivation
- 246 kilometres of road maintenance
- construction of 1 bridge, and maintenance of 1 bridge
- associated operational planning

LP's activities were approved in *Forest Development Plan^v 2002-2007 Amendment #3*, effective December 2003, and *Forest Stewardship Plan^{vi} 2007-2012*, effective March 2008.

All LP's planning and practices activities were subject to the transitional provisions of FRPA, as planning activities and on-the-ground operations were approved in LP's forest development plan and continue to be governed by the Code. The Board audited these documents and site plans to ensure compliance with applicable legislation.

LP's practices audited related to harvesting and road activities only, and were assessed on the ground or in the air using a helicopter. During the audit period, a total of 44 blocks were harvested, and the audit assessed 21 of them.

Road construction consisted of 8.6 kilometres of road to access the harvest blocks and 35.5 kilometres of in-block roads. All 8.6 kilometres of constructed access roads were audited, and auditors also assessed all of the 35.5 kilometres of in-block road that was deactivated. LP has maintenance obligations for 246 kilometres of road within the watershed and the auditors assessed several road segments, which totalled 159 kilometres. LP also installed and removed one bridge and maintained one bridge within the watershed. Both of these bridges were assessed.

Forestry Findings

The audit found that the harvesting, road activities and associated planning undertaken by Louisiana-Pacific Canada Ltd., within the Kiskatinaw River watershed, complied in all significant respects with the requirements of FRPA and related regulations, and applicable requirements of the Code, as of October 2008.

The audit assessed LP's activities as related to soil conservation and water quality. Auditors assessed roads, bridges and cutblocks to determine the potential extent of siltation that could enter stream channels and potentially impact water quality. Examples of practices noted during the audit were:

- Using low pressure ground-based equipment to minimize compaction or rutting.
- Conducting activities during frozen ground conditions as per plan.
- Rehabilitating temporary access structures as per plan.
- Locating roads to minimize risk to landslides.
- Using terrain specialists in areas of instability and incorporating recommendations into activities, where applicable.
- Locating drainage structures to ensure natural drainage patterns were maintained.
- Removing crossings on major streams where winter road access was used.
- Using techniques such as grass seeding, silt fencing, ditch blocks, settling ponds, straw bales in and around stream crossings to minimize soil erosion and sediment transfer.
- Using road maintenance practices that minimize erosion of running surface.

Auditors also noted that LP used existing oil and gas infrastructure, such as seismic cutlines or access roads, as an alternative to construction of new roads, to access some of their cutblocks. Therefore, LP avoided establishing additional roads, reducing the amount of increased disturbance created in the watershed as a result of their activities.

Oil and Gas Activities

After the Board selected the Kiskatinaw River watershed as an area to audit, auditors identified approximately 60 oil and gas companies that had some form of activity within the watershed. To select a manageable level of activity to audit, auditors broke the licensees down by level of activity; removing those with less than 20 sites, grouping the five licensees with between 20 and 100 sites, and grouping the four licensees with more than 100 sites. Then the auditors randomly selected two licensees from each group. After confirming current activities within the watershed, the fourth selected licensee (selected from the 20 to 100 site group) did not have any current activities and was dropped from the audit. The three licensees selected for audit were: BP Energy Company; Duvernay Oil Corporation; and Encana Corporation. These operators were selected randomly and not on the basis of location or past performance.



Figure 2. An active drill rig.

Shortly after notifying Duvernay Oil Corporation of the audit, the company was purchased by Shell Canada Ltd. (Shell). Also, after the audit field work was complete, but prior to completion of the final audit report, BP Energy Company was purchased by Apache Corporation.

The planning and practices associated with these licensees' activities within the Kiskatinaw River watershed, which included 99 wellsites and facilities and 111 pipelines, for the period October 1, 2005, to June 26, 2009, were included in the scope of this audit. No seismic activity was conducted in the watershed by the auditees during the audit period.



Figure 3. An active wellsite with a flare stack.

Apache Corporation – Formerly BP Energy Company

BP Energy Company (BP) held a master licence to cut (M01045), which provided direction with regards to surface land activities within the watershed. After the audit field work was complete, but prior to completion of the final audit report, BP was purchased by Apache Corporation (Apache). Only those sites operated by BP, under the above listed master licence to cut, were subject to audit.

BP's practices on the ground related to surface land activities, which included the construction of wellsites, facilities, pipelines, and associated access roads. During the audit period, a total of 13 wells, 4 facilities and 12 pipelines were constructed.

