



Canadian Natural Resources Limited

Application for New Primary Recovery Scheme
Cold Lake Oil Sands Area

June 7, 2005

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2005-059: Canadian Natural Resources Limited, Application for New Primary Recovery Scheme, Cold Lake Oil Sands Area

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

CANADIAN NATURAL RESOURCES LIMITED APPLICATION FOR NEW PRIMARY RECOVERY SCHEME COLD LAKE OIL SANDS AREA

Decision 2005-059
Applications No. 1081995,
1081996, and 1082375

1 DECISION

Having carefully considered all of the evidence, the Alberta Energy and Utilities Board (EUB/Board) hereby approves Applications No. 1081995, 1081996, and 1082375.

2 INTRODUCTION

2.1 Applications

Canadian Natural Resources Limited (CNRL) applied to the EUB, pursuant to Section 10 of the *Oil Sands Conservation Act*, for approval to operate three new schemes for the recovery of crude bitumen from the Mannville Group in the Cold Lake Oil Sands Area.

Application No. 1081995 pertains to the north half of Section 10 of Township 62, Range 4, West of the 4th Meridian (Section 10-62-4W4M).

Application No. 1081996 pertains to the south half of Section 36-61-4W4M.

Application No. 1082375 pertains to the northwest quarter of Section 6-62-3W4M, the north half of Section 1-62-4W4M, and the southwest quarter of Section 12-62-4W4M.

In the application areas noted above (shown on the attached map), CNRL is requesting that the drilling spacing units be reduced from 64 hectares to 4 hectares, with wells within the application areas having a minimum interwell distance of 100 metres (m) and a project boundary buffer of 50 m. A reduction in the drilling spacing unit would facilitate CNRL's intent to optimize recovery of crude bitumen within the area of these applications.

2.2 Intervention

Sally Ulfsten made a submission in opposition to CNRL's applications on January 14, 2001, and expanded and clarified her objection in a letter dated September 30, 2002. However, she had concerns with respect to the EUB's handling of this application and with CNRL's fulfillment of past conditions that it had inherited with the assets that it had acquired. She was concerned about CNRL's meeting conditions imposed on it through a past EUB decision (*Decision 2000-023*). With respect to the subject applications, Ms. Ulfsten was concerned about human health impacts resulting from the release of solution gas to the atmosphere both from well casing vents and on-site storage tanks, possible acid deposition in the area resulting from solution gas venting, further emissions and noise from natural gas-driven drive engines, and possible impacts on area groundwater supplies resulting from the drilling activity. She was also concerned about

pedestrian safety and increased emissions associated with the increase in traffic that would result from the drilling, servicing, and production of any wells drilled. Ms. Ulfsten also expressed concern regarding CNRL's consultation with area residents. She owns and resides on a portion of the NW quarter of Section 35-61-4W4M, about 800 m from the nearest area of CNRL's applications. At the hearing, Ms. Ulfsten stated that she had reached an agreement with CNRL with respect to her concerns related to the applications under consideration by the Board at this hearing.

Ellen Ulfsten also made a submission in opposition to the CNRL applications on January 14, 2001, and expanded, clarified, and supported her objection in letters dated January 24, 2001, and October 23, 2003. She expressed the opinion that CNRL had not abided by the conditions set out in *Decision 2000-023*, particularly conditions related to the conservation of solution gas. Ellen Ulfsten also expressed concerns about airborne emissions that result from venting and vehicle exhaust. She also expressed safety concerns about hydrogen sulphide settling in low areas that are used for recreational purposes, the possible spread of heavy metals with the disposal of used drilling fluid, and the manner of public consultation that CNRL employed.

Ken Peterson identified several concerns in submissions made on January 24, 2001, September 29, 2002, November 12, 2003, and July 13, 2004. Mr. Peterson's concerns included potential health impacts from casing vents and storage tank emissions, potential groundwater contamination, noise, visual impacts, property devaluation, and increased traffic that would increase the safety risk and damage the roads.

Ellen Ulfsten and Ken Peterson own and reside on a portion of the NE quarter of Section 1-62-4W4M, within the area of applications.

Chuck Farrer submitted a letter on July 9, 2004, objecting to the applications based on negative impact on property values and quality of life, noise, traffic, dust, road conditions, garbage, and odours. Mr. Farrer reiterated his concerns about traffic, dust, road conditions, garbage, and odours in his March 22, 2005, submission. Mr. Farrer owns and resides in a portion of the SE quarter of Section 36-61-4W4M.

Astrid Spiess registered at the commencement of the hearing but after confirming that the agreement between herself and CNRL was registered with the EUB, she did not participate any further in the proceedings.

