



Canadian Natural Resources Limited

Applications for Well Licences and a Battery

March 15, 2005

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2005-016: Canadian Natural Resources Limited, Applications for Well Licences and a Battery

March 15, 2005

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**CANADIAN NATURAL RESOURCES LTD.
APPLICATIONS FOR WELL LICENCES AND A BATTERY
LLOYDMINSTER FIELD**

**Decision 2005-016 Errata
Applications No. 1331326,
1331327, 1331970, 1358471**

DECISION

The Alberta Energy and Utilities Board has considered the recommendations set out in the following errata to the examiner report, adopts the recommendations, and directs that the corrections described in the errata to the examiner report be adopted as errata to and form part of *Decision 2005-016*.

DATED at Calgary, Alberta, on September 21, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

Neil McCrank, Q.C., P.Eng.
Chairman

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**CANADIAN NATURAL RESOURCES LTD.
APPLICATIONS FOR WELL LICENCES AND A BATTERY
LLOYDMINSTER FIELD**

**Decision 2005-016 Errata
Application No. 1331326,
1331327, 1331970, 1358471**

The Alberta Energy and Utilities Board (EUB/Board) issued *Decision 2005-016* on March 15, 2005, approving Canadian Natural Resources Ltd.'s (CNRL's) Applications No. 1331326, 1331327, 1331970, and 1358471 for licences for three wells and one multiwell oil battery subject to conditions. In Appendix 2 of *Decision 2005-016*, the examiners recorded the following commitment, which was attributed to the evidence given by CNRL's witnesses during the hearing:

Restrict all CNRL truck traffic traveling past the Scriber farm to the 8-10 well to Monday to Friday between the hours of 8 a.m. to 5 p.m., except for emergency access.

Following the issuance of the Board's decision, counsel for CNRL wrote to the Board to request a correction to Appendix 2 of *Decision 2005-016*. CNRL submitted that it did not make the above commitment and that in fact the CNRL witnesses' evidence was that CNRL required access to the well site at all times. CNRL did indicate that it committed to having flush-by trucks attend the site only during daytime hours. CNRL also indicated that it had committed to performing sting processes at the 8-10 site only during daytime hours. Both commitments were subject to emergency conditions arising that would require immediate access to the site.

Counsel for the landowner interveners responded to CNRL's request. The interveners stated that CNRL was alleging that the Board made an error in interpreting the evidence and therefore that CNRL's only recourse was to request a review of the Board's decision.

The examiners have reviewed the record of the proceeding and in particular CNRL's evidence on the commitments it made regarding hours of access to the 8-10 site. The examiners have determined that the examiner report adopted by the Board in *Decision 2005-016* incorrectly recorded the commitment expressed by CNRL's witnesses during the hearing with respect to well site access. The examiners therefore recommend that the second bullet of Appendix 2 of *Decision 2005-016*, under the heading "Commitments by CNRL," be corrected to read as follows:

Except in emergency situations, restrict CNRL traffic travelling past the Scriber farm for the purposes of conducting stinging or flush-by operations to day-time hours.

The examiners note that the portion of Appendix 2 to *Decision 2005-016* that is recommended for correction is a record of the commitments cited by the CNRL witnesses. In the examiners' view, the examiner report, and consequently *Decision 2005-016*, incorrectly recorded the CNRL commitment. It was always the examiners' intention to correctly record the commitments made by CNRL to the interveners. The examiners are not interpreting evidence, as counsel for the interveners suggested in his response letter. The examiners are also not changing their recommendation on the applications. As indicated in *Decision 2005-016*, commitments are

undertakings made by CNRL that arise independent from the Board's decision on the applications.

Dated in Calgary, Alberta, on July 21, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

W. G. Remmer, P.Eng.
Presiding Member

<original signed by>

C. A. Langlo, P.Geol.
Examiner

<original signed by>

B. A. Austin, P.Geol.
Examiner

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**CANADIAN NATURAL RESOURCES LIMITED
APPLICATIONS FOR WELL LICENCES AND A BATTERY
LLOYDMINSTER FIELD**

**Decision 2005-016
Applications No. 1331326,
1331327, 1331970, 1358471**

DECISION

The Alberta Energy and Utilities Board has considered the findings and recommendations set out in the following examiner report, adopts the recommendation, and directs that Applications No. 1331326, 1331327, 1331970, and 1358471 be approved, subject to the conditions set out in the report.

DATED at Calgary, Alberta, on March 15, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

B. T. McManus, Q.C.
Board Member

**EXAMINER REPORT RESPECTING
CANADIAN NATURAL RESOURCES LIMITED
APPLICATIONS FOR WELL LICENCES AND A BATTERY
LLOYDMINSTER FIELD**

**Decision 2005-016
Applications No. 1331326,
1331327, 1331970, 1358471**

1 RECOMMENDATION

Having carefully considered all of the evidence, the examiners recommend that the Alberta Energy and Utilities Board (EUB/Board) approve Applications No. 1331326, 1331327, 1331970, and 1358471, subject to conditions listed in Appendix 2.

2 INTRODUCTION

2.1 Applications

Canadian Natural Resources Limited (CNRL) applied for licences for three wells and one multiwell oil battery, as detailed in the following sections. The proposed projects would be located about 20 kilometres (km) north of Lloydminster. The maximum hydrogen sulphide (H₂S) concentration of the wells and the battery would be 0.0 moles per kilomole (mol/kmol) (0 per cent).

