

Oil and Gas Activities within the Agricultural Land Reserve:

**An Audit of the BC Oil and Gas
Commission's Performance in Carrying out
its Delegated Authority to Decide on Oil
and Gas Non-Farm Use Activities and ALC
Act Applications within the Agricultural
Land Reserve**

March 2009

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Executive Summary

Preserving and protecting agricultural land and maintaining oil and gas development are both important to the economic, social and environmental sustainability of British Columbia. Consequently, the Agricultural Land Commission (ALC) and Oil and Gas Commission (OGC) have developed a process to streamline and improve the review of proposals for oil and gas activities and pipelines on Agricultural Land Reserve (ALR) lands, while preserving the inherent capability of agricultural lands and encouraging the farming of agricultural lands. That process, set out in the *OGC / ALC Delegation Agreement, April 1, 2007*, enables the OGC to decide certain applications for oil and gas activities and pipelines on ALR lands, and to exempt certain oil and gas activities and pipelines on ALR lands from the requirement of an application under the *Agricultural Land Commission Act* (the Act), provided specified conditions are met.

This audit provided an independent assessment of the OGC's performance in carrying out its responsibilities, as set out in Parts 2, 6 and 7 of the Delegation Agreement, to make decisions that respect the purpose and intent of the Act. The audit examined OGC approvals and related activities in the Peace River Regional District (PRRD) occurring in fiscal 2006 and 2007 – April 1, 2006 through March 31, 2008.



Active well site on ALR land.

The audit examined a sample of the applications for oil and gas activities and pipelines made to the OGC, (271 of 1,613) to assess whether the administrative conditions of the Delegation Agreement were met. The audit also field-reviewed a sample of well sites, facilities and pipelines (234 of 1,513) to assess whether the sites could potentially be

permanently and completely reclaimed. For wells and facilities, the field review also assessed whether cumulative impacts were within specified limits for a quarter section (65 hectare) parcel of land; and whether the activity created physical restrictions to farming. For reclaimed well sites, facility sites, and pipelines, the audit assessed whether reclamation efforts met specifications set out in the Delegation Agreement and reclamation plans for reestablishing soils, surface grooming and contours, and revegetation.

The audit found that, with one exception, the planning and field activities approved or exempted from application under the Act by the Oil and Gas Commission conformed, in all significant respects, with the requirements of Sections 2, 6 and 7 of the *OGC / ALC Delegation Agreement, April 1, 2007*, as of October 2008. The exception was a finding of significant non-

conformance related to the timeliness of confirmation of pipeline reclamation. OGC does not track the timing of pipeline reclamation. Although most pipelines audited appeared to be reclaimed shortly after installation, the lack of a timely Schedule B submission creates uncertainty as to whether pipelines are being promptly and properly reclaimed as specified under the Delegation Agreement.

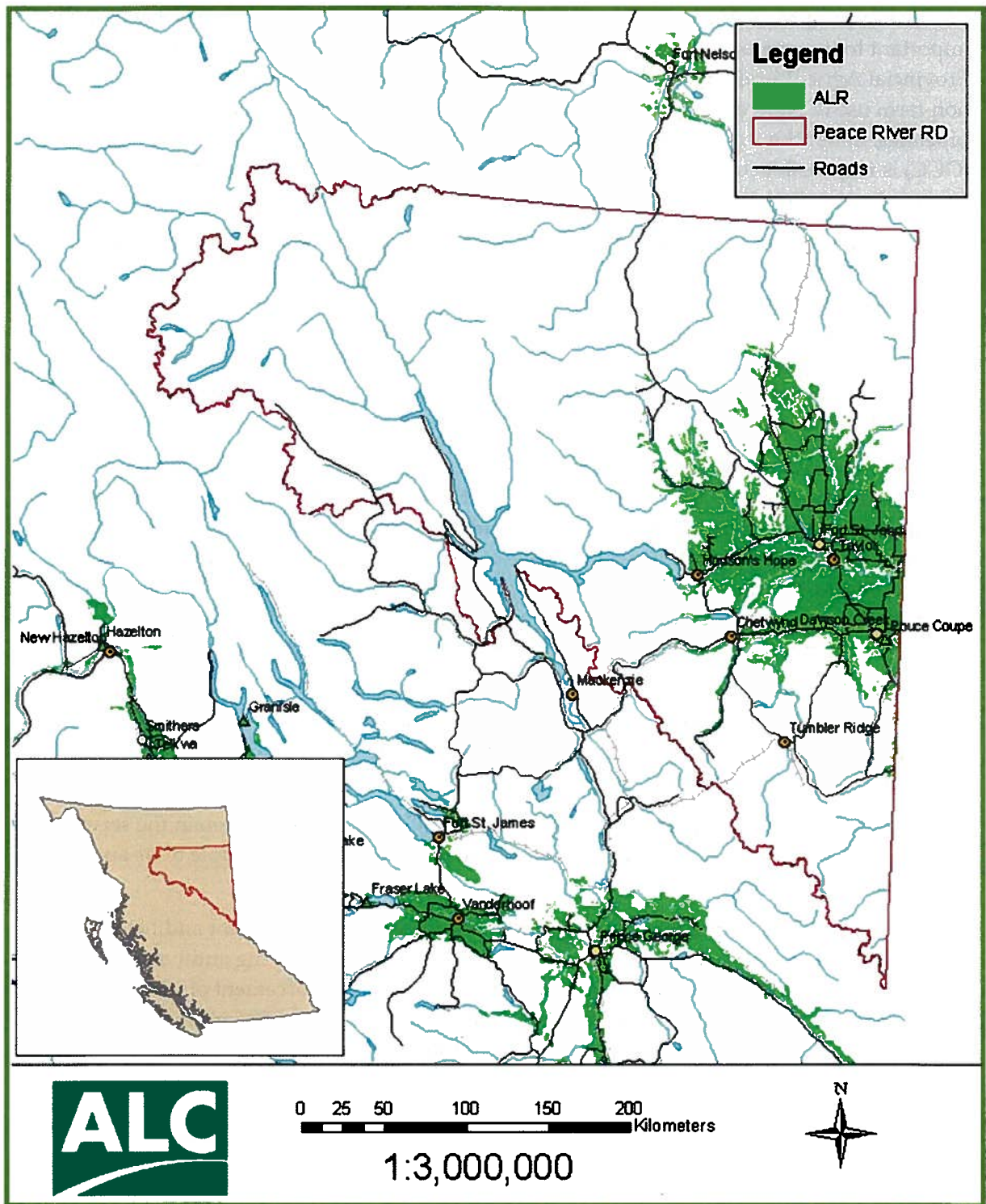
The field review found that well sites, facility sites and pipelines were mostly developed in a way that would allow for complete reclamation of the site. Cumulative impacts from well and facility sites were within the specified limits for quarter section parcels, and physical restrictions to farming beyond the well lease site and access roads were rare. Also, reclaimed old well sites and pipelines were often difficult to distinguish from the surrounding farmland, which is the ultimate goal of site reclamation on ALR land. Although the majority of work was well done, the audit did note that soil was not adequately stripped or stored on some sites.

Under the Delegation Agreement, the total building and structure area (footprint) is used to indicate the risk of facilities to agricultural capacity and determine the appropriate application process. However, the footprint does not provide a meaningful indicator of potential impact, and current processes do not accurately assess the footprint area.