2.3 Hearing

The Board originally scheduled a hearing to commence on February 15, 2005; however, following the issuance of the Notice of Hearing, the Board received an adjournment request from Sally Ulfsten to give the interveners more time to prepare. CNRL did not object to the granting of the adjournment. The Board rescheduled the public hearing to be held in Bonnyville, Alberta, on April 5, 2005, before Board Members J. R. Nichol, P.Eng. (Presiding Member) and G. J. Miller and Acting Board Member D. K. Boyler, P.Eng. Prior to the opening of the hearing, the Board visited the area of applications. Those who appeared at the hearing are listed in [Appendix 1](#).

At the close of the hearing on April 5, 2005, there were no outstanding undertakings, and therefore the Board considers the hearing to have been closed on that date.

3 APPROPRIATE DISPUTE RESOLUTION

CNRL started its public consultation with respect to these applications in January 2001 and the EUB began receiving written objections from residents of Ardmore and the surrounding area at that time. CNRL engaged in the EUB's Appropriate Dispute Resolution (ADR) process and prior to the opening of the hearing, the ADR provider filed a note indicating that 23 parties had either verbally agreed to withdraw their objections or had signed a formal confirmation of nonobjection.

4 ISSUES

The Board considers the issues respecting the applications to be

- need and appropriateness for the reduced spacing
- traffic
- regional issues

5 NEED AND APPROPRIATENESS FOR THE REDUCED SPACING

5.1 Views of the Applicant

CNRL submitted that approval of the applications is necessary to effectively recover the crude bitumen in the area and for CNRL to equitably recover its share of the reserves in the application areas.

In regard to groundwater protection, CNRL stated that it had committed to test all water wells within 500 m of any proposed drill location to establish baseline quality and quantity. CNRL said that if a well owner suspected that oil activities had affected their water supply, CNRL would retest the well in order to confirm the cause of the problem. CNRL stated that it would consider testing wells that were farther than 500 m away on a case-by-case basis if requested by the owner of a water well. CNRL stated it was also involved, through Lakeland Industrial Community Association (LICA), in a study of the area water supply, demand, and quality, with the purpose being to make recommendations on how to best manage the water resources.

In response to concerns raised by the interveners, CNRL stated that if its activities were suspected of damaging a water well, it would temporarily replace the water supply while a third-party investigation was conducted. If CNRL activities were found to be the cause of the damaged water well, it would replace the water supply on a more permanent basis either by drilling a new well or by some other means. CNRL was not able to give a specific number of investigations it had been involved in to determine the cause of water well damages. The CNRL panel estimated that in the last four years it was involved in between five and ten investigations of suspected damage to water wells. CNRL stated that investigations determined that its activities were not

the cause of the damage in any of these instances where the investigation was complete. CNRL also indicated that one investigation had not yet been completed, so the results were not known.

While CNRL was against blanket restrictions on the use of 24-hour trucking, it committed to restrict trucking on Range Road 440 to between 6:00 a.m. and 10:00 p.m. CNRL said that restricting trucking hours only served to increase the volume of trucking that had to occur when the rest of the population used the roads. Additionally, CNRL added that as both the wells and the facilities were producing on a 24-hour basis, it was most economical to truck on a 24-hour basis as well. CNRL was not aware of, nor was it participating in, any synergy groups focused on addressing trucking issues on a regional basis.

CNRL confirmed that it anticipated that about 25 wells would be drilled in the application areas. It stated that the surface locations had not been selected and that final locations would be selected based on geologic considerations and landowner input. CNRL committed to exceed *Guide 56* minimum notification requirements and notify all parties to a radius of 1.5 kilometres (km) of any proposed well location in the application area.

CNRL anticipated that each well would be expected to produce for three to five years and then it would be abandoned if it was no longer productive. Regarding pad sites, CNRL indicated that it may wait until all wells have stopped producing prior to reclaiming the well pad lease.

In response to concerns raised about drilling in close proximity to the Town of Ardmore and the local golf course, CNRL agreed not to place any surface facilities in the NW quarter of Section 1-62-4W4M.

5.2 Views of the Interveners

The interveners expressed concerns about the intensity of the area development and felt that the cumulative development would reduce the quality of life for the residents in the area and may result in soil and water contamination. Mr. Farrer stated that he had already subdivided 80 acres of his land for residential acreage development and intended to subdivide the remaining portions of his property. He believed that development for bitumen recovery was not conducive to country residential development.

The interveners acknowledged that CNRL stated it did not intend to drill the maximum number of wells that this reduced spacing approval would permit. However, they noted that plans were subject to change and they feared that 16 wells per quarter section would further exacerbate their concerns that the area was already subject to very intensive development.