2.1.1 Applications No. 1331326 and 1331327

CNRL applied to the EUB on January 29, 2004, pursuant to Section 2.020 of the *Oil and Gas Conservation Regulations* (OGCR), for licences for two wells in Section 4 of Township 52, Range 1, West of the 4th Meridian (section 4 wells). Application No. 1331326 was for a well licence to drill a slant oil well from a surface location in Legal Subdivision (LSD) 1 of Section 4, Township 52, Range 1, W4M with a bottomhole location in LSD 1-4-52-1W4M (1-4 well). Application No. 1331327 was for a well licence to drill a slant oil well from a surface location in LSD 1-4-52-1W4M with a bottomhole location in LSD 2-4-52-1W4M (2-4 well). The purpose of the proposed wells would be to obtain oil production from the Sparky Member.

2.1.2 Application No. 1331970

CNRL applied to the EUB on February 3, 2004, pursuant to Section 2.020 of the OGCR, for a well licence to drill a slant oil well from a surface location in LSD 1-10-52-1W4M to a bottomhole location in LSD 8-10-52-1W4M (8-10 well/section 10 well). The purpose of the proposed well would be to obtain oil production from the Sparky Member.

2.1.3 Application No. 1358471

CNRL applied to the EUB on August 26, 2004, pursuant to Section 7.001 of the OGCR, to construct and operate a multiwell oil battery in LSD 1-4-52-1W4M. The proposed battery would consist of two heated tanks for storage and measurement of production from the proposed section 4 wells.

2.2 Interventions

In March 2004, objections were received by the EUB from Scriber Farms Ltd. (Scriber Farms), Pete Scriber, Phyllis Margaret Scriber (Margaret Scriber), Dan and Betty Scriber, and Ted Scriber (the Scribers). Ted, Dan, Betty, Margaret, and Pete Scriber all hold shares in Scriber Farms, own land individually, and rent land to Scriber Farms for it to conduct its farming operations. Margaret Scriber owns the southeast (SE) quarter of Section 10-52-1W4M and Pete Scriber owns the SE quarter of Section 4-52-1W4M. The Scribers expressed concerns about the impact of the proposed wells and facility on the health and safety of themselves and their children and the impacts on property values and farming operations. Concerns were also raised about the negative effects of noise and of contaminants in water, air, and soil. Pete Scriber, the landowner of the SE quarter of section 4-52-1W4M, did not appear at the hearing.

In October 2003, Russell Nilsson filed an objection to the proposed section 4 wells. Mr. Nilsson raised concerns about truck routing and traffic, venting, emissions and odours, mud spreading, surface casing, watershed, and fire. Mr. Nilsson later reported that an agreement had been reached on all issues but one, which was the potential negative effect of gas migration on a possible aquifer in the Milk River Formation. As a result, Mr. Nilsson's views are only cited in Section 8 of this report.

The attached figure shows the location of the proposed wells, associated multiwell battery, location of the Scribers' farm, and location of Mr. Nilsson's land.

2.3 Background

CNRL applied for the proposed section 4 wells, followed by the section 10 well, and subsequently applied for the multiwell oil battery located at LSD 1-4. CNRL did not apply for a single-well oil battery at the 8-10 site, which would typically be an exempt activity, in accordance with EUB *Guide 56: Energy Development Applications and Schedules*. *Guide 56* states that if concerns are raised regarding an exempt activity, a nonroutine application may be required. Although CNRL did not file an application for a single-well battery to produce the 8-10 well, the issues around the potential battery at that site were discussed at length at the hearing.

2.4 Hearing

The Board initially scheduled an examiner hearing to be held in Lloydminster, Alberta, on October 18, 2004. On August 30, 2004, the Board received a request to adjourn the hearing. It granted the request and rescheduled the hearing for November 24, 2004. The Board held an examiner hearing commencing on November 24, 2004, before examiners W. G. Remmer, P. Eng., C. A. Langlo, P.Geol., and B. A. Austin, P.Geol. Those who appeared at the hearing and a list of abbreviations used in this report are set out in Appendix 1. The examiners conducted a site visit on November 25, 2004.

The Scribers submitted a requested response arising from the hearing to the Board on December 15, 2004, and CNRL provided a response to that submission on December 20, 2004. The examiners therefore consider the hearing to have closed on December 20, 2004.

3 PRELIMINARY MATTERS

At the opening of the hearing, a request for adjournment was made by the Scribers, as they felt that the applications were not complete. The Scribers argued that notification was not conducted properly on the section 10 well, as a notification package was not provided to them. The Scribers also argued that in regard to the airstrip on their land, discussions with Transport Canada were not in accordance with EUB requirements. The Scribers stated that the complete application with supporting material for the multiwell battery at LSD 1-4 was only provided to the Scribers as the hearing commenced. However, they acknowledged that they would have time to review the multiwell battery application materials following the close of the first day of the hearing.

CNRL said that its notification process was complete and that it had followed the requirements set out in *Guide 56*. CNRL said that it had carried its consultation out with regard to the airstrip located on the Scribers' land appropriately. CNRL acknowledged that although a copy of the multiwell battery application materials were not provided in the application package given to the Scribers, the Scribers were aware of the plans to construct it, since that was part of their negotiations and was referenced in the notification materials and the Notice of Hearing.

The examiners considered the request for adjournment and denied the request, given that the Scribers agreed that the hearing, including the multiwell battery application, could proceed. The examiners also noted that the adequacy of the notification was an issue that could be considered as part of the hearing.

4 ISSUES

The examiners consider the issues respecting the applications to be

- need for the wells and multiwell battery,
- location and access,
- health and safety,
- gas migration and aquifer protection, and
- consultations/negotiations/conditions.

