

2012/13

Oil and Gas Site Restoration Summary

BC Oil and Gas Commission



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Photography

Photographs of aerial well sites (including cover image) and remediated sites provided by Commission staff.

About the

BC Oil and Gas Commission

The BC Oil and Gas Commission is the provincial regulatory agency with responsibilities for regulating oil and gas activities in British Columbia, including exploration, development, pipeline transportation and reclamation.

The Commission's core services include reviewing and assessing applications for industry activity, consulting with First Nations, cooperating with partner agencies, and ensuring industry complies with provincial legislation and all regulatory requirements. The public interest is protected by ensuring public safety, respecting those affected by oil and gas activities, conserving the environment, and ensuring equitable participation in production.

For general information about the Commission, please visit www.bcogc.ca or phone 250-794-5200.



Mission

We regulate oil and gas activities for the benefit of British Columbians.

We achieve this by:

- Protecting public safety,
- Respecting those affected by oil and gas activities,
- Conserving the environment, and
- Supporting resource development.

Through the active engagement of our stakeholders and partners, we provide fair and timely decisions within our regulatory framework.

We support opportunities for employee growth, recognize individual and group contributions, demonstrate accountability at all levels, and instill pride and confidence in our organization.

We serve with a passion for excellence.

Vision

To be the leading oil and gas regulator in Canada.

Values

Respectful

Accountable

Effective

Efficient

Responsive

Transparent

About this Summary

2012/13 Oil and Gas Site Restoration Summary

This Oil and Gas Site Restoration Summary provides an overview of British Columbia's Certificate of Restoration (CoR) program. The BC Oil and Gas Commission (Commission) is responsible for overseeing restoration and issuing CoRs when appropriate, ensuring restoration activities are completed in the public interest with regard to environmental, economic and social effects.

The CoR process ensures land used for oil and gas development is restored to a safe and productive condition. When an oil and gas site, which includes wellsites, facilities and pipelines, is no longer productive, the operator is required to reclaim the site and is not allowed to cease payment on surface land tenures until a CoR has been issued. In order to obtain a CoR, the impacted lands must be returned to a state, as near as is reasonable, to the surface condition which existed before the oil and gas activity was commenced.

Previous site restoration reports and background information on the CoR program can be viewed here:

- [2008 Annual Site Restoration Report](#)
- [2009/10 Site Restoration Annual Report](#)
- [2010/11 Site Restoration Annual Report](#)
- [2011 Oil and Gas Restoration Summary](#)
- [Fact Sheets](#)



Aerial view of a wellsite in Northern BC

Certificate of Restoration (CoR)

The CoR process was established under the Petroleum and Natural Gas Act (PNGA) in October 1973, and is a certificate stating an operator has adequately restored land disturbed by oil and gas activities to a state as near as practical to pre-activity land use and quality according to provincial regulations. These requirements have been updated over time, most notably following the 1998 introduction of the Contaminated Sites Regulation (CSR) by the Ministry of Environment, revisions to the CSR and the Environmental Management Act (EMA) in 2004, and the introduction of the Oil and Gas Activities Act (OGAA) in 2010.

In 2005, the Commission established a department dedicated to ensuring sites meet the requirements of the EMA prior to issuance of a CoR. The Commission subsequently made changes to the CoR application process and information requirements as detailed in Information Letter 06-14, released in 2006.

CoR Application Process

To obtain a CoR for a site, a two-part application must be submitted to the Commission. Part I of this application includes a site assessment identifying the potential presence of contamination. If contamination has been identified, the operator must submit a report detailing how the contamination has been managed. The Commission reviews CoR Part I submissions and may request additional information, site sampling or other actions to assist in determining the adequacy and effectiveness of remedial activities.

Part II of the application requires an effective assessment of surface reclamation activities in restoring site productivity. Upon acceptance of a Part II application, the Commission will issue a CoR. Because of the time necessary for a determination on the success of vegetation reestablishment and other factors, Part II applications are commonly made one or more years after a Part I application is submitted.