The Auditor of Record recommends that:

1. The OGC develop a process to track whether owners of pipelines are reclaiming the disturbed areas and submitting a Schedule B report within 24 months as required under the Delegation Agreement.
2. The OGC and ALC consider developing best management practices to guide operators in the stripping and stockpiling of soil for well sites, facility sites, and associated roads.
3. The OGC and ALC review their processes for assessing proposals for facilities associated with oil and gas development.

ALR in the Peace River Regional District



Overview

Preserving and protecting agricultural land and maintaining oil and gas development are both important to the economic, social and environmental sustainability of British Columbia. The Provincial Agricultural Land Commission (ALC) is responsible for deciding applications for the non-farm use of Agricultural Land Reserve lands (ALR), including oil and gas activities and pipelines, under the *Agricultural Land Commission Act* (the Act). The Oil and Gas Commission (OGC) is responsible for regulating oil and gas activities and pipelines under the *Oil and Gas Commission Act*, *Petroleum and Natural Gas Act* and *Pipeline Act*.

To streamline and improve the review process for proposals for oil and gas activities and pipelines on ALR lands, while preserving agricultural lands and encouraging the farming of agricultural lands, the ALC and OGC have agreed to enable the OGC to exercise the powers of the ALC under subsections 25(1) and (2) of the Act; to decide applications for oil and gas activities and pipelines on ALR lands; and to exempt certain oil and gas activities and pipelines on ALR lands from the requirement of an application under the Act. Conditions are set out in the *OGC / ALC Delegation Agreement, April 1, 2007* (Appendix 1).

Oil and gas activities and pipelines exempted from application under the Act are those considered to be low risk¹ by the ALC. Under the terms of the Delegation Agreement, the OGC staff has authority to approve those activities under specific conditions, including written consent from the surface landowner and a site reclamation plan. Other, more moderate risk applications must be decided by the OGC Commissioner or Deputy Commissioner. Any high risk applications fall outside of the Delegation Agreement, and must be reviewed by the ALC and follow the regular non-farm use application process via local government.

The Delegation Agreement requires all temporary oil and gas activity, whether exempt from the ALC application process or not, to have a pre-development site assessment and reclamation plan (Schedule A), and a reclamation report (Schedule B), to confirm suitable reclamation when the site is no longer required for oil and gas use.

Under the terms of the Delegation Agreement, the OGC must, at its cost, retain the services of an independent auditor, satisfactory to the ALC, to annually review a sample of its authorized decisions and activities.

The ALC and OGC selected the Forest Practices Board as their independent auditor. The Forest Practices Board, established in 1995, has developed expertise in applying audit and investigation principles to the management, conservation and enforcement of natural resources. The Director of Audits of the Forest Practices Board is the Auditor of Record for this engagement and is responsible for the audit, including this final report.

¹ Risk – the probability of an undesirable event occurring within a specified period of time.

The audit team consisted of Board staff and contractors with expertise in natural resource auditing and agriculture:

Terence Lewis, PhD, P.Ag., P.Geo.

Chris Mosher, CA, CEA (SFM) – Auditor of Record

Peter Nagati, RPF, MBA – Project Leader

A. (Tony) Schori, P.Ag., CAC

Brian Sibley, CMA

This report is the property of the OGC and ALC, subject to the rules of the *Freedom of Information and Protection of Privacy Act*.

Purpose

The audit provides an independent assessment of the OGC's performance in carrying out its responsibilities, as set out in the Delegation Agreement, to make decisions that respect the purpose and intent of the *Agricultural Land Commission Act* to:

- preserve agricultural land;
- encourage farming on agricultural land in collaboration with other communities of interest; and
- encourage local governments, First Nations, the provincial government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

The audit evaluates oil and gas activities, as exempted or approved by the Oil and Gas Commission, relative to the specific conditions of the Delegation Agreement. The audit considers:

- the impact of oil and gas uses on ALR lands and agricultural use of those lands; and
- the effectiveness of reclamation of ALR lands disturbed by oil and gas activities as approved by the Oil and Gas Commission, or exempted from application under an agreement under section 26 of the *Agricultural Land Commission Act*.

Audit Approach and Scope

The audit consisted of two parts. The first was an office review to test whether the conditions for documentation as set out in the Delegation Agreement were met. The second was a field review, with a focus on the results achieved on site.

The sampling strategy was based on the risk of impacts to the ALR. Audit risk, for the purposes of this audit, was the risk that the auditor will form an incorrect overall opinion on OGC's

adherence to the Delegation Agreement, as a result of not detecting a significant event or condition. Therefore, the scope and extent of the procedures performed in the audit were functions of the relative risk of a significant event or condition not being detected. This is the rationale for the risk-based sampling, rather than random sampling.

Sufficient and appropriate audit evidence was collected to provide a reasonable basis of support for all audit findings. What constitutes sufficient appropriate audit evidence is a matter of professional judgment. More evidence was collected where findings were considered potentially reportable.

Sampling intensity was conducted at the level required, in the opinion of the Auditor of Record, to reach an overall audit opinion. Sampling considered different land uses (i.e. forested versus cultivated), activity types (i.e. wells, pipelines, and facilities), agricultural capability, geographical area, and whether the land was privately or publicly owned.

The audit included a review of records, field examinations, and interviews with OGC staff and ALC staff. Audit evidence was obtained by such means as observation, inspection, measurement, computation, inquiry and confirmation.

The audit examined OGC approvals and related activities in the Peace River Regional District occurring in fiscal 2006 and 2007 – April 1, 2006 through March 31, 2008.

The audit assessed conformance with Parts 2, 6 and 7 of the Delegation Agreement. This included how OGC exercised its delegated powers for consideration of both Schedule A and Schedule B assessments. These included such things as ensuring surface landowner consent was recorded, as well as assessing the timing of the pipeline reclamation and ensuring the combined total area occupied by existing or proposed oil and gas activity is less than 17 acres per quarter section (or 7 hectares per 65 hectare parcel).

The audit did not assess conformance with Parts 3, 4 and 8 of the Delegation Agreement. These include the inspection and compliance activities conducted by the OGC, such as the adequacy of response to complaints from landowners. Initially, it was planned that the audit would review a sample of OGC records to verify that the OGC investigated and responded to all complaints from landowners, however auditors chose to forgo this planned portion of the audit, as it would fit better as part of a more complete audit of inspection and compliance activities. The audit placed reliance on the accuracy and integrity of the population numbers supplied by the OGC in the past two fiscal “OGC/ALC Delegation Agreement Annual Reports” and therefore did not conduct any testing to specifically verify the authenticity of these figures. The audit also did not assess any applications that were made directly to the ALC.

The audit did not examine the overall effectiveness of the Delegation Agreement in achieving the ALC’s objectives for preserving ALR land, or the cumulative impacts of the oil and gas activities over the ALR, including potential environmental impacts of roads or bridges leading to well sites or camps, potential sub-surface contamination, or the timeliness of reclamation efforts.

The ALC and OGC could decide to examine such matters in a future audit to provide a broader perspective on the implementation of the Delegation Agreement.