The audit assessed all 17 wellsites and facilities, which covered 56.5 hectares, as well as 11.7 kilometres of access roads. The audit also assessed 5 pipelines, totalling 31.1 kilometres, and another 6.6 hectares that were cleared for temporary work areas and log decks.

Shell Canada Ltd. – Formerly Duvernay Oil Corporation

Duvernay Oil Corporation (Duvernay) held a master licence to cut (M00937), which provided direction with regards to surface land activities within the watershed. After initial notification of this audit, but prior to the initiation of the field work, Duvernay was purchased by Shell. Only those sites initially developed by Duvernay, under the above listed master licence to cut, were subject to audit.

Duvernay's practices on the ground related to surface land activities, which included the construction of wellsites, facilities, pipelines, and associated access roads. During the audit period, a total of five wells, one facility and two pipelines were constructed.

The audit assessed all five wellsites and one facility, which covered 9.4 hectares, as well as 6.7 kilometres of access roads. The audit also assessed the two pipelines, totalling 3.9 kilometres, and another 0.5 hectares that were cleared for temporary work areas and a log deck.

Encana Corporation

Encana Corporation (Encana) holds two master licences to cut (M01057 and M00742), which provide direction with regards to surface land activities within the watershed.

Encana's practices on the ground related to surface land activities, which included the construction of wellsites, facilities, pipelines, and associated access roads. During the audit period, a total of 76 wells and 97 pipelines were constructed.

The audit assessed 22 wellsites, which covered 54.2 hectares, as well as 11.8 kilometres of access roads. The audit also assessed 9 pipelines, totalling 21.7 kilometres, and another 7.1 hectares that were cleared for temporary work areas and log decks.

Oil and Gas Findings

The audit found that the oil and gas planning and field activities undertaken by Apache Corporation, Shell Canada Ltd. and Encana Corporation within the Kiskatinaw River watershed complied in all significant respects with the requirements of FRPA, and applicable requirements of the Code, as of June 2009.

The audit assessed oil and gas activities related to soil conservation and water quality. Auditors assessed wellsites, facilities, borrow pits, access roads, campsites, temporary worksites, and pipeline right-of-ways to determine the potential extent of siltation that could enter stream channels and potentially impact water quality. Examples of practices noted during the audit were:

- Locating wellsites, facilities, borrow pits, campsites, and temporary worksites to avoid existing streams and non-classified drainages.
- Conducting activities during frozen ground conditions as per plan.
- Rehabilitating temporary access structures as per plan, including replacing top soil and ground cover on wellsites, campsites, and temporary worksites after completion.
- Locating roads to minimize risk of landslides.
- Locating drainage structures to ensure natural drainage as maintained.
- Removing crossings on major streams where winter road access was used.
- Using techniques such as mulching, rip-rap, grass seeding, silt fencing, and straw bales in and around stream crossings, to minimize soil erosion and sediment transfer.
- Boring pipelines underneath major river crossings encountered within the pipeline right-of-way.
- Using road maintenance practices that minimize erosion of running surface.

Auditors also noted that new pipeline projects were using existing corridors created from established forestry roads or existing pipeline right-of-ways, thus reducing additional disturbance on the land base wherever possible. In some situations, all terrain vehicle bridges were constructed to allow operator access while minimizing impacts such as siltation that could affect water quality in the watershed.

Range Activities

The 4 largest of the 24 range tenures within the Kiskatinaw River watershed were selected for audit. These tenures were selected due to their size, not on the basis of location or past performance. The four selected tenures are: Bear Mountain Grazing Association—RAN073326; RAN073601; RAN073896; and RAN075539.^{vii} Range practices conducted during the period October 1, 2005, to October 10, 2008, were included in the scope of this audit.



Figure 4. A cow on a range tenure within the Kiskatinaw River watershed.

Auditors conducted a reconnaissance assessment on the four range tenures to identify if range practices on Crown land are likely to contribute to increased erosion and sedimentation, leading to a deterioration of water quality, or impact fish habitat. The four range tenures were flown by helicopter and specific areas were assessed on the ground. As the audit focus was on soil conservation and water quality, the audit team concentrated its activities in and around water features including streams, wetlands, lakes, and range developments such as dugouts, with direct connection to the Kiskatinaw River. The auditors examined compliance with water protection requirements in the agreement holders' range use plans and FRPA's practice requirements for water and the protection of fish habitat.

Range Findings

The audit found that Bear Mountain Grazing Association—RAN073326; RAN073601; RAN073896; and RAN075539 complied in all significant respects with the soil conservation and water quality requirements of FRPA and related regulations, as of October 2008.