If a site is classified as a priority site, it is immediately referred to the Ministry of Environment for review. In addition, the Commission may, upon receiving a CoR application, forward any submission to the Ministry of Environment for oversight of remediation under the CSR site profile process.



Picture of a reclaimed wellsite

All applications for CoRs (Parts I and II) must be submitted by certified environmental professionals operating under a strict code of conduct, legislated and controlled by the provincial government. Eligible professionals include professional engineers, registered with the Association of Professional Engineers and Geoscientists of British Columbia; professional agrologists, registered with the British Columbia Institute of Agrologists; and applied science technologists registered with the Applied Science Technologists and Technicians of British Columbia.



Table 1 - CoR Application Statistics

Fiscal Year	Part-I Received	Part-I Accepted	Part-II Received	Part-II Accepted
2006/07	16	15	0	0
2007/08	100	94	11	11
2008/09	98	91	16	16
2009/10	115	88	26	24
2010/11	103	82	93	84
2011/12	169	158	98	98
2012/13	221	205	135	123

What is involved in Environmental Site Assessment?

Localized soil and groundwater contamination may occasionally be found on oil and gas wellsites and facilities. Contamination may range from nearly undetectable levels of inorganic contaminants, such as salts or metals, to more complex situations involving combinations of petroleum hydrocarbons and other organic and/or inorganic substances.



Lime is added to improve soil salinity conditions

In all cases, when contamination is found, companies must comply with the provisions of the PNGA and EMA. All decisions made by the Commission in issuing CoRs are guided by CSR standards established by the Ministry of Environment.

When evaluating applications for CoRs, the Commission relies on the established Ministry of Environment standards with limited allowance for risk-based assessments¹. For lands within the Agricultural Land Reserve, the surface reclamation requirements of the delegation agreement between the Commission and the Agricultural Land Commission apply in addition to the requirements of the CSR.

A small number of sites may be identified as priority sites based on the [Site Classification Tool](#). The Commission refers these sites to the Ministry of Environment and they are not eligible for a CoR until all high-risk conditions have been addressed and the ministry is satisfied. The Commission will then ensure concerns have been resolved regarding residual contamination prior to issuing a CoR.

¹ Where numerical standards are exceeded, Ministry of Environment procedures, such as screening level risk assessments and detailed risk assessments, provide alternative means for site owners to demonstrate certain sites do not pose a significant risk to human health and the environment. Rationale developed following such procedures may also be used to support a CoR application.

Liability and Remediation

Issuance of a CoR does not absolve operators of any future liability associated with the impacts operations may have on a restored site. The CoR provides assurance to stakeholders that the site has been restored in accordance with current standards and requirements and all known contamination issues or other hazards have been mitigated. Should issues arise in the future requiring additional restoration work at a site that has received a CoR, the operator remains responsible for the full cost of the work.

Provisions pertaining to responsibility for contamination are detailed in the EMA. Should contamination issues be identified subsequent to the issuance of a CoR, the Commission will work with the responsible parties to ensure the issues are rectified. In the event no responsible party can be identified, the Commissioner may designate a site as an orphan site and draw funds from the Orphan Site Reclamation Fund (OSRF) to complete the necessary work.

Landowners who enter into a surface lease agreement under the PNGA to allow a company access to subsurface resources cannot be held responsible for contamination resulting from activities at oil and gas sites unless the contamination was caused or made worse by their own gross negligence or willful misconduct (CSR- Sect. 30).

Effectiveness and Performance Measures

The Commission has the regulatory responsibility to ensure oil and gas sites, which include wellsites, facilities and pipelines are adequately restored in a timely and effective manner. To gauge the Commission's effectiveness, three key measures have been developed and are reported annually. These measures are liability management, application quality and Commission timeliness.

Liability Management Measure

The Liability Management Measure (LMM) is calculated as the number of wells that have received a CoR divided by the number of wells that have been plugged². Plugged wells are wells where operators should be in the process of obtaining a CoR.

Recalling that the CoR process consists of two parts, there is typically a one or two year delay from the time a well is plugged to the time it may be eligible to receive a CoR. In addition, there are approximately 3,656 legacy sites reclaimed prior to the advent of legislated CoR requirements in 1974 and subsequent changes discussed in the background section of this report. These legacy sites are described in detail in the [Assessment of Environmental Liabilities of Historically Reclaimed Sites](#) report published by the Commission.