The audit follows Generally Accepting Auditing Standards and the environmental auditing principles described in the Board's *Compliance Audit Reference Manual, Version 6.0, May 2003*,²

The audit team met with OGC and ALC staff in Fort St. John on August 25 to 27, 2008 to interview OGC staff, initiate the review of office records and field-test audit procedures. Additional office work was conducted during the week of September 8 to 12, 2008. Field work was completed the week of September 29 to October 3, 2008.

Planning and Practices Examined

Office Review

For non-farm use activities and applications for oil and gas activities and pipelines made to the OGC, the audit considered whether the administrative conditions of the Delegation Agreement were met, including:

- Was there evidence of landowner consent, a signed Form C/General Instrument, or a Mediation and Arbitration Board Order?
- Was there a report of an assessment of the site as set out in Schedule A of the Delegation Agreement?
- Were copies of relevant applications provided to local governments (Article 6 approvals)?
- Were approvals signed by the Commissioner or Deputy Commissioner (Article 6 approvals)?
- Did submitted reclamation plans meet the requirements of the Delegation Agreement?
- Did OGC evaluate and record Schedule B assessments for pipelines immediately upon completion of construction and reclamation, upon request for approval to abandon or within a maximum of 24 months after installation?

For low risk proposals that are exempt from ALC Act application (as per Article 7 of the Delegation Agreement), the audit reviewed files for:

- 105 of the 907 well sites (12 percent)
- 68 of the 540 pipelines (13 percent)
- all 36 of the facility sites (100 percent)
- 7 of the 19 "other" activities, such as an access road or a quarry (37 percent)

For more moderate risk applications decided by the OGC Commissioner (as per Article 6 of the Delegation Agreement) the audit reviewed files for:

- all five of the facility sites
- the one "other" activity

² http://www.fpb.gov.bc.ca/audits/manuals/CARMS_2003/cover-toc.pdf



Pipeline reclamation – sign posts indicate a buried pipeline, yet pipeline is indistinguishable from surrounding farmland.

For exempt or approved oil and gas activities on ALR lands where the land is no longer required, and for which reclamation plans (Schedule B's) had been submitted, the audit reviewed files for:

- 21 of the 36 wells (58 percent)
- 28 of the 69 pipelines (41 percent)
-

Field Review

For active well sites, facility sites and pipelines, the field review identified:

- any issues that would potentially prevent the site from being permanently and completely reclaimed (i.e. soil separation and storage, soil compaction, visible contamination, etc.).
- any other issues that might interfere with farming (weed control, appropriate control fencing and cattle guards, etc.).

For active wells and facility sites, the field review also assessed:

- whether cumulative impacts were within specified limits for a quarter section parcel of land; and
- whether the activity created physical restrictions to farming (i.e. restricted access or made farm equipment difficult to turn).

For reclaimed well sites, facility sites, and pipelines, the audit assessed whether reclamation efforts met specifications set out in the Delegation Agreement and reclamation plans for reestablishing:

- soils (replacement, mixing, compaction, erosion control, etc.)
- surface grooming and contours
- revegetation (frequency, distribution, height, vigor, crown cover)
- removal of industrial and domestic debris and other remaining hazards for livestock



Good separation of topsoil and subsoil around well site, and along access road. The soil stockpiles have not yet been seeded.

For activities that were approved under Article 6 or Article 7 of the Delegation Agreement, the audit field-reviewed:

- 89 of the 809 well sites (11 percent)
- 63 of the 538 pipelines (12 percent)
- 32 of the 41 facility sites (78 percent)
- 6 of the 20 other activities (30 percent)



Well site reclamation – ALR is back into productive farm use.

For activities for which reclamation plans (Schedule B's) had been submitted, the audit field-reviewed:

- 20 of the 36 wells (56 percent)
- 24 of the 69 pipelines (35 percent)

Findings

The audit found that, with one exception, the planning and field activities approved, or exempted from application under the Act, by the Oil and Gas Commission conformed, in all significant respects, with the requirements of Sections 2, 6 and 7 of the *OGC / ALC Delegation Agreement, April 1, 2007* as of October 2008. The exception was a finding of significant non-conformance related to the timeliness of Schedule B confirmation of pipeline reclamation.

Office Review Findings

Overall, the office review determined that documentation was prepared in conformance with the Delegation Agreement. The one exception is described below:

Timeliness of Confirmation of Pipeline Reclamation

Section 6.2 of the Delegation Agreement sets out that the owner of a pipeline must reclaim the disturbed area and submit a Schedule B report to the OGC and the surface landowner within 24 months of installation and reclamation of a pipeline. However, the OGC does not track the timing of pipeline reclamation, and therefore has no ability to ensure conformance with this section of the Delegation Agreement. Although most pipelines audited appeared to be reclaimed shortly after installation, the lack of a timely Schedule B submission creates uncertainty as to whether pipelines are being promptly and properly reclaimed within the specified timeframes. Consequently, this non-conformance represents a significant weakness in

the OGC's management system which should ensure that Schedule B reports are being submitted in a timely fashion, in accordance with the Delegation Agreement.

Field Review Findings



This well site has been "tear dropped", enabling farming to continue. Note access is along the field edge to minimize disruption to cultivation

The field review found that well sites, pipelines and facilities were generally developed in a way that would allow for complete reclamation of the site. Also, the work carried out on the ground by the various oil and gas companies on ALR land was generally in accordance with the Delegation Agreement. Cumulative impacts of well and facility sites were within the specified limits for quarter section parcels, and physical restrictions to farming were rare.

Also, reclaimed well sites and pipelines were often difficult to distinguish from the surrounding farmland, suggesting full reclamation of the sites. Although the majority of work was well done, some practices and procedures could be improved.

Soil Management at Well and Facility Sites

On 18 of the 93 active well and facility sites examined, the topsoil and subsoil was not clearly separated and/or stockpiled. In some cases, the subsoil was stored overtop of topsoil, making the eventual reclamation possible but more challenging. In other cases, the subsoil and topsoil was removed in one lift, resulting in admixing that will hinder full reclamation of the site. None of the files examined included maps identifying the location of subsoil and topsoil, potentially making it difficult for equipment operators to distinguish them for future



Stockpiled soil with adequate seeding – no erosion or weed issues noted.

reclamation. This becomes especially difficult where topsoil and subsoil layers have a similar colour, and can only be distinguished by distinct soil piles or soil chemistry.



Stockpiled soil without adequate seeding –weed infestation noted in foreground.

On 15 sites, the amount of stored soil appeared inadequate to allow for full reclamation of the site. Furthermore, soil piles had not been seeded on 29 sites, increasing the risk of erosion and weed establishment. Given the large number and distribution of oil and gas sites, the spread of weed species potentially becomes a landscape level problem rather than just a site level problem. However, where seeding has been undertaken, the resulting vegetative cover and weed control was generally good. Consequently, improved soil management practices would facilitate reclamation of some of the well and facility sites examined.

Ability to Reclaim Access Roads



No stockpiled soil along access road.

New wells are usually accessed via new roads. Of the 66 active well sites examined in the field, access roads for 13 were built without stripping and/or storing soil for eventual reclamation of the road. Some of those roads were apparently built by spreading soil from the ditchline on top of undisturbed ground and capping the road surface with gravel. The resulting soil compaction and admixing will hinder any eventual reclamation efforts. This practice could permanently damage the physical capability of the roadways for future agricultural use. Some of these roads may have been constructed to a permanent standard at the request of the landowner for agricultural purposes.