The interveners also expressed concerns about 24-hour trucking, despite the commitments CNRL made with respect to restrictions on certain roads at certain hours. Mr. Farrer was concerned about the security of the groundwater supply for area residents and suggested that CNRL did not have a backup plan should it negatively impact the groundwater resource. Mr. Farrer was also concerned about gas venting. He further expressed that there were a number of well sites slated for remediation but that there had been promises and subsequent delays with respect to completion of work at those well sites. He was wondering if the addition of numerous wells drilled within this downspacing area would worsen this apparent avoidance of reclamation duty.

Despite the concerns raised, the interveners indicated that they would rather continue working with CNRL on this project than have the proposed applications denied and have to start over with a new company.

5.3 Views of the Board

The Board acknowledges that in this area 4 hectare spacing is appropriate to allow for operational flexibility in locating the wells in a manner that optimizes recovery of the resources and addresses landowner siting concerns. The Board also notes that none of the interveners disputed the need for the reduced well spacing. As such, the Board finds that there is a need for the reduced spacing.

For any wells that are eventually approved in this area, the Board is satisfied that 24-hour trucking is appropriate, with the exception of CNRL's commitment to restrict trucking on Range Road 440, based on the information in evidence. The Board expects CNRL and its contractors to adhere to the trucking restrictions respecting routing of vehicles and vehicle operations.

Alberta Environment has jurisdiction for groundwater and it is the lead investigator for all water well complaints. The EUB participates and joins the investigation as required. The Board acknowledges CNRL's investigation policy and its policy of replacing a damaged water supply. The Board notes that these policies are fairly consistent in the oil and gas industry. The Board is satisfied that these commitments will adequately address the concern about loss or contamination of water wells expressed by the interveners.

The Board notes with interest the comment made by the interveners that they would rather continue to work with CNRL on this project than have to start over again, possibly with a new company. The Board is encouraged by this attitude and the efforts that all the parties have made to get to that point. CNRL is encouraged to maintain the dialogue that it has opened with area residents, and the Board expects CNRL to meet all the commitments it has made to the various parties.

The Board wishes to once again remind the parties that approval of these reduced spacing applications does not mean that the anticipated wells are automatically approved. The Board acknowledges CNRL's commitment to work with landowners in the siting of wells. However, if CNRL is not able to resolve all concerns outside of the Board's adjudicative process, the affected parties will still have the opportunity to file an objection to the well licence application in question. The approval of the spacing application in no way abrogates the rights of an affected party to have its concerns addressed.

The Board notes that CNRL has committed to not placing any surface facilities on the NW quarter of Section 1-62-4W4M in response to concerns raised by the public. The Board expects CNRL to honour this commitment and will advise the EUB's Applications Branch to flag this quarter section accordingly.

6 REGIONAL ISSUES

The interveners took advantage of the hearing to express concerns not specifically arising from the subject applications. These regional and ongoing issues are related to trucking, pipelining, noise, air emissions, and groundwater protection. As the Board believes that these issues merit serious consideration from a regional perspective, they are included below.

6.1 Views of the Applicant

When questioned about any collaborative efforts being made by area operators with regard to many of the areas of the above-noted regional issues, CNRL either answered that it was not collaborating in an official manner with other area operators or that it was working with other operators and the public to address some of these issues through the LICA synergy group. The panel members were only able to provide very limited information respecting the activities currently under way through LICA.

CNRL submitted that it participated in regional air quality studies and monitoring through LICA. It said that LICA was still in the process of collecting data and the results were not published yet. Outside of LICA, CNRL said it had addressed specific landowner concerns by placing monitoring equipment in the landowner's yard. CNRL maintained it had completed three air quality studies and all three had concluded that the ambient air quality guidelines had not been exceeded.

CNRL committed to work with Sally Ulfsten to further study the composition of the vapours emitted from tank vents. A previous study indicated that any compounds found were not in sufficient concentrations to cause health impacts. However, CNRL agreed to do further analysis on tank vent vapours to see if compounds that were not part of the original study were present in tank vapours.

With respect to conservation of solution gas, CNRL acknowledged that it must meet the requirements of *Guide 60: Upstream Petroleum Industry Flaring Guide*. CNRL acknowledged being aware of pending updates to *Guide 60* that would do more to encourage the conservation of solution gas and stated that it would abide by the rules in place at the time; however, CNRL stated that it was not planning to implement any of the upcoming requirements prior to the new *Guide 60* coming into force. When asked to comment on the state of solution gas conservation in the area, CNRL indicated that about 80 per cent of the produced solution gas in the Cold Lake area was being conserved; however, it said that it was very marginal economically.