5 NEED FOR THE WELLS AND MULTIWELL BATTERY

5.1 Views of the Applicant

CNRL submitted that it had leased the mineral rights underlying section 10. It stated that the section 10 well would target a regional Sparky sand that it believed, based on geological and seismic information, might contain a productive reservoir. CNRL also stated that the optimal bottomhole location would be in LSD 8. It estimated that the section 10 well, if successful, could produce up to 80 to 100 barrels of heavy oil per day.

CNRL stated that the section 4 wells and multiwell battery were required to drain an existing reservoir. The section 4 wells would also target the Sparky Formation for production of heavy oil. CNRL explained that a well targeting freehold mineral rights was drilled at LSD 9-33-51-1W4M (9-33 well), offsetting the section 4 wells to the south. It added that in 2001 the Alberta

Crown served CNRL with an offset notice because of production from the 9-33 well and gave CNRL the option to drill a well on section 4, surrender the mineral leases back to the Crown, or pay a compensatory royalty. CNRL opted to pay a compensatory royalty to hold the mineral leases and stated that it had paid about \$63 000. CNRL stated that Husky had recently obtained approval for reduced spacing and would likely be applying for wells in LSDs 15 and 16 of section 33, which immediately offset the section 4 wells and could pose a drainage issue if they were drilled. CNRL estimated that the wells on section 4, if successful, would each produce about 80 to 100 barrels of heavy oil per day.

5.2 Views of the Interveners

The Scribers questioned the production rates that CNRL predicted based on data from similar wells in the area. They felt that the production predictions were considerably higher than the data showed and stated that the cost benefit of the wells might not be as good as CNRL predicted. They did not contest CNRL's need to exploit its mineral rights or to drill the wells and construct the associated battery in order to produce the reserves.

5.3 Views of the Examiners

The examiners accept that CNRL has acquired the petroleum and natural gas rights underlying sections 4 and 10 and note that there was no dispute about CNRL's right to exploit its petroleum and natural gas rights. The examiners are satisfied that there is a need for the applied-for wells and multiwell battery to allow CNRL to exploit the mineral rights that it holds, provided that the development can be carried out in a safe and efficient manner.

6 LOCATION AND ACCESS

Because the issues of location and access were raised only with regard to the section 10 well, the following sections deal only with that section.

6.1 Views of the Applicant

CNRL stated that during its negotiations with the Scribers, it had considered at least one alternative location west of the proposed site before selecting the applied-for location. However, it did not select that location due to the extra costs to drill and reclaim in an area that it concluded was more environmentally sensitive. CNRL said that the applied-for surface location in LSD 1-10-52-1W4M was its preferred location, since it would still be able to reach the desired bottomhole location by drilling a slant well. It also believed that this location would minimize the impacts on the Scribers. CNRL stated that its bottomhole location was based on its interpretation of the geological and geophysical data. It also noted that this surface location would fall behind a natural barrier between it and the Scribers' farm. As well, because it was closer to the county road, it would require a shorter access road and would be less costly and difficult to construct and reclaim. CNRL also indicated that it would return a portion of the lease to farming, leaving a "teardrop" configuration to minimize the impact on farm equipment movement.

CNRL stated that the access road required was an approach that would enter the lease from the east, directly off of Range Road 12, and added that it had obtained consent from the County of Vermillion River No. 24 (the County) for this approach. CNRL felt that this location for the

access road would be the safest, as it was on the crest of the hill and would provide the best view of traffic from either direction.

CNRL felt that any construction activities could be done effectively during frozen conditions and that its contractors would be able to construct the well site with little soil admixing and therefore with little effect on the Scribers' land. CNRL stated that it used larger gravel on its leases and access roads to control vehicle speed and dust on the site.

CNRL acknowledged that there were safety concerns about the Scribers' airstrip, but it believed that its proposal would not affect the use of the Scribers' airstrip. CNRL stated that when its traffic was travelling past the airstrip, it would essentially be in a corridor created by a power line on one side and a row of trees on the other and, therefore, would not impose any additional risks to aircraft. CNRL also stated that the structures in the farm yard would be higher than the structures on the well sites, with the exception of the drilling rig, which would only be there for three days.

6.2 Views of the Interveners

The Scribers stated that their alternative location, west of the applied-for site, was raised during their negotiations with CNRL, as they believed it would have less impact on their farming operations. They said that the applied-for location was in an already aerielly restrictive portion of their land due to the natural drainage course and tree belt. The Scribers stated that the area of the applied-for location in the SE of section 10 was already hard to farm with the large equipment they currently used and that adding the well site to that area would hamper farming operations even more. The Scribers also submitted that they considered the soil in that area to be fragile, as it was a lighter, sandier loam, with a very thin layer of topsoil, and that any admixing of soils would have a long-lasting impact.

The Scribers argued that if the 8-10 well were approved, an access road parallelling the county road on the east edge of the quarter section would be a safer option than the proposed access road. They noted that the county road was being used as a bus route and that neighbours used it to access the nearby county water well directly south in section 3. They felt that the proposed approach was in a blind spot, and the risk of a large oilfield truck pulling out in front of an approaching vehicle would be higher and could result in an accident. The Scribers believed that as citizens they were required to look out for their neighbours as well as themselves. Should the access road be approved as applied for, the Scribers requested that CNRL permit them to use it when required and to provide proper approaches, fences, and gates.

The Scribers requested that any excavation on the Scribers' lands occur during the frost-free season in order to reduce soil admixing. The Scribers also requested that all gravel used on the access road and lease be a smaller size than that proposed by CNRL in order to reduce the impacts on their farm machinery once the lease was reclaimed.