Gauging the Impact of Facilities

The ALC views facilities associated with oil and gas activities, such as batteries and compressor stations, as an industrial use that generally excludes agricultural use for long periods of time. Consequently, facilities where the area of existing and proposed buildings and structures (footprint) on a quarter section exceeds a combined area of greater than 450 square metres, are deemed as high risk and must be submitted to the ALC for decision. However, the Delegation Agreement does not specify how to measure the footprint, i.e. what part of and types of buildings and structures to include in the calculation. In addition, the OGC's dual approval



Note the large fenced off area of this facility.

processes for surface land and the equipment requirements for facilities sometimes do not coincide. Also, applicants can seek to add to existing facilities by using an OGC Notice of Intent, which does not undergo scrutiny or consideration of these ALR requirements. While the audit did not find any facilities with building footprint exceeding 450 square metres that did not go through the correct ALC application process, current processes create a risk that this may occur.

Auditors also found that the building footprint does not indicate the extent of farm land alienated from agricultural use by facilities. Many buildings are supported on pilings rather than by concrete foundations or slabs, which would facilitate their eventual removal with little impact to underlying soils. However, buildings were often distributed within fenced enclosures of up to two hectares, with that total fenced area unavailable for agricultural use. A substantial portion of the developed area was usually capped with aggregate (gravel or crushed rock) to allow for regular and all-season traffic by equipment. Therefore, the total site area for a facility likely provides a better indicator of the area alienated from long term agricultural use.

Recommendations

1. OGC currently does not track the timing of pipeline reclamation, creating uncertainty as to whether pipelines are being promptly reclaimed within the specified timeframes. To fulfill its obligations under section 6.2 of the Delegation Agreement, the OGC should develop a process to track whether owners are reclaiming pipelines and are submitting a Schedule B report within 24 months.

2. While soil management practices were appropriate for most well and facility sites, in some cases the inadequate separation or storing of soil will make the eventual reclamation of the sites more challenging. Accordingly, the OGC and ALC should consider developing best management practices to guide operators in the stripping and stockpiling of soil for well sites, facility sites, and associated roads.
3. Under the Delegation Agreement, the total building and structure area (footprint) is used to indicate the risk of facilities to agricultural capacity and determine the appropriate application process. However, the footprint does not provide a meaningful indicator of potential impact, and current processes do not accurately assess the footprint area. The OGC and ALC should review its processes for assessing proposals for facilities associated with oil and gas development.

Audit Opinion

In my opinion, with one exception, the planning and field activities carried out by the Oil and Gas Commission in the Peace River Regional District, between April 1, 2006 and March 31, 2008, conformed, in all significant respects, with the requirements of Sections 2, 6 and 7 of the *OGC / ALC Delegation Agreement, April 1, 2007*, as of October 2008.

As described in the *Timeliness of Confirmation of Pipeline Reclamation* section of this report, the audit identified a situation of significant non-conformance related to the timeliness of Schedule B confirmation of pipeline reclamation.

In reference to conformance, the term “in all significant respects” recognizes that there may be minor instances of non-conformance 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 planning and practices to support an overall evaluation of conformance with the Delegation Agreement.



Christopher R. Mosher CA, CEA (SFM)
Director, Audits

Victoria, British Columbia
February 19, 2009



Delegation Agreement

OGC / ALC Delegation Agreement, April 1, 2007

This agreement made the 1st day of April, 2007.

BETWEEN:

PROVINCIAL AGRICULTURAL LAND COMMISSION ("ALC")
133 – 4940 Canada Way
Burnaby, B.C. V5G 4K6

AND:

OIL AND GAS COMMISSION ("OGC")
200, 10003 – 100th Avenue
Fort St. John, BC V1J 6M7

WHEREAS the ALC is responsible for approving applications for the non-farm use of Agricultural Land Reserve lands (ALR), including oil and gas activities and pipelines, under the Agricultural Land Commission Act (the "Act");

AND WHEREAS the OGC is responsible for regulating oil and gas activities and pipelines under the Oil and Gas Commission Act, Petroleum and Natural Gas Act and Pipeline Act;

AND WHEREAS preserving and protecting agricultural land and oil and gas development are both important to the economic, social and environmental sustainability of British Columbia;

AND WHEREAS the ALC and the OGC wish to further the one window regulation of the oil and gas industry and seek ways to streamline and improve the review and approval processes for applications for oil and gas activities and pipelines on ALR lands while preserving agricultural lands and encouraging the farming of agricultural lands;

NOW THEREFORE the ALC and the OGC agree, pursuant to section 26 of the Act, to enable the OGC to exercise the powers of the ALC under subsections 25 (1) and (2) of the Act, to decide applications for oil and gas activities and pipelines on ALR lands, and to exempt certain oil and gas activities and pipelines on ALR lands, as set out in this agreement, from the requirement of an application under the Act.

1 Applicability of Agreement

This agreement applies to ALR lands in the Peace River Regional District and Northern Rockies Regional District upon which oil and gas activities and pipelines are proposed, constructed or operated.

Applications and decisions for other non-farm use, subdivision, exclusion or inclusion remain the responsibility of the ALC and are not part of this agreement.

2 OGC Responsibilities

2.1 The OGC will exercise its delegated powers and operate under this agreement as follows:

2.1.1 receive, consider and decide to approve or not approve applications set out in article 6 for oil and gas activities on ALR lands by:

2.1.1.1 ensuring decisions are consistent with the purpose and intent of the Act,

2.1.1.2 adhering to all or part of the guidelines in Appendix II ,

2.1.1.3 minimizing impacts of oil and gas activities and pipelines on ALR lands, having regard for the sound development of the oil and gas sector, and

2.1.1.4 providing copies of the applications to relevant local governments as notification and considering issues or concerns raised by the local government, if any;

2.1.2 receive, evaluate and record pre-disturbance assessments as set out in Schedule A of this Agreement, submitted to the OGC under article 6 or article 7;

2.1.3 provide such other information as may be requested by the ALC to assess oil and gas development on ALR lands.

2.2 For clarity, the OGC Commissioner and Deputy Commissioner are authorized to approve or not approve ALC applications submitted under article 6.1 of this agreement.

2.3 When land is no longer required for an oil and gas activity or pipeline on ALR lands, the OGC will:

2.3.1 require the owner of the oil and gas activity or pipeline to submit a completed post-reclamation site assessment report as set out in Schedule B, to the OGC and the surface landowner, and

2.3.2 evaluate and record Schedule B assessments before issuing a Certificate of Restoration for wellsites or other oil and gas activities.

2.3.3 evaluate and record Schedule B assessments for pipelines immediately upon completion of construction and reclamation, upon request for approval to abandon or within a maximum of 24 months after installation.

2.4 For clarity, articles 2.3, 3.1, 3.2 and 3.3 apply to oil and gas activities or pipelines on ALR lands approved or authorized before the effective date of this agreement and for which Schedule B reports have not been submitted as of the effective date of this agreement.

3 Inspection and Compliance

3.1 As part of its general inspection programs, the OGC will develop an inspection program satisfactory to the ALC and OGC for the inspection of oil and gas activities and pipelines approved by the OGC under article 6 or authorized under article 7 and conduct inspections to ensure compliance with the Act and the requirements under this agreement.