Overall, sediment from range practices on the four tenures did not have a significant impact on water quality or fish habitat within the Kiskatinaw River watershed during the audit period. There were some areas of localized impacts to riparian features, including livestock trails across streams and some damage to riparian vegetation. On the largest range tenure examined, localized damage to streams is partly attributable to large scale conversion of forested land to tame pasture during the 1970s. The conversion included removal of all vegetation and stumps, even near stream channels, tilling the soil and planting non-native grasses (clover and bluegrasses). The absence of vegetation now provides unobstructed livestock access to some riparian areas.

Only two of the streams identified as having localized livestock impacts had potential to support fish. On these two streams, fish habitat quality was very poor and it is unlikely that fish would occupy these streams, other than the occasional migrant from the Kiskatinaw River during high flows.

Localized trampling of some channel banks will result in erosion and deposition of sediment. While some of this sediment will be transported to the Kiskatinaw River, the effects are likely to be very low or undetectable when considered in conjunction with the natural background levels of sediment within the watershed.

It is important for all range tenure holders to assess possible impacts in or near riparian features and to consider available best management practices to prevent over use of these areas.

Audit Opinions

In my opinion, the timber harvesting; road construction, deactivation and maintenance; and the associated operational planning, carried out under Forest Licence A60064 by Louisiana-Pacific Canada Ltd. within the Kiskatinaw River watershed, for the period October 1, 2005, to October 19, 2008, complied in all significant respects with the soil conservation and water quality requirements of the *Forest and Range Practices Act* (FRPA) and related regulations, and certain transitional requirements of the *Forest Practices Code of British Columbia Act* (the Code), as of October 2008.

In my opinion, the oil and gas planning and field activities carried out under Master Licence to Cut M01045 by Apache Corporation (formerly BP Energy Canada Ltd.); M00937 by Shell Canada Ltd. (formerly Duvernay Oil Corporation); and M01057 and M00742 by Encana Industries Ltd. within the Kiskatinaw River watershed, for the period October 1, 2005, to June 26, 2009, complied in all significant respects with the soil conservation and water quality requirements of the *Forest and Range Practices Act* (FRPA) and related regulations, and certain transitional requirements of the *Forest Practices Code of British Columbia Act* (the Code), as of June 2009.

In my opinion, the range planning and practices conducted by Bear Mountain Grazing Association—RAN073326; RAN073601; RAN073896; and RAN075539 within the Kiskatinaw River watershed, for the period October 1, 2005, to October 10, 2008, complied in all significant respects with the soil conservation and water quality requirements of the *Forest and Range Practices Act* (FRPA) and related regulations, as of October 2008.

In reference to compliance, the term “in all significant respects” recognizes that there may be minor instances of non-compliance that either may not be detected by the audit, or that are detected but not considered worthy of inclusion in the audit report.

The *Audit Approach and Scope* and the *Planning and Practices Examined* sections of this report describe the basis of the audit work performed in reaching the above conclusion. The audit was conducted in accordance with the auditing standards of the Forest Practices Board. Such an audit includes examining sufficient forest planning and practices to support an overall evaluation of compliance with FRPA and the Code.



Christopher R. Mosher CA, EP(EMSLA)
Director, Audits

Victoria, British Columbia
November 30, 2010

Appendix 1: Forest Practices Board Compliance Audit Process

Background

The Forest Practices Board conducts audits of government and agreement-holders under the *Forest and Range Practices Act* (FRPA), section 122, and the *Wildfire Act* (WA). Compliance audits examine forest or range planning and practices to determine whether or not they meet FRPA and / or WA requirements. (The transitional provisions of FRPA state that the Code continues to apply to forest practices carried out under a forest development plan, until there is an approved forest or range stewardship plan, at which point the requirements of FRPA apply.)

Selection of Auditees

The Board conducts about eight or nine compliance audits annually. Most of these are audits of agreement holders. The Board also audits the government's BC Timber Sales Program (BCTS). This section describes the process for selecting agreement holders to audit.

To begin with, auditors randomly select an area of the Province, such as a forest district. Then the auditors review the forest resources, geographic features, operating conditions and other factors in the area selected. These are considered in conjunction with Board strategic priorities (updated annually), and the type of audit is determined. At this stage, we choose the auditee(s) that best suits the selected risk and priorities. The audit selections are not based on past performance.

For example, in 2007, the Board randomly selected the Robson Valley Timber Supply Area as a location for an audit. After assessing the activities within that area, we discovered that two licensees had recently closed operations due to financial problems. As the Board has expressed concern in the past about financially strapped companies failing to meet outstanding obligations, such as reforestation, and road maintenance, the audit focused on the status of the outstanding obligations of these two licences.