The Scribers were concerned with the potential hazards to their airstrip posed by the ongoing well site and battery operations. The Scribers said that not only did they use the airstrip for personal use, but a flying school also frequented the airstrip. The Scribers felt that the traffic associated with the well site and any large structures on the site could pose a potential hazard to anyone using the airstrip.

6.3 Views of the Examiners

The examiners accept that CNRL identified the proposed bottomhole location of the section 10 well based on its interpretation of the geological and geophysical data and that CNRL believes it to be the optimal location for a successful well. The examiners also note that the well is being drilled as a slant well to minimize the surface impact. While the examiners recognize that there will be some inconvenience caused to the farming operations in section 10, they are not convinced that the proposed 8-10 well would prevent the area from being utilized. The examiners note CNRL's intention to allow farming operations to continue on the lease outside of the teardrop-shape area required to check and maintain the well. The examiners believe that the proposed location for the section 10 well is appropriate.

The examiners recognize that both parties agree that access safety is important and they encourage CNRL to ensure that it selects the safest location in consultation with the county. The examiners also note that the alternative access proposed by the Scribers would render more of the Scribers' productive land unusable.

With regard to the timing of construction, the examiners are satisfied that CNRL can strip the ground safely during frozen ground conditions without significant risk of admixing. As well, the examiners note that the lease area would need to be restored to its prior condition before a reclamation certificate is issued by Alberta Environment. The examiners are satisfied that any issues regarding gravel following the abandonment of the wells would be addressed during reclamation. The examiners also note that given the short distance of the access road, speed on the lease road may not be an issue. For this reason, the examiners would encourage CNRL to take the concerns of the Scribers into account when selecting gravel size.

The examiners believe that the increased impact on the use of the Scribers' airstrip would be limited to the very short-term drilling or servicing phases, since that is the only time that high structures would be on the site. The examiners encourage CNRL to notify the Scribers if they intend to have any high equipment on their sites, such as during drilling and servicing operations.

The examiners note that the impacts of the location and access for the section 4 wells and facility were not discussed. The examiners have reviewed CNRL's application for the section 4 wells and find the proposed location of the section 4 wells acceptable.

7 HEALTH AND SAFETY

The Scribers identified safety as their primary concern, particularly in light of the medical conditions of Margaret Scriber and of Morgan Scriber, the son of Dan and Betty Scriber. Concerns pertaining to safety included the potential health effects of dust, traffic, and emissions on Margaret and Morgan Scriber, as well as noise and the potential risk of increased traffic near the Scribers' children, Morgan and Chelsea Scriber. The Scribers indicated that their most significant concerns regarding safety related to development in and around their "home half," or the east half of section 10-52-1W4M, as that location was closer to the Scriber residence and yard, where Mrs. Margaret Scriber and the Scriber children often were.

7.1 Dust and Traffic

7.1.1 Views of the Applicant

CNRL submitted that the main trigger for asthma attacks was known allergens associated with dust. It argued that although house dust, due to the dust mites associated with it, was a known trigger of asthma attacks, there was no clear evidence regarding the impact of dust from crustal sources, including road dust. CNRL stated that it was not aware of specific studies examining the role of dust on the health of patients with asthma or a tracheostomy. CNRL concluded that there was no medical evidence to support the Scribers' concern that increased exposure to road dust would result in the worsening of Morgan Scriber's asthma. It did acknowledge, however, that there was a theoretical risk that the increased exposure to road dust might impact the health of Margaret Scriber. CNRL argued that given the low volume of truck traffic resulting from its project and given its proposed dust suppression measures, there was only limited opportunity for increased exposure to road dust as a result of its project. CNRL indicated that if the section 10 well were successful, it would be willing to do its part in paving the road in front of Dan and Betty Scribers' residence. CNRL also noted that the road travelled past the Scriber farm on the east side and, given its understanding of the prevailing winds, the dust would be generally blown away from the Scribers' farm.

CNRL estimated that the traffic past the Scribers' home half associated with its proposed project would be several trucks per day during the drilling of the well and one to two trucks per day while the well was on production. It acknowledged that some additional traffic might be needed for servicing the wells. CNRL indicated that it had considered various truck routes for the 8-10 well, but the County wanted the traffic from this site to be directed north on the county road. CNRL stated that as the road was a county road, the CNRL traffic would not be the only traffic passing the Scribers' residence. It submitted that the surface location and design of the road into the section 10 well site was designed to ensure that traffic was slowed on the lease and lease roads.

CNRL reported that the County had given it two options regarding truck routing to service and maintain the section 4 wells and pointed out that neither route would result in traffic moving past the Scribers' residence. CNRL also committed to take the appropriate measures, including signage, to ensure that its trucks would travel at a safe speed along the county roads.

7.1.2 Views of the Interveners

The Scribers stated that Morgan was diagnosed with asthma in spring 2003 and had been treated continuously for his condition since then. They added that his condition worsened with exposure to dust, fumes, and allergens in the environment. They also confirmed that Margaret Scriber had had a tracheostomy performed during her treatment for a medical condition.

The Scribers argued that the truck traffic associated with CNRL's project would seriously aggravate the pre-existing respiratory conditions of both Margaret and Morgan Scriber. Dan and Ted Scriber expressed deep concern for their mother and did not want her to be under any additional constraints. Betty Scriber described the nature and extent of Morgan's asthma as severe and related situations when she needed to use medication intended to rescue an asthmatic from a severe asthma attack. Betty Scriber conveyed her fear that CNRL's activities would exacerbate her son's condition with potentially fatal consequences. She noted that special precautions were undertaken both when Morgan Scriber was inside and out doors. These

included the use of dust reduction mechanisms, as well as a special mask that Morgan wore when outside. The Scribes commented that they were able to exercise control over their own traffic when travelling about the farm by communicating with each other, planning the timing of operations, and ensuring that Morgan had a mask on when he was outside. They also noted that they had moved the access road into the farm yard away from the area of their house.