3.2 The OGC will investigate and take appropriate remedial and enforcement actions as authorized under section 56 (1) of the Act for non-compliance of oil and gas activities and pipelines on ALR lands with the Act and regulations. Remedial and enforcement actions include inspections, stop work orders, determinations and remediation orders, order of compliance and penalties.

3.3 The OGC will investigate and respond to all complaints from landowners regarding reclamation of sites disturbed by oil and gas activities and pipelines on ALR lands approved or authorized under this agreement and seek the advice of a Professional Agrologist, if appropriate.

3.4 The OGC will ensure its inspectors have a general knowledge and awareness of appropriate reclamation practices on ALR lands and seek the advice of the landowner or a Professional Agrologist regarding any areas of concern.

3.5 The OGC may also take appropriate enforcement actions under other Acts and regulations administered by the OGC.

4 Reporting, Data Gathering and Information Sharing

4.1 The OGC will submit to the ALC by May 1 of each year or such other date agreed upon by the ALC Chief Executive Officer and OGC Commissioner, a report summarizing the following information for the preceding annual period:

4.1.1 Total number of Schedule A's for activities exempted from application

4.1.2 Total number of Schedule B's

4.1.3 Total number of ALC applications approved by the OGC Commissioner and/or Deputy Commissioner

- 4.1.4 Total number of ALC applications not approved by the OGC Commissioner and/or Deputy Commissioner
- 4.1.5 Total number of investigations
- 4.1.6 Total number of enforcement actions under this agreement
- 4.1.7 Summary of individual investigations and enforcement actions (individual or table form acceptable) including:
 - 4.1.7.1 Oil and gas company contact information
 - 4.1.7.2 Surface landowner contact information
 - 4.1.7.3 Location of the oil and gas activity or pipeline
 - 4.1.7.4 Description of the issue or concern
 - 4.1.7.5 Resolution of the issue or concern
- 4.2 The OGC will gather and keep appropriate statistics and information on all applications, activities exempted from applications, inspections and compliance matters dealt with under this agreement and necessary for the preparing of reports under article 4.1 and conducting audits under article 5.
- 4.3 The Parties agree to exchange information related to the administration of this Agreement (i.e. compliance reports; annual inspection reports; audits) to the extent permitted by and in accordance with their respective privacy and/or access to information legislation.
- 4.4 All information supplied to by one party o another may not be disclosed without the consent of the supplying party, except as required by law or for investigative and enforcement purpose.
- 4.5 Where a Party discloses information as a requirement of law, the disclosing party shall immediately notify the other party the details of such disclosure.

5 Audits

An audit team approach including staff representatives from both the ALC and OGC along with an independent auditor will be used to determine delegation effectiveness. The OGC, at its cost, will retain the services of an independent auditor, satisfactory to

the ALC, to annually review a sample of decisions and activities authorized without applications, under this agreement. The purpose of the audit is set out in Appendix III attached to this agreement. The general Terms of Reference for the audit will be based on Appendix III and details of the audit will be approved by ALC and OGC Commissioner each year. The ALC Chief Executive Officer and OGC Commissioner may by mutual agreement specify additional requirements for an annual audit.

6 Oil and Gas Activities Requiring an Application to OGC

6.1 As per article 2.2 of this agreement, an application under section 20 (3) of the Act to the OGC is required for the oil and gas activities on ALR lands marked by an "X" in column 2 of Appendix I provided that all of the following conditions are satisfied:

6.1.1 the surface landowner has consented by signing a surface lease agreement with the owner of the proposed oil and gas activity, or by signing a Form C/General Instrument, or the entry, occupation or use has been authorized by an order of the Mediation Arbitration Board;

6.1.2 the owner of the proposed oil and gas activity obtains advice regarding the site assessment, construction of the development and reclamation of the land, from a reclamation specialist with appropriate training and a minimum of 2 years of related experience in land reclamation; and

6.1.3 the owner of the proposed oil and gas activity files the following reports with the OGC, which must be prepared in consultation with the surface landowner prior to constructing the development:

6.1.3.1 an assessment of the site as set out in Schedule A;

6.1.3.2 a site reclamation plan for restoring the land to an equivalent topographic and soil condition that existed prior to disturbance, as set out in Schedule B;

6.1.3.3 a report which provides evidence that the proposed oil and gas activity complies with paragraphs 6.1.1 and 6.1.2 and which includes a detailed survey plan.

6.2 If an oil and gas activity is approved under article 2.1.1, it is a condition of the approval that when the land is no longer required for the oil and gas activity, the owner of the oil and gas activity must reclaim the disturbed area in accordance with Schedule B (or any other condition as set by the OGC) and submit a Schedule B report to the OGC and the surface landowner upon completion of reclamation work, prior to applying for a Certificate of Restoration. For pipelines, the owner of the pipeline must reclaim the disturbed area in accordance with Schedule B (or any other condition as set by the OGC)

and submit a Schedule B report to the OGC and the surface landowner within 24 months of installation and reclamation of a pipeline.

6.3 The OGC may refer an application received under this article to the ALC for decision for the following reasons:

6.3.1 The decision, if made by the OGC, may give rise to a real or perceived conflict of interest;

6.3.2 The decision, if made by the OGC, conflicts with, or appears to conflict with a policy of the ALC;

6.3.3 The decision may result in a significant controversy between the ALC and a government agency, industry, or the public; or

6.3.4 Other circumstances mutually determined by the ALC Chief Executive Officer and the OGC Commissioner.

7 Oil and Gas Activities and Pipelines Exempted From Application

7.1 As provided by section 26 (2) of the Act, the oil and gas activities and pipelines marked by an "X" in column 4 of Appendix I are exempt from the requirement of an application under section 20 (3) provided that all of the following conditions are satisfied:

7.1.1 the surface landowner has consented by signing a surface lease agreement with the owner of the proposed oil and gas activity or pipeline, or by signing a Form C/General Instrument, or the entry, occupation or use has been authorized by an order of the Mediation Arbitration Board;

7.1.2 the existing and proposed buildings and structures which are part of the oil and gas activities or pipelines on a quarter section or equivalent area have a combined area of less than or equal to 450 square meters;

7.1.3 the combined total area occupied by existing and proposed oil and gas activities is less than 17 acres per quarter section (or 7 hectares per 65 hectare parcel);

7.1.4 the owner of the proposed oil and gas activity or pipeline obtains advice regarding the site assessment, construction of the development and reclamation of the land, from a reclamation specialist with appropriate training and a minimum of 2 years of related experience in land reclamation; and

7.1.5 the owner of the proposed oil and gas activity or pipeline files the following reports with the OGC, which must be prepared in consultation with the surface landowner prior to constructing the development:

7.1.5.1 an assessment of the site as set out in Schedule A;

- 7.1.5.2 a site reclamation plan for restoring the land to an equivalent topographic and soil condition that existed prior to disturbance as set out in Schedule B;
 - 7.1.5.3 a report which provides evidence that the development complies with paragraphs 7.1.1 through 7.1.4 and which includes a detailed survey plan.
- 7.2 If an oil and gas activity is exempted under this article, it is a condition of the exemption that when the land is no longer required for the oil and gas activity, the owner of the oil and gas activity must reclaim the disturbed area in accordance with Schedule B (or any other condition as set by the OGC) and submit a Schedule B report to the OGC and the surface landowner upon completion of reclamation work, prior to applying for a Certificate of Restoration. For pipelines, the owner of the pipeline must reclaim the disturbed area in accordance with Schedule B (or any other condition as set by the OGC) and submit a Schedule B report to the OGC and the surface landowner within 24 months of installation and reclamation of a pipeline.
- 7.3 Despite article 7.1, the OGC may require an application to be submitted if the OGC believes the proposed oil and gas activity or pipeline may significantly impair the agricultural use of the quarter section or equivalent area of ALR land on which the proposed oil and gas activity or pipeline will occur;
- 7.4 This agreement does not affect applications that may be required under other statutes for oil and gas activities.