On the subject of pipelining crude bitumen, CNRL stated that it was not aware of any advances that would make it a feasible alternative to trucking. When asked about the status of trucking produced sand and fluids, CNRL responded that truck traffic intensity would decrease because CNRL and other area operators were using larger trucks, so fewer trips were required to transport the same volumes.

When asked if CNRL thought that LICA was fulfilling its role of looking at the regional issues, CNRL responded that LICA had made great strides on a number of issues, while admitting that it may not have made significant progress on all issues.

6.2 Views of the Interveners

Sally Ulfsten maintained that there were some areas in the province that would always generate a lot of public interest, such as towns and lakes, when an energy company proposed to drill underneath them. She stated that the provincial government, specifically the Department of Energy, should recognize this and discontinue the practice of leasing mineral rights for these areas. Ms. Ulfsten stated this practice would also have the added benefit of maintaining a reserve of oil and gas should it be needed in the future.

Sally Ulfsten expressed concerns about the effectiveness of LICA. She stated that it was funded by industry and appeared to be a forum for industry to “toot its own horn” rather than to resolve any regional issues. She expressed frustration, noting that no local residents were willing to sit on the committee and that the EUB should recognize this situation. Ms. Ulfsten said that she was exasperated when she read EUB decision reports to see that the EUB both trusted LICA to accomplish certain goals and commended it for the good work it had done. Ms. Ulfsten maintained that any good work that LICA had done was simply work that Alberta Environment was required to do and passed on to LICA and, because LICA was industry funded, the results it reported were considered suspect by some parties.

6.3 Views of the Board

The Board is disappointed that CNRL did not seat a panel member with more knowledge respecting the activities that are under way to address the regional issues that have been identified at previous hearings in this area. The Board believes that information on these regional activities would have assisted the Board in understanding how these regional issues are being addressed and whether the resolution of these matters are being advanced in any meaningful fashion. This information would have assisted the Board in getting a good understanding of what gaps in information gathering still exist and in what areas the activity has not met the Board’s expectations.

The Board recognizes that some progress on these regional issues is being made. However, the Board is concerned about the apparent lack of cooperation respecting gas conservation, as well as the apparent lack of activity respecting the advancement of alternatives for the pipelining of crude bitumen production. It does not appear to the Board that the field testing of pipeline options contemplated, if not committed to, at previous hearings have in fact taken place. The CNRL panel members were not able to provide any clarity or update respecting pipelining work completed or being contemplated. Pipelining of production continues to be the only real solution to the problems and concerns related to the trucking of production, and the Board is disappointed that this area of concern does not appear to be addressed in any meaningful manner. These matters pertain to all operators in this area, and the panel intends to raise its concerns with the full EUB Board with a view to possibly initiating a meeting with senior EUB and industry members to review these issues in more detail.

Dated in Calgary, Alberta, on June 7, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