The Scribes hoped that CNRL would implement dust control measures by spraying potable water when necessary on a best efforts basis, although they acknowledged that dust control using this mechanism would be problematic in the winter months. The Scribes requested that CNRL implement more permanent dust suppression measures on the county road past their residence. They also requested that CNRL limit and enforce vehicle speeds past their farm.

The Scribes concluded that increased truck traffic would jeopardize the safety of their children and also affect their quality of life. They estimated that currently about one to three trucks drove past their home per week. Although the Scribes acknowledged that CNRL had managed truck traffic relatively well in the past, they were concerned about the safety of their children as a result of the increased traffic. The Scribes indicated that they had also provided input to the County regarding trucking routes but that they were not able to influence the County's decision regarding traffic flow past their home.

7.1.3 Views of the Examiners

The examiners note that medical information regarding Margaret Scriber's and Morgan Scriber's conditions was requested by CNRL in advance of the hearing but was not provided by the Scribes. The Scribes also did not present Morgan Scriber's attending physician as a witness in the proceeding, although they did enter into evidence a brief written medical opinion from him. In the examiners' view, it is regrettable that the Scribes chose not to place at least the most relevant portions of those medical records in evidence. While the evidence provided confirmed that dust generally is an irritant to Morgan Scriber's condition, there was no opportunity to confirm the role of allergenic versus crustal sources of dust or the role of other specific irritants in assessing health impacts. Having this information available would have permitted a more informed discussion of the possible effects of the proposed project on Margaret and Morgan Scriber. However, based on the experiences of Margaret and Morgan Scriber, as attested to by Betty Scriber, the examiners do accept that the proposed project has the potential to affect the medical conditions of Margaret and Morgan Scriber due to increased exposure to road dust, particularly in the area of the Scriber residence.

The examiners recognize that the Scribes have made significant efforts to mitigate the impacts of dust from their farming operation and acknowledge that they would not have a similar amount of control over traffic from the proposed development. However, the examiners are satisfied that given CNRL's commitment to both monitor and control dust on the well site and on the road in front of the Scriber residence, the impacts can be significantly reduced.

The examiners strongly encourage CNRL develop a plan for long-term dust suppression in the area of the Scriber residence should the section 10 well be successful. The examiners recognize CNRL's commitment to revisit discussions with the County regarding paving of the road in front of the Scriber residence and other options available for dust suppression. The examiners encourage CNRL to implement dust suppression during the drilling phase or make other arrangements with the Scribes to minimize potential impacts of increased dust from traffic during the drilling of the section 10 well. In this regard, the examiners note that the health risk

assessment submitted by CNRL was, in part, based on the implementation of dust suppression measures.

The examiners note that decisions regarding trucking routes rest with the County and accept CNRL's commitment to initiate discussions with the County regarding the potential for setting appropriate speed limits on county roads using signage provided by CNRL. The examiners also strongly encourage CNRL to make special efforts to establish routine timelines for well maintenance activities, to keep the Scribers informed of those timelines, and to make all reasonable efforts to notify the Scribers of any irregular events that might occur.

7.2 Emissions and Noise

7.2.1 Views of the Applicant

CNRL stated that emissions associated with its proposed activities and operations would not compromise the health of the Scribers or aggravate the specific medical conditions of Margaret and Morgan Scriber. This conclusion was based on a number of factors, including the chemical characteristics of the substances in question, the nature and frequency of exposure to these substances, and the known health effects associated with such exposure. CNRL believed that the venting of emissions from the storage tank would not present any practical threat to the respiratory health of the Scriber family. CNRL said that this conclusion was based on the low concentrations of vented emissions involved, the distance over which the emissions would disperse before reaching the Scriber residence, and the prevailing wind direction, which would blow emissions away from the home half.

CNRL stated that it planned to use technology to reduce emissions during drilling and production, thereby reducing emissions and limiting exposure to the Scriber family. CNRL also stated that the Scribers' farming operations had an equal potential for contributing to chemical exposure and maintained that the incremental impact of its energy operations would be negligible.

CNRL indicated that there would be some noise resulting from the proposed project. The predicted noise would be that commonly associated with the drilling of wells and the operation of production facilities. CNRL confirmed that it would be in compliance with the EUB noise regulations at all times. CNRL stated that its noise level calculations for the section 4 facility predicted noise outputs based on sources such as engines and compressors, as well as distance from the source.

CNRL stated that it took noise complaints very seriously and that once a concern was brought to its attention, it would meet with the affected landowner and determine the source of the noise. Once the source was determined and confirmed with noise tests when necessary, it would implement solutions to manage the problem, for example by utilizing specialized equipment to moderate the noise. CNRL said it did not plan to use noise-control shacks to reduce the noise generated from the 8-10 well equipment; however, it confirmed that if the Scribers had noise concerns, it would implement measures to address those concerns, provided the measures were economically reasonable.

7.2.2 Views of the Interveners

The Scribers stated that the pollutants associated with activities of the section 10 well would adversely affect the health of both Margaret and Morgan Scriber. Betty Scriber indicated that their doctor had advised that Morgan Scriber was very susceptible to any kind of environmental emissions. She also described the considerable efforts made by the Scribers to avoid Morgan being exposed to emissions.

The Scribers stated that they were utilizing emission control technology on their tractors that surpassed what was required to comply with emission standards in Canada. They believed that CNRL's activities would have greater impacts than their own farming operations and were concerned that the incremental impacts would result in exceeding the threshold for problems associated with their families' health.