8 Applications to the ALC

Applications under Section 20 (3) of the Act continue to be the responsibility of the ALC and follow the regular process for non-farm use applications submitted to the appropriate local government for the following:

- 8.1 Oil and gas activities marked by an X in column 3 of Appendix I;
- 8.2 Where the existing and proposed buildings and structures which are part of the oil and gas activities or pipelines on a quarter section or equivalent area have a combined area of greater than 450 square meters; and
- 8.3 Where the combined total area occupied by existing and proposed oil and gas activities is greater than 17 acres per quarter section (or 7 hectares per 65 hectare parcel).

9 Reconsideration

Reconsideration of an approval granted by the OGC under article 2.1.1 will be handled in accordance with the Agricultural Land Commission Act section 33.

10 Fees

The OGC may retain the entire fee payable under section 34 of the ALC Act, or if a fee is deemed unnecessary the fee may be waived. Applications submitted to the ALC in Column 3 continue to require a fee.

11 Disputes

- 11.1 If a dispute arises regarding whether the OGC or ALC should consider a specific application, the ALC Chief Executive Officer and OGC Commissioner will decide jointly.
- 11.2 A dispute between the parties regarding the interpretation of a provision of this agreement will be resolved by the ALC Chief Executive Officer and OGC Commissioner.

12 Term

- 12.1 The term of this agreement shall be for 1 year commencing on the effective date of this agreement unless extended by mutual agreement of the ALC CEO and the OGC Commissioner.
- 12.2 Either party may terminate the agreement on giving 3 months notice to the other party or by mutual agreement of the ALC Chief Executive Officer and the OGC Commissioner.

13 Effective Date

Subject to the execution of this agreement by the parties, the effective date is April 1st, 2007.

PROVINCIAL AGRICULTURAL LAND COMMISSION

Erik Karlsen, Chair

Signature: original signed

OIL AND GAS COMMISSION

Ross Curtis, Oil and Gas Commissioner

Signature: original signed

APPENDIX I

Responsible Agency for Applications under the Agricultural Land Commission Act

	Non-farm Use	ALC Act Application to OGC	ALC Act Application to ALC via local govt	Exempt from ALC Act Application ¹	Application to OGC under other Acts
1	Pipelines and surface facilities directly related to operation of the pipelines			X	X
2	Wells on existing sites			X	X
3a	Up to 3 stand-alone well sites per quarter section or equivalent area, including access roads & facilities directly related to operation of the well			X	X
3b	4th stand-alone well site per quarter section or equivalent area, including access roads and facilities directly related to operation of the well	X			X
3c	5th or greater stand-alone well sites per quarter section or equivalent area, including access roads & facilities directly related to operation of the well		X		X
4a	Change in use from a well to an activity described in item 5 (<450 sq. m.)	X			X
4b	Change in use from a well to an activity described in item 5 (>450 sq. m.), 8 or 9		X		X

5	Batteries, compressor stations, drilling and production waste handling, produced water and gas handling or processing facilities, and the combined area of associated buildings and structures on the quarter section or equivalent area is less than or greater than 450 sq m	X Bldg area less than 450 sq. m.	X Bldg area greater than 450 sq. m.		X
6a	Electric power lines immediately adjacent to access roads ²			X	X
6b	Electric power lines not adjacent to access roads ²	X			X
7	Commercial waste handling and disposal, including deep well disposal projects		X		X
8	Other facilities not exclusively related to oil & gas production, including material & equipment storage		X		X
9	Proposed oil & gas activity on a quarter section or 65 hectare parcel in which the combined total area occupied by existing and proposed activities is greater than 7 hectares (or 17 acres)		X		

1. Exempted uses are subject to specified conditions of reporting and reclamation set out in this agreement.
2. Electric power lines do not require Schedule A and B reporting

APPENDIX II

Guidelines for Reviewing Applications for Oil and Gas Activities and Pipelines on ALR Lands

Note: These guidelines are not all inclusive as each oil and gas activity or pipeline or the ALR land on which the activity or pipeline is proposed may have unique characteristics that may require different or additional considerations.

1 Land resource

- What is the agricultural potential of parcel of land?
- Is the land suitable for agriculture now or with improvements?
- Productivity
- What is the present land use? If it is currently cultivated or used for grazing a little more attention to impact will be necessary than for forested Crown land where the vegetation will have to be removed.
- What is the Agriculture capability rating (references: Land Capability Classification for Agriculture in BC, MOE Manual 1, 1983 and agriculture capability rating/map in Schedule A report). More attention and concern for Class 1-3 lands and less concern for class 4-6.

2 Agricultural concerns

- Will the proposed use permanently damage the physical capability of the land for agricultural use?
- What are the physical restrictions that may interfere with farm use (footprint, percent of parcel alienated from agricultural use; density of oil and gas development)
- What is the cumulative effect of these uses on the agricultural use of the land? How much of the area is now limited to agricultural use?
- Does the proposed use and its location impinge on field patterns, making the land difficult to cultivate (turn tractors etc.)?
- Can what is being proposed be accomplished in a different way (ie. twinning, directional drilling, shared access row)?
- If the access road cuts through the middle of a field can it be located along a field edge or fence line to minimize alienation of part of the land?
- Can an existing disturbed area be used to minimize new disturbance?
- Is the oil and gas activity located close to calving areas, buildings and grain storage facilities?
- Other surface landowner concerns specific to the agricultural use of their land

3 Area concerns

- Local government concerns
- If necessary, request recommendation or information from other sources such as Ministry of Agriculture and Lands, local government agricultural advisory committee or other agricultural stakeholders.

4 Request the opinion of a qualified professional

5 View property and meet with applicant on site if necessary

APPENDIX III

AUDIT

Purpose: To ensure that the Oil and Gas Commission carries out its responsibilities as set out in the delegation agreement and is making decisions while respecting the purpose and intent of the Agricultural Land Commission Act.

Independent Auditor:

The Oil and Gas Commission will acquire the services and cover the costs of an independent auditor once per year to review a sample of activities under this agreement.

The auditor's report will be submitted to the Provincial Agricultural Land Commission for use in reporting to the Minister of Sustainable Resource Management.

The auditor must meet the following requirements:

- be independent (not part of OGC or ALC staff);
- be a Professional Agrologist with soils specialty and a member in good standing with an accredited professional body;
- be familiar with the Agricultural Land Commission Act and regulations, and;
- be capable of assessing the items set out in audit guidelines below.

The audit team will comprise of the auditor who will lead the audit along with a representative from both the OGC and the ALC. These representatives will provide the auditor with the necessary access to documentation and answer questions as required in order to facilitate and conduct the audit.

Audit Guidelines:

The audit will be based on a reasonable sampling (proportional to activity in a particular area or areas) of Schedule A reports, Schedule B reports, OGC application decisions, investigations and enforcement actions.