² Plugged wells are wells that have been permanently plugged and cemented in accordance with the Drilling and Production Regulation to ensure the safety and integrity of the wellbore.

A consistent LMM ratio indicates the CoR process is being managed in a manner consistent with the rate at which wells are being plugged. A decrease in the ratio indicates the Commission should consider taking steps to increase the number of restored wells, which may include actively following up with operators of plugged sites that have not received a CoR.

The LMM for 2008 through 2013 demonstrates the overall liability is consistent. However, the LMM has a slightly decreasing trend indicating restoration is not quite keeping pace with plugging operations. The Commission is monitoring this and taking action to promote the timely restoration of sites.



Table 2 - Liability Management Measure

Period	# of Plugged Wells	# Restored	Ratio
To December 2008	5,768	3,814	0.66
To December 2009	5,849	3,827	0.65
To December 2010	6,092	3,911	0.64
To December 2011	6,372	4,009	0.63
To December 2012	6,606	4,153	0.63
To December 2013	6,815	4,255	0.62

Application Quality Measure

The Application Quality Measure (AQM) is calculated as the number of CoR Part I applications received that are successful upon first submission, divided by the total number of applications for a given period.

A high percentage indicates the applications being received are complete and provide sufficient detail to demonstrate a minimal risk to the public or environment. A low percentage may indicate the submission of incomplete or inadequate applications (see table 3). An AQM of 97.1 per cent in 2012/13 indicates that the majority of applications were complete and contained enough detail to demonstrate a minimal risk to the public or the environment. The AQM in this reporting period was higher than in previous years.

Commission Timeliness Measure

The Commission Timeliness Measure (CTM) is calculated as the average number of days taken by the Commission to review a CoR Part I application during a specified time period.

The number of calendar days to assess a new application of a Part I submission is dependent on multiple factors including:

- The completeness of the submission
- The complexity of issues identified
- The volume and timing of submissions
- The Commission's capacity to manage applications

The average number of calendar days to assess new applications in 2011 was 17.8 days and in 2012 it was 17.6 days. The consistent number from 2011 to 2012 indicates staffing capacity during that period was adequate to process applications in a timely manner in the reported time.



Table 3 - Application Quality Measure

Fiscal Year	Part-I Received	Part-I Accepted	Accepted/Received
2007/08	100	94	94.00%
2008/09	98	91	92.90%
2009/10	115	88	76.60%
2010/11	103	82	79.60%
2011/12	169	158	93.50%
2012/13	221	205	97.10%

Restoration Verification Audits

The Commission's Restoration Verification Audit Program was initiated in 2012 to provide the Commission, First Nations and the public with assurance that residual contamination at reclaimed oil and gas sites is being adequately managed and addressed in accordance with provincial regulatory requirements.

Audit Procedures

Sites to be audited are selected and assessed in accordance with the roles, responsibilities and procedures detailed in the Restoration Verification Audit Procedure Manual. The audit includes a thorough review of files and documentation in addition to field verification of the selected sites including soil sampling at areas of potential environmental concern such as well centre, product storage areas, drilling waste disposal areas, flare pits, and electromagnetic (EM) survey anomalies.

Restoration verification for 2012 was conducted on approximately 12 per cent of the plugged wellsites that received a CoR during 2011/12. Restoration verification for 2013 was conducted on approximately 18 per cent of the plugged wellsites that received a CoR during 2012/13.

Where possible, Treaty 8 First Nations were invited to participate in the Restoration Verification Audits. Two First Nations were involved in site visits in 2012.

The findings from 2012 and 2013 are shown on this page. At the time of publication, two of the sites from 2013 are still under review and evaluation.