J. R. Nichol, P.Eng.
Presiding Member

<original signed by>

G. J. Miller
Board Member

<original signed by>

D. K. Boyler, P.Eng.
Acting Board Member

APPENDIX 1 HEARING PARTICIPANTS

**Principals and Representatives
(Abbreviations used in report)****Witnesses**

Canadian Natural Resources Limited (CNRL)
P. McGovern

C. Kinniburgh

T. Tillatson

B. Parker

R. Bretzlaff

D. McNamara

B. Wychopen, P.Eng.

S. Ulfsten

S. Ulfsten

E. Ulfsten

E. Ulfsten

K. Peterson

K. Peterson

C. Farrer

C. Farrer

A. Spiess

A. Spiess

Alberta Energy and Utilities Board staff

G. Bentivengna, Board Counsel

G. McClenaghan, P.Eng.

F. Levstik

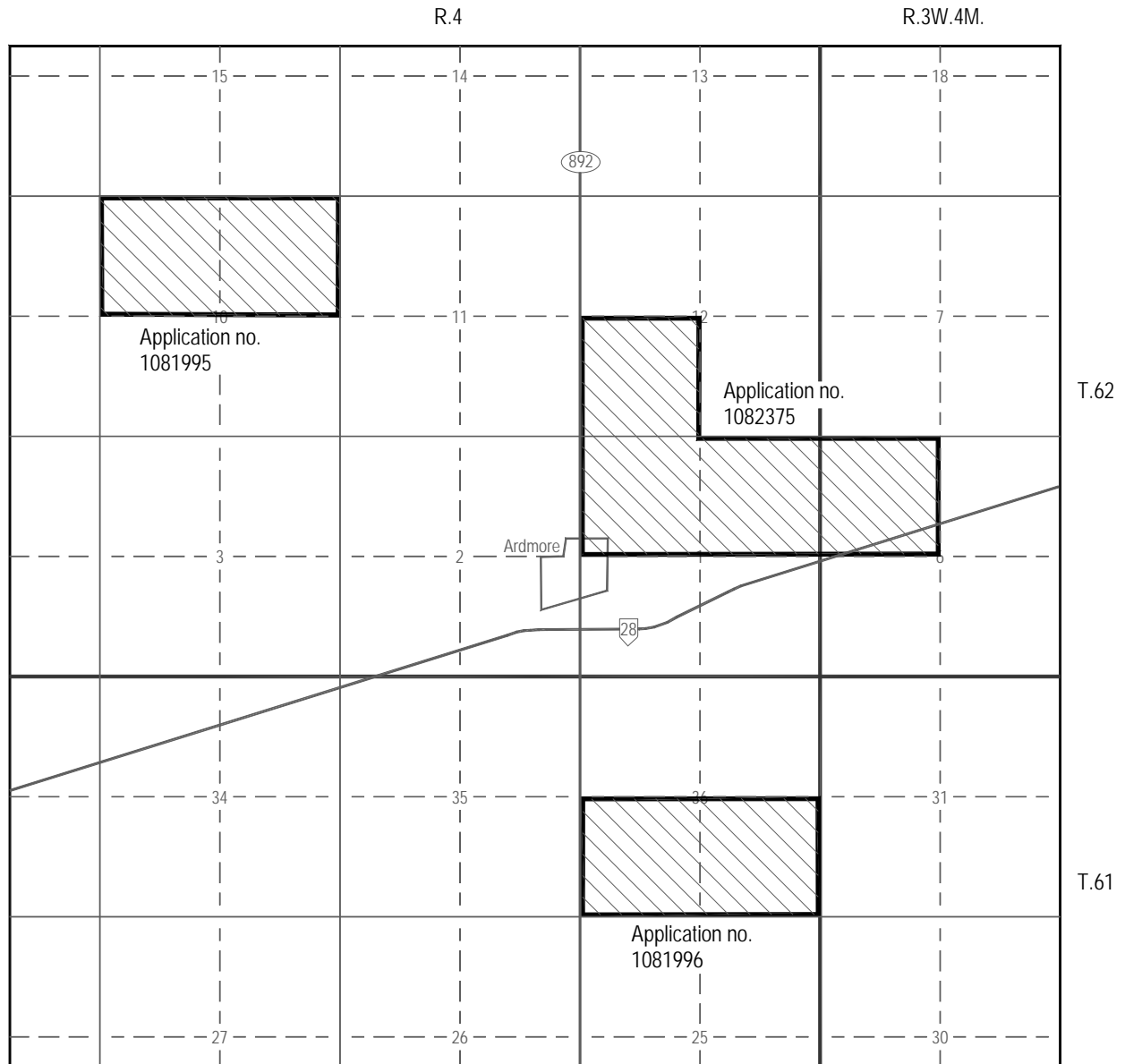
APPENDIX 2 SUMMARY OF COMMITMENTS

The Board notes throughout the decision report that CNRL has undertaken to conduct certain activities in connection with its operations that are not strictly required by the EUB's regulations or guidelines. These undertakings are described as commitments and are summarized below. It is the Board's view that when a company makes commitments of this nature, it has satisfied itself that these activities will benefit both the project and the public, and the Board takes these commitments into account when arriving at its decision. The Board expects the applicant, having made the commitments, to fully carry out the undertaking or advise the EUB if, for whatever reasons, it cannot fulfill a commitment. The EUB would then assess whether the circumstances regarding the failed commitment warrant a review of the original approval. The Board also notes that the affected parties also have the right to request a review of the original approval if commitments made by the applicant remain unfulfilled.

The Board has noted the commitments made by CNRL that were mentioned at the hearing. The Board is aware that there may be other commitments made by CNRL during its public consultation that the Board may not be aware of.

COMMITMENTS BY CNRL

- CNRL will restrict heavy truck traffic to and from the application areas on Range Road 440 to between the hours of 6 a.m. and 10 p.m.
- CNRL will continue to work with Ms. Ulfsten to further the investigation of tank vent emissions.
- CNRL is willing to test all water wells within 500 m of any proposed well location prior to drilling to establish baseline quality and quantity conditions and, upon reasonable request from the owner of the water well, retest the well to see if there have been any changes subsequent to drilling.
- CNRL will not place any surface facilities or well surface locations on the NW quarter of Section 1-62-4W4M. This development restriction will be placed on the EUB's application registry system.



Area of applications