Audit terms of reference will be approved by the ALC and OGC Commissioner each year.

The auditor will review and report on the following taking into consideration the purpose and intent of the *Agricultural Land Commission Act*:

- i. impact of oil and gas uses on ALR lands and agricultural use of those lands;
- ii. effectiveness of reclamation of ALR lands disturbed by oil and gas activities as approved by the Oil and Gas Commissioner or exempted from application under an agreement under section 26 of the Agricultural Land Commission Act;
- iii. investigations and enforcement actions, and;
- iv. other matters as identified and agreed upon by the ALC and OGC such as local government concerns, OGC staff concerns, agricultural stakeholder concerns.

SCHEDULE A

SITE ASSESSMENT REQUIREMENTS:

The soils of the surface lease and related developments must be documented prior to construction so that the reclamation of the land can be planned effectively and reclamation requirements can be achieved. The objective of reclamation is to return the land to an equivalent capability to what existed prior to development. This means that operators must plan their operations to ensure that conditions on the reclaimed site are similar to pre-construction conditions. This report will set out the reclamation plan and identify a baseline of information to refer to when reclamation work is being undertaken.

These assessment requirements are intended to provide the flexibility to respond to practical realities of differing site characteristics and soils. There is room for interpretation of the Schedule A assessment criteria based on site specific issues and the professional judgement of the specialist hired to carry out the assessment.

Surface lease means all leases, easements, and rights-of-way which may be required for a well site, access road, pipeline, camp, workspace, sump, borrow pit and/or any other area related to oil and gas production.

It is recommended that the owner of the development be familiar with the Weed Control Act and its regulations to ensure that the construction, management, and reclamation of the surface lease is in compliance with this Act.

The level of effort required to conduct site assessments will vary depending on local conditions, but the following requirements are the minimum information, which must be filed with the Oil and Gas Commission and the surface landowner:

NOTE: Site Development should NOT occur when the soil is extremely wet

Site Information:

- well name/location or pipeline location (well to well)
- proposed oil and gas development (list all)
- for wellsite/access applications, approximate total area disturbed by existing access roads and wellsites on each quarter section (in square meters or hectares)
- Area of existing and proposed buildings and structures at the location (in square meters or hectares)
- petroleum company name contact information
- location and legal description of property(s)
- name and contact information of surface landowner or specify if Crown land
- date of site assessment

- name and address of person conducting the site assessment
- approximate construction date
- Form C signed by the surface landowner or representative

Site Description:

- A brief description of the surficial geology. This information is available from published soil surveys and government reports.
- The agricultural capability rating from published resource inventory maps, such as the Canada Land Inventory maps.
- Current land use (cultivated, forested, range/grazing or other)
- A rating of the surface drainage as good, moderate or poor and a description and location of any existing natural water courses.
- A description of the site topography, indicating the gradient and aspect of slopes.

Sampling Procedures:

The primary purpose of the site assessment is to document the soil quality, quantity, and profile of the surface lease. Soil sampling can be done with hand tools, an auger, or construction equipment. The following procedures must be followed:

- The soil conditions of a well site, camp, borrow pit etc. must be sampled at five locations: one sample must be taken 5 m inside from each corner of the surface lease boundary, and one sample must be taken at the center of the surface lease. This is the minimum number of samples; more may be necessary based on site conditions.
- Access roads and pipelines greater than 500 m in length require one sample on the centerline of the surface lease for every 250 m in length. This is the minimum number of samples; more may be necessary based on site conditions. If a change in landform/topography/soil characteristics/vegetation is noticed while traversing the right of way, that change should be inspected and/or sampled.
- Access roads and pipelines less than 250 m in length require a minimum of two samples including one at the terminus and one at the midpoint.
- For wellsites, soil samples must extend 20 cm below the B horizon (20 cm into the C horizon), or to a maximum depth of 100 cm below the surface of the ground. Under frozen conditions, the soil samples must extend deep enough to accurately characterize the B horizon(s). For pipelines, soil samples must extend deep enough to accurately characterize the B horizon(s).

Soil Assessment:

A visual analysis of the soil at each sample location should include the following information:

Sample Number	A Horizon Depth (cm)	Description	B Horizon Depth (cm)	Description

The A horizon is the upper portion of the soil profile that has been significantly altered by accumulation of organic matter and by weathering processes. This layer is commonly referred to as “topsoil”. The B horizon is the soil layer below the topsoil that has been altered by weathering but has little or no visible accumulation of organic matter.

The description of each horizon must include its texture class, based on the Canadian System of Soil Classification, Third Edition, 1998.

The A horizon from the five samples from a wellsite, camp, borrow pit etc. must be combined and thoroughly mixed. A portion of this combined sample must be sent to a laboratory for an analysis of its organic content, pH, and texture. A laboratory analysis for pipelines is not required.

Photographs:

Photographs must be taken which show the condition of the surface lease prior to disturbance. Each photograph should have noted with it the location, direction and any comments:

Maps:

The site assessment must include a sketch map and a legal survey plan of the surface lease and associated developments that show the following information:

Large scale map:

- location of where the soil samples were taken
- topographical features such as, slope direction and drainage pattern
- current vegetation and land use
- total area required for development (in square meters or hectares)
- location and description of works required to prevent soil erosion from runoff

Small scale legal survey:

- location of the proposed well site, camp, borrow pit, access road, and pipeline rights-of-way
- location of other existing wellsites, access roads and pipelines on the subject parcel

SCHEDULE B

SITE RECLAMATION REQUIREMENTS:

This report is used to assess if the development site has been appropriately reclaimed and meets the criteria that demonstrate that reclamation is complete prior to a Certificate of Restoration being obtained for a well site or other oil and gas activity and within 24 months of installation and reclamation of a pipeline.

All sites constructed since 1995 must meet the following criteria. Sites that were developed prior to 1995 must also submit a Schedule B report containing the same information but will not be as rigorously reviewed.

The purpose of the following requirements is to ensure that the soil, topography, and vegetation of surface leases and pipelines are restored to an equivalent condition and capability after wells have been decommissioned and pipelines have been installed. Surface lease means all leases, easements, and rights-of-way that may be required for a well site, access road, pipeline, camp, workspace, sump, borrow pit and/or any other area related to oil and gas production. The requirements do not address site contamination and the disposal of wastes as these matters are the responsibility of other government agencies.

These reclamation requirements are intended to provide the flexibility to respond to practical realities of differing site characteristics and soils. There is room for interpretation of the Schedule B assessment criteria based on site specific issues and the professional judgement of the specialist hired to carry out the assessment.

Schedule A reports will be used as part of this review process as a baseline for pre-development information.

A report which documents that the following minimum requirements (in bold) have been met must be filed with the Oil and Gas Commission and the surface landowner prior to a Certificate of Restoration or approval to abandon is issued by the Oil and Gas Commission, or within 24 months of installing a pipeline:

NOTE: site development should NOT occur when the soil is extremely wet

Site Information:

- Well name/legal and well site approval number or pipeline location (well to well).
- Date of construction..
- Petroleum company name contact information.
- Location and legal description of property(s).
- Name and contact information of surface landowner or specify if Crown land.
- Date of site inspection.

- Name and address of person conducting the site assessment.