Table 4 - 2012 Restoration Verification Audit Findings

WA #	Location	Operator	Owner	In the ALR	Audit Finding
10840	a-04-J/094-H-08	TAQA	Crown	No	Fully Acceptable
6009	d-41-L/094-P-02	EnCana	Crown	No	Fully Acceptable
15698	c-77-A/094-P-02	ConocoPhillips	Crown	No	Fully Acceptable
23531	3-25-87-22	Baytex	Crown	No	Fully Acceptable
12493	d-04-J/093-I-16	ConocoPhillips	Crown	No	Fully Acceptable
7986	12-15-86-18	Pengrowth	Private	Yes	Fully Acceptable

Table 5 - 2013 Restoration Verification Audit Findings

WA #	Location	Operator	Owner	In the ALR	Audit Finding
9247	a-a47-G/094-P-04	EnCana	Crown	No	Fully Acceptable
10239	d-25-C/094-I-08	EnCana	Crown	No	Fully Acceptable
8773	c-91-F/094-H-03	Devon	Crown	No	Fully Acceptable
14355	c-38-I/094-H-08	TAQA	Crown	No	Under Review
7383	d-a59-F/094-G-08	CNRL	Crown	No	Under Review
21356	a-07-J/094-B-16	Progress	Crown	No	Fully Acceptable
9857	b-36-I/094-A-11	CNRL	Private	Yes	Fully Acceptable
7649	7-14-85-18	Devon	Private	Yes	Fully Acceptable
16269	a-43-K/093-P-02	ConocoPhillips	Crown	No	Fully Acceptable

Moving Forward

This site restoration report provides an overview of British Columbia's CoR program for 2012 / 2013. Statistics on performance measures provide comparisons and benchmarks regarding oil and gas site restoration and are reviewed for effectiveness.

Oil and gas activities have been taking place in British Columbia since the first wells were drilled in the East Kootenay region circa 1905. These first wells were largely unregulated and little documentation remains concerning their locations, productivity or abandonment status. The Commission continues to investigate to establish locations and current status of all wells in the province to determine if any remedial activities should be undertaken to ensure they have been abandoned in a safe and environmentally responsible manner.



Using lime in the reclamation process

More Information

Contact Us

For specific questions or enquiries regarding this report, please contact:

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Glossary

Agricultural Land Commission (ALC)

The ALC is an independent Crown agency whose mandate is to preserve agricultural land.

Agricultural Land Reserve (ALR)

The ALR is a provincial zone where agriculture is recognized as the priority use and farming is encouraged and where non-farm uses are regulated; agricultural lands are designated under the Agricultural Land Commission Act.

ALC-OGC Delegation Agreement

An agreement between the ALC and the Commission to further one window regulation of the oil and gas industry and to seek ways to streamline and improve the review and approval process for applications for oil and gas activities and pipelines on ALR lands while preserving agricultural lands and encouraging the farming of agricultural lands. Under the agreement, the Commission is able to exercise the powers of the ALC to decide applications for oil and gas activities and pipelines on ALR lands.

Certificate of Restoration (CoR)

A document issued by the Commission certifying that a wellsite has been restored to meet regulatory requirements. Reclamation is the process of restoring the surface environment to acceptable pre-existing conditions. Wellsites and facilities no longer used for oil and gas production must be reclaimed in order to

receive a Certificate of Restoration. Reclamation on ALR land means returning the land to an equivalent agricultural capability to what existed prior to the oil and gas development.

Contaminated Sites Regulation (CSR)

The Land Remediation Section of the Ministry of Environment is charged with the regulatory role related to all contaminated sites under the CSR. This Section facilitates the remediation of sites and provides operational and procedural guidance. The full CSR can be viewed at the [Ministry of Environment website](#).

Environmental Management Act (EMA)

The Land Remediation Section of the Ministry of Environment administers the provisions for the investigation and remediation of contaminated sites in B.C. under the EMA. The EMA can be viewed at: www.bclaws.ca.

Petroleum and Natural Gas Act (PNGA)

The PNGA regulates the steps and approvals throughout the stages of oil and gas development. The PNGA can be viewed in its entirety at: www.bclaws.ca.

Plugged Well

A well where the borehole has been filled with mud and cement to prevent the flow of water, gas or oil from one strata to another or to the surface.

Suspended Well

A well previously completed but is now no longer being produced.