The Scribers requested that the storage tank used by CNRL be fitted with emission-control technology acceptable to the Scribers, that all fluids be extracted from the storage tank using a pump-loading method, and that disposal of any sump fluids or toxic or hazardous substances on the lease site be avoided. If contamination were to occur, the Scribers requested that they be notified and that mitigation be implemented immediately.

The Scribers stated that the noise impacts associated with the CNRL applications were not in the public interest and asked that CNRL be required to use specific equipment, including shacks, to minimize the noise.

7.2.3 Views of the Examiners

While the examiners accept that present circumstances make the Scribers susceptible to emissions from various types of activities, they believe it is very unlikely that the operations proposed by CNRL will significantly increase the risks above those now faced by the Scribers as a result of the existing farming operations. The examiners are satisfied that existing regulations and guidelines provide adequate protection from emissions from oil and gas activities. The examiners also note that given the distance from the Scriber residence, it is unlikely that any emissions would affect the areas near the residence. As well, the examiners note CNRL's commitment to use technologies to reduce emissions during both the drilling and production phases.

The examiners note that if CNRL meets the criteria outlined in *EUB Guide 60: Upstream Petroleum Industry Flaring Guide plus Updates and Clarification*, which details appropriate flaring volumes and volumes of gas allowed to be vented or flared prior to it having to be tied in, it will be required to conserve the gas produced by the proposed wells. The examiners expect CNRL to comply with the requirements for flaring volumes and gas conservation as set out in *Guide 60*.

With regard to emissions from the storage tank, the examiners note that CNRL has applied for two storage tanks associated with the multiwell battery at the 1-4 site, but has not applied for a single well battery with associated storage tank for the 8-10 well. The examiners note that, although it was not applied for specifically, the battery and associated equipment was discussed at length at the hearing. The examiners expect that prior to installing any facilities on the 8-10 site CNRL will comply with the requirements set out in the EUB's *Guide 56: Energy Development Applications and Schedules*,

The examiners are concerned about predicted noise levels at the section 4 facility, given the estimated 39.6 dBA level at a residence 700 m east of the proposed location. The examiners expect CNRL to conduct a noise survey once the section 4 wells are drilled and the multiwell battery is operating to ensure that noise levels are below the permissible sound level, as detailed in EUB *Guide 38: Noise Control Directive—User Guide*. If the 8-10 well is successful, the examiners recommend that CNRL take a proactive approach to minimize noise at the Scribers' residence.

8 GAS MIGRATION AND AQUIFER PROTECTION

8.1 Views of the Applicant

CNRL noted that gas migration was an issue in the Lloydminster area and it also agreed that the potential for gas migration was higher for a slant well compared to a vertical well. It also indicated that it had about a 15 per cent incident rate of gas migration in its wells in the area.

CNRL submitted that gas migration typically resulted from a poor cement job or improper bonding of the cement to the production casing or formation rock. CNRL stated that it used techniques such as roughing up or scraping the wellbore to remove the drilling mud, which was critical to ensuring that the cement bond between the production casing and the formation rock was solid. It also stated that it routinely implemented pipe centralization on all wells in this area to facilitate a uniform thickness of cement between the wellbore and casing on slant wells in an effort to ensure a solid bond.

CNRL stated that the likelihood of a potable aquifer in the Milk River Formation was very low in this area. It explained that although the Milk River Formation was present in this area, what was known as the Milk River aquifer was located farther south. It noted that when an aquifer was present in the Milk River, it was easily recognizable on geophysical logs. CNRL maintained that this aquifer was not present on any of the geophysical logs from wells in the area. CNRL also confirmed that any aquifer encountered would be protected by production casing that would be cemented to surface.

8.2 Views of the Interveners

The Scribers and Mr. Nilsson stated that they were concerned about potential impacts on water wells as a result of oil and gas activities in the area, including impacts from gas migration.

The Scribers submitted that isotope technology could be used to identify and detect the source of gas migration. They discussed the impacts of gas migration and the importance of taking proper samples in determining if there was in fact a gas migration problem. The Scribers believed that the proposed technology was cost effective and facilitated efficient sampling.

Mr. Nilsson's representative stated that he believed that an aquifer existed in the Milk River Formation and that it should be protected. He argued that the wells to be drilled through the Milk River Formation should have surface casing set below the base of the Milk River Formation, as gas migration would impact an aquifer that may be required in the future as water sources start to diminish.

8.3 Views of the Examiners

The examiners are satisfied that CNRL is taking appropriate measures to prevent surface casing vent flows and gas migration and to protect aquifers. The examiners believe that the requirements of EUB *Interim Directive 2003-01* and EUB *Guide 8: Surface Casing Depth Minimum Requirements* have been met in the applications under consideration.

The examiners are encouraged by the continuing evolution of opportunities to improve best management practices with respect to preventing and detecting surface casing vent flows and gas migration. The examiners note that the focus of the Scribers' evidence was on the technology one company made available to detect the source of migrating gas.

The examiners acknowledge that CNRL is aware of gas migration problems in the area and is designing its cementing program accordingly. The examiners believe that the focus of industry should be on implementing best available technology to stop the occurrence of gas migration in the first instance. The examiners encourage CNRL to participate in any industry initiatives to manage surface casing vent flow and gas migration in the area of their operations. The examiners agree that cemented casing is an effective way to prevent cross-flow between zones, and as CNRL intends to cement the production casing to surface, all aquifers should thereby be protected.