Definition of Surface Soil:

For the purposes of Schedule B, surface soil means the soil that has been salvaged, amended, and replaced onto the surface lease.

Sampling Procedures:

a. Well Sites, camps, borrow pits

No soil sampling is required for portions of the surface lease where soil disturbance has not occurred. Disturbance includes, but is not limited to, stripping, rutting, trenching, compaction, and erosion.

The quantity and quality of the replaced surface soil on a surface lease must be sampled using a 20 metre x 20 metre sampling grid. The edges of the grid should correspond to the boundaries of the surface lease, and grid should be adjusted to evenly cover the entire lease. A soil sample must be taken from the middle of each 20 m X 20 m grid, for each grid in the surface lease.

A minimum of four control samples must be taken from adjacent undisturbed ground; one each from the center point of each side of the surface lease.

b. Access Roads and Pipelines

The quantity and quality of the replaced surface soil must be sampled at 250 metre intervals for roads and pipelines > 250 m in length, and a minimum of two sampling locations is required for roads and pipelines less than 250 m in length (one at the terminus and one at the midpoint). This is the minimum number of samples; more may be necessary based on site conditions.

Two samples are required for each sampling location. One sample must be taken from the centerline of the access road or one sample must be taken from the disturbed ground over a pipeline, and one sample must be taken from undisturbed ground 10 m outside the boundary of the surface lease.

Soil Assessment:

Each soil sample must penetrate 20 cm below the surface soil, or to a maximum depth of 50 cm. A visual analysis of each sample of the surface soil must include the following information:

Sample Number	Surface Soil Depth (cm)	Description	Admixing %	Aggregate Size
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The description of each sample must include its texture class, based on the Canadian System of Soil Classification, Third Edition 1998. The extent of admixing (i.e. mixing of the B horizon into the A horizon) must be recorded. The admixing classes are: 0-10%, 10-20%, 20-30% 30-40%, 40-50% and >50%.

The aggregate size distribution for each sample of the surface soil must be recorded. The aggregate size classes are: <2 cm, 2-5 cm, and >5-10 cm. **No soil aggregates greater than 10 cm are allowed.**

The surface soil from five representative samples from a wellsite, camp, borrow pit, etc. must be combined and thoroughly mixed. A portion of this combined sample must be sent to a laboratory for an analysis of its organic content, pH, and texture. A laboratory analysis for pipelines is not required.

A visual analysis of each sample from undisturbed ground must include the following information:

Sample Number	A Horizon Depth (cm)	Description	B Horizon Depth (cm)	Description

The description of each sample must include its texture class, based on the Canadian System of Soil Classification, Third Edition 1998.

Soil Reclamation Requirements:

The following minimum reclamation standards must be met:

a. Depth of Surface Soil

- The required replacement depth (RRD) of surface soil is 80% of the depth of the average A horizon on the adjacent undisturbed ground.
- The average replacement depth (ARD) is the average depth of all the surface soil samples. The ARD must be equivalent to or greater than the RRD.
- The minimum replacement depth (MRD) is 80% of the RRD. **All surface soil samples must be > the MRD, except for surface leases which were originally covered by native trees or shrubs or where the average A horizon depth on the undisturbed ground is <10 cm,**
 - Sites which were covered by trees or shrubs may have three surface soil samples, which are not adjacent, that are > 40% of the RRD.

- The MRD requirement does not apply where the average A horizon depth on the undisturbed ground is <10 cm, but the available surface soil must be replaced as evenly as possible across the entire surface lease.

b. Mixing of Soil Horizons

- **The average admixing of all the surface soil samples must not be greater than 30%.** That is, the average of the samples must be composed of less than 30% of non-surface soil (B horizon).

c. Soil Structure

- **The average aggregate class of the surface soil samples must be the same as the average aggregate class of the samples from the undisturbed ground.**
- The bulk density of the subsoil of the disturbed ground for each sampling location must not be more than 120% of the average bulk density of the subsoil of the undisturbed ground.

Topographic Requirements:

The topography of the surface lease must be restored to its original or better condition. The reclamation of the surface lease is to be assessed by comparing the reclaimed site, as a whole, with adjacent undisturbed ground. The following requirements must be met:

Criteria:	Requirement:
Drainage	<ul style="list-style-type: none"> ● Surface drainage must be consistent with the original natural drainage patterns, directions, and capacity, or be compatible with the surrounding landscape. ● Facilities and structures left in place must not impede natural surface drainage and water flow.
Erosion	<ul style="list-style-type: none"> ● The frequency and extent of erosion features must be similar to adjacent undisturbed land.
Contour	<ul style="list-style-type: none"> ● The contour of the surface lease must conform to adjacent land or be consistent with present or intended land uses.
Stability	<ul style="list-style-type: none"> ● No visible evidence of slope movement, slumping, subsidence, or tension cracks are allowed.
Gravel and Rocks	<ul style="list-style-type: none"> ● May not be piled, windrowed, or concentrated in one area unless it improves the agricultural capability of the

	surface lease.
Debris	<ul style="list-style-type: none"> • No industrial or domestic debris is allowed. • No large wood debris that could be removed with a brush rake is allowed, unless permitted in writing by the landowner.

Vegetation Requirements:

Reclamation of a surface lease includes restoring vegetation by either replanting native vegetation or applying a suitable seed mixture. Preventing soil erosion, and preventing an increase in the distribution of weeds, should be the main criteria when choosing a seed mixture.

The reclamation of the surface lease is to be assessed by visually comparing the reclaimed site, as a whole, with adjacent undisturbed ground. The following requirements must be met within 24 months of applying the seed mixture or introducing vegetation:

Criteria:	Requirement:
Species	<ul style="list-style-type: none"> • Seed mixtures must not increase the frequency or distribution of any weed species on the surface lease or on adjacent undisturbed ground. • Seed mixtures must include species that are adapted to the climate and soil conditions of the Peace River region of British Columbia. (contact your local Ministry of Agriculture office if you require information or assistance) • Native species must be similar to vegetation which would occur naturally on the undisturbed ground.
Density	<ul style="list-style-type: none"> • $\geq 80\%$ of the density on adjacent undisturbed ground.
Height	<ul style="list-style-type: none"> • $\geq 80\%$ of height on adjacent undisturbed ground.
Health	<ul style="list-style-type: none"> • Plants should be healthy based on a visual inspection of their vigour, height, and colour.
Cover	<ul style="list-style-type: none"> • The vegetation must cover $> 80\%$ of the soil surface if the species on the reclaimed site are similar to the vegetation on the adjacent undisturbed ground.

	<ul style="list-style-type: none">• Where the species composition on the reclaimed site is different from the vegetation on the undisturbed ground, or the undisturbed ground has been cultivated, vegetation on the reclaimed site must cover > 80% of the soil surface.• Vegetation on the reclaimed site must be evenly distributed, or be similar to the distribution on the undisturbed ground.
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Photographs:

Photographs must be taken which show the condition of the surface lease, associated developments and pipelines after reclamation. Each photograph should have noted with it the location, direction and any comments.

Overall Summary:

A short summary statement suggesting a pass or fail, comments on where criteria have not been met and if this will have a negative impact on the use of the land for agriculture and/or what should be done to remedy the problem areas. Any landowner/occupant comments or requests should be noted.

Report author sign off/signature and date.



**Forest
Practices
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