For BCTS audits, a forest district within one of the 12 business areas within the province is selected randomly for audit.

Audit Standards

Audits by the Board are conducted in accordance with the auditing standards developed by the Board. These standards are consistent with generally accepted auditing standards. The standards for compliance audits are described in the Board's *Compliance Audit Reference Manual*.

Audit Process

Conducting the Audit

Once the Board randomly selects an area or district and determines the scope of audit to be conducted and the licensee(s) to be audited, all activities carried out during the period subject to audit are identified (such as harvesting or replanting, and road construction or deactivation activities). Items that make up each forest activity are referred to as a population. For example, all sites harvested form the timber harvesting population and all road sections constructed form the road construction population.

A separate sample is then selected for each population (e.g., the cutblocks selected for auditing timber harvesting). Within each population, more audit effort (i.e., more audit sampling) is allocated to areas where the risk of non-compliance is greater.

Audit field work includes assessments of features using helicopters as well as ground procedures, such as measuring specific features like riparian reserve zone width. The audit teams generally spend one to two weeks in the field.

Evaluating the Results

The Board recognizes that compliance with the many requirements of the Code, FRPA and WA, is more a matter of degree than absolute adherence. Determining compliance, and assessing the significance of non-compliance, requires the exercise of professional judgment within the direction provided by the Board.

The audit team, composed of professionals and technical experts, first determines whether forest practices comply with legislated requirements. For those practices considered to not be in compliance, the audit team then evaluates the significance of the non-compliance, based on a number of criteria, including the magnitude of the event, the frequency of its occurrence and the severity of the consequences.

Auditors categorize their findings into the following levels of compliance:

Compliance – where the auditor finds that practices meet Code, FRPA and WA requirements.

Not significant non-compliance – where the auditor, upon reaching a non-compliance conclusion, determines that one or more non-compliance event(s) is not significant and not worthy of reporting. Therefore, this category of events will generally not be included in audit reports.

Significant non-compliance – where the auditor determines a non-compliance event(s) or condition(s) is or has the potential to be significant, and is considered worthy of reporting.

Significant breach – where the auditor finds that significant harm has occurred, or is beginning to occur, to persons or the environment as a result of one or many non-compliance events.

If it is determined that a significant breach has occurred, the auditor is required by the *Forest Practices Board Regulation* to immediately advise the Board, the party being audited, and the Minister of Forests and Range.

Reporting

Based on the above evaluation, the auditor then prepares a draft audit report. The party being audited is given a draft of the report for review and comment before it is submitted to the Board.

Once the auditor submits the draft report, the Board reviews it and determines if the audit findings may adversely affect any party or person. If so, the party or person must be given an opportunity to make representations before the Board decides the matter and issues a final report. The representations allow parties that may potentially be adversely affected to present their views to the Board.

The Board then reviews the auditor's draft report and the representations from parties that may potentially be adversely affected before preparing its final report. Once the representations have been completed, the report is finalized and released: first to the auditee and then to the public and government.

ⁱ Cumulative effects assessment: A case study for the Kiskatinaw River watershed.

ⁱⁱ On October 4, 2010, the *Oil and Gas Activities Act* came into effect, replacing some of these provisions.

ⁱⁱⁱ The government objectives listed in the *Act* are soils, visual quality, timber, forage and associated plant communities, water, fish, wildlife, biodiversity, recreation resources, resource features, and cultural heritage resources.

^{iv} The audit assessed compliance with harvesting as well as road and bridge construction, deactivation and maintenance and associate operational planning, looking specifically at soil conservation and water quality. The audit did not assess silviculture practices or activities under the *Wildfire Act*.

^v A forest development plan is an operational plan under the Code that provides the public and government agencies with information about the location of proposed roads and cutblocks for harvesting timber over a period of at least five years. The plan must specify measures that will be carried out to protect certain forest resources prescribed by regulation. It must also be consistent with any higher level plans. Site-specific plans are required to be consistent with the forest development plan.

^{vi} A forest stewardship plan (FSP) is a key planning element in the FRPA framework and the only plan subject to public review and comment and government approval. In FSPs licensees are required to identify results and/or strategies consistent with government objectives for values such as water, wildlife and soils. These results and strategies must be measurable and once approved are subject to government enforcement. FSPs identify areas within which road construction and harvesting will occur but are not required to show the specific locations of future roads and cutblocks. FSPs can have a term of up to five years.

^{vii} RAN073601, RAN073896 and RAN075539 are held by individuals, not companies, therefore only the licence number is provided.