9 CONSULTATIONS/NEGOTIATIONS/CONDITIONS

9.1 Views of the Applicant

CNRL stated that it had met or exceeded all notification and consultation requirements of EUB Guide 56. CNRL believed that it had conducted itself in good faith throughout, as it had initiated an appropriate dispute resolution (ADR) process and then resumed negotiations, which had lasted a very long time. CNRL stated that it felt the ADR process had been successful in helping it to clearly understand concerns and try to work through them. However, it was also very frustrated because negotiations went on far too long and it was not able to reach an agreement with the Scribers. CNRL indicated that it was working on making future negotiations more expedient. In this situation, when it realized that an agreement was not going to be reached, it made its application and requested that a hearing be held. CNRL agreed that the negotiations had taken place without prejudice to a EUB hearing. It also indicated that it did not consider most of the matters discussed to be confidential or restrictive in terms of the evidence that could be brought forward at the hearing.

CNRL stated that it did not agree to all of the 80 conditions put forward in the schedule supplied by the Scribers. It believed that the conditions being sought were either outside the EUB's jurisdiction or were currently covered by existing regulations. CNRL argued that such items should not form part of any conditions on a licence that the Board might grant. In replying to the response provided by the Scribers, CNRL argued that the Scribers were asking the Board to wildly exceed its jurisdiction. It argued that general powers did not permit the Board to apply conditions that did not relate to the specific application, would affect future applications, were under the jurisdiction of the Surface Rights Board or the Alberta Environmental Appeal Board, or were clearly matters of compensation or contractual provisions. It also argued that where matters fell under EUB jurisdiction, the conditions were not required or not needed, as outlined in evidence at the hearing.

9.2 Views of the Interveners

The Scribers argued that notification for the section 10 well was not conducted in accordance with a strict interpretation of the provisions of *Guide 56* and the regulations regarding notification to Transport Canada because of the airstrip on the Scribers' land. They argued that notification was required to be carried out with the Regional Manager, Air Navigation Requirements, Transport Canada, Edmonton, Alberta, as set out in the *Aeronautics Act*. The Scribers also stated that the lack of notification and the incomplete plot plan in Application No. 1358471 each would classify the applications as incomplete with major deficiencies.

The Scribers indicated that late in 2003 they requested that all correspondence and matters dealing with CNRL be directed to their lawyer, as they needed his assistance and were overwhelmed with all the new activity in the area, the complexity of material received, and the amount of negotiations taking place.

The Scribers felt positive about the ADR process. They stated that any dialogue was better than no dialogue and that through ADR they learned a lot about CNRL activities, issues, and concerns. They also felt that while the company sincerely listened to their concerns, it was disheartening that an agreement could not be reached. The Scribers indicated that the difference between past discussions regarding other wells on their property and discussions on the section 10 well was that the proposed section 10 location was very close to their residences. As a result, they felt that it was necessary that all of the 80 conditions contained in the schedule to their written submission be specifically addressed and agreed to by CNRL. The Scribers indicated that they understood that the negotiations were without prejudice, but during the hearing indicated that they were unclear about how the matter of confidentiality affected what could be discussed at the EUB hearing. The Scribers argued that if a complete agreement could not be reached, then all matters were open for discussion and should be addressed at the hearing. The Scribers stated that the 80 conditions contained within the schedule were detailed and self-explanatory. The Scribers felt all of the conditions outlined should form part of any approval granted by the Board. The Scribers argued that the general powers of the Oil and Gas Conservation Act allow the Board to make any reasonable orders it considers necessary.

9.3 Views of the Examiners

The examiners accept CNRL's evidence that it contacted Transport Canada and was advised that because the airstrip located on the Scriber lands is a private, unregistered airstrip, Transport Canada did not require notification of the section 10 applications but did require that CNRL notify the owner of the airstrip. While the notification to Transport Canada may not have complied to the letter with EUB requirements, the examiners are satisfied that it complies in substance with EUB requirements and is sufficient in these circumstances. The examiners will suggest to the Board that it provide a copy of this report to Transport Canada for its information.

Based on the evidence of consultation and the knowledge of the applications demonstrated by the Scribers during the hearing and in their written submission, the examiners are satisfied that the Scribers had a sufficient understanding of the applications to be able to fully and fairly present their position on the applications to the examiners.

The examiners were surprised and disappointed to learn that the Scribers were not provided with a copy of the multiwell battery application in advance of the hearing, as required under Section

19(4) of the EUB Rules of Practice. However, the examiners believe that CNRL provided sufficient information to proceed with a hearing. The examiners also note that all applications scheduled for a hearing are audited by EUB staff to ensure that sufficient material is provided to hold a hearing.

The examiners appreciate the significant amount of negotiation and the frustrations of both CNRL and the interveners that an agreement could not be reached. The examiners also note that both parties felt that there was value in the negotiations, as it got them together and their discussion led to better understanding on both sides. However, the examiners agree with CNRL that negotiations in this instance greatly exceeded reasonable timelines. The examiners note that various options, such as setting deadlines regarding such matters as when to proceed to a hearing, should have been established early and acted upon when deadlock occurred. The examiners also note that the parties generally understood that their negotiations were without prejudice, but it appears there was a lack of clarity on confidentiality as it relates to information that could be raised at the hearing. There are a variety of options to deal with confidentiality, as outlined in *EUB Informational Letter 2001-1: Appropriate Dispute Resolution (ADR) Program and Guidelines for Energy Industry Disputes*.

At the close of the hearing, the examiners requested an undertaking by the Scribers pertaining to their proposed schedule. The request included a response to the following: 1) advise which of the proposed conditions are within the EUB's jurisdiction; 2) advise which proposed conditions are covered by existing regulations; 3) identify which specific regulations cover the proposed conditions in 2; and 4) where the proposed condition exceeds the regulations, provide the reasons why the condition was being requested.

The Scribers provided a high-level response, which did not give specific details as requested. The examiners recognize the difficulties the interveners may have had in providing a detailed response but are concerned about the interveners' apparent misunderstanding of the powers given by the legislation under which the EUB operates. The examiners do not agree that the general powers of the *Oil and Gas Conservation Act* permit them to recommend any condition, especially on matters outside of the EUB's jurisdiction. The examiners believe that any condition applied to a licence must clearly be related to EUB jurisdiction, be justified by the evidence in the proceeding, and be over and above requirements stipulated in current regulations or directives.

The examiners note that some of the conditions requested by the Scribers dealing with presite assessments, soil sampling, and reclamation are addressed by Alberta Environment guidelines and requirements. Similarly, some conditions include requirements listed in EUB regulations and directives. The Scribers did not provide details in their undertaking response as to why existing regulatory requirements did not meet their needs or what specific circumstances would justify the Board imposing additional requirements.

The examiners are concerned that the negotiations undertaken appear to have been hindered by the use of certain specific terms and conditions on both sides and the apparent lack of flexibility to explore options. The examiners believe that this contributed to the protracted negotiations and the degree of frustration expressed by both sides. The examiners note that both parties have a list of terms or conditions: the lease agreement provided by CNRL and the schedule provided by the Scribers. The examiners suggest that the potential for success could have been improved if the parties had used their documents to jointly develop a list of common items and to identify what matters were over and above existing regulatory requirements. The discussion could then have

focused on why the additional measures were appropriate and a process to explore various options. The ADR process anticipates that the applicant, in this case CNRL, would take the lead in explaining how it would meet regulatory requirements. This could include discussion of how the existing requirements might already deal with the concerns or, if appropriate, what additional measures might be taken to meet the interveners' particular concerns.

10 CONCLUSION

The examiners find that CNRL has demonstrated the need for the proposed wells and battery and that they can be drilled, constructed, and operated in a safe and environmentally acceptable manner. The examiners also find that the associated impacts can be properly addressed and mitigated with measures that are reasonably incurred. As a result, the examiners are of the view that the subject applications are in the public interest and, therefore, recommend that the Board approve the applications subject to CNRL meeting all of the regulatory requirements, as well as the conditions set out in Appendix 2.

Dated in Calgary, Alberta, on March 15, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

W. G. Remmer, P.Eng.
Presiding Member

<original signed by>

C. A. Langlo, P.Geol.
Examiner

<original signed by>

B. A. Austin, P.Geol.
Examiner

APPENDIX 1 HEARING PARTICIPANTS

Principals and Representatives
 (Abbreviations used in report)

Witnesses

Canadian Natural Resources Ltd. (CNRL)
 P. McGovern
 R. Palmer, R.E.T.

K. Fleck
 N. Guay, P.Ag., P.Geol.
 D. McKain
 B. Parker
 S. Stauth
 B. Wychopen, P.Eng.

D. Davies, Ph.D., of
 Cantox Environmental Inc.
 J. Freeman, of
 Matrix Solutions Inc.
 R. Leigh, Ph.D., of
 University of Calgary

D., B., T., P., and M. Scriber (Scriber Farms)
 T. Weiss
 A. Damer

B. Szatkowski, of
 GCHEM Ltd.
 D. Scriber
 B. Scriber
 T. Scriber
 M. Scriber

R. Nilsson
 R. Strom

None presented

Alberta Energy and Utilities Board staff
 G. Perkins, Board Counsel
 C. Brown, P.Biol.
 E. Knox, C.E.T.

APPENDIX 2 SUMMARY OF COMMITMENTS AND CONDITIONS

The examiners note throughout their report that CNRL has undertaken to conduct certain activities in connection with its operations that are not required by the EUB's regulations or guidelines. These undertakings are described as commitments and are summarized below. It is the examiners' 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 examiners take these commitments into account when arriving at their decision. The examiners expect the applicant, having made the commitments, to fully carry out the undertaking or to advise the EUB if for any reason 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 examiners also note that the affected parties may also have the right to request a review of the original approval if commitments made by the applicant remain unfulfilled.

COMMITMENTS BY CNRL

- Continue negotiations with the County on dust suppression, signage, and traffic past or in the area of the Scriber residence if the 8-10 well is successful.
- Restrict all CNRL truck traffic travelling past the Scriber farm to the 8-10 well to Monday to Friday between the hours of 8 a.m. to 5 p.m., except for emergency access.

Note: the second bulleted item above has been changed as per the Errata of September 21, 2005 (located in the front of this document)

Conditions generally are requirements in addition to or otherwise expanding upon existing regulations and guidelines. An applicant must comply with conditions or it is in breach of its approval and subject to enforcement action by the EUB. Enforcement of an approval includes enforcement of the conditions attached to that licence. Sanctions imposed for the breach of such conditions may include the suspension of the approval, resulting in the shut-in of a facility.

CONDITIONS

- Provide an accurate plot plan showing all of the equipment proposed to be on site for the multiwell battery at LSD 1-4. A licence will not be issued for the 1-4 multiwell battery until the plot plan has been submitted to and reviewed by the EUB.
- Conduct a noise survey for the 1-4 multiwell battery, to ensure that noise levels at the nearest or most impacted residence are below the permissible sound level, within 60 days following the completion of construction, testing, and initial production from the 1-4 multiwell battery. CNRL must provide a copy of that assessment to the EUB for its review and approval, and if noise levels exceed permissible sound levels, CNRL is expected to implement any measures necessary to ensure that the sound level complies with *Guide 38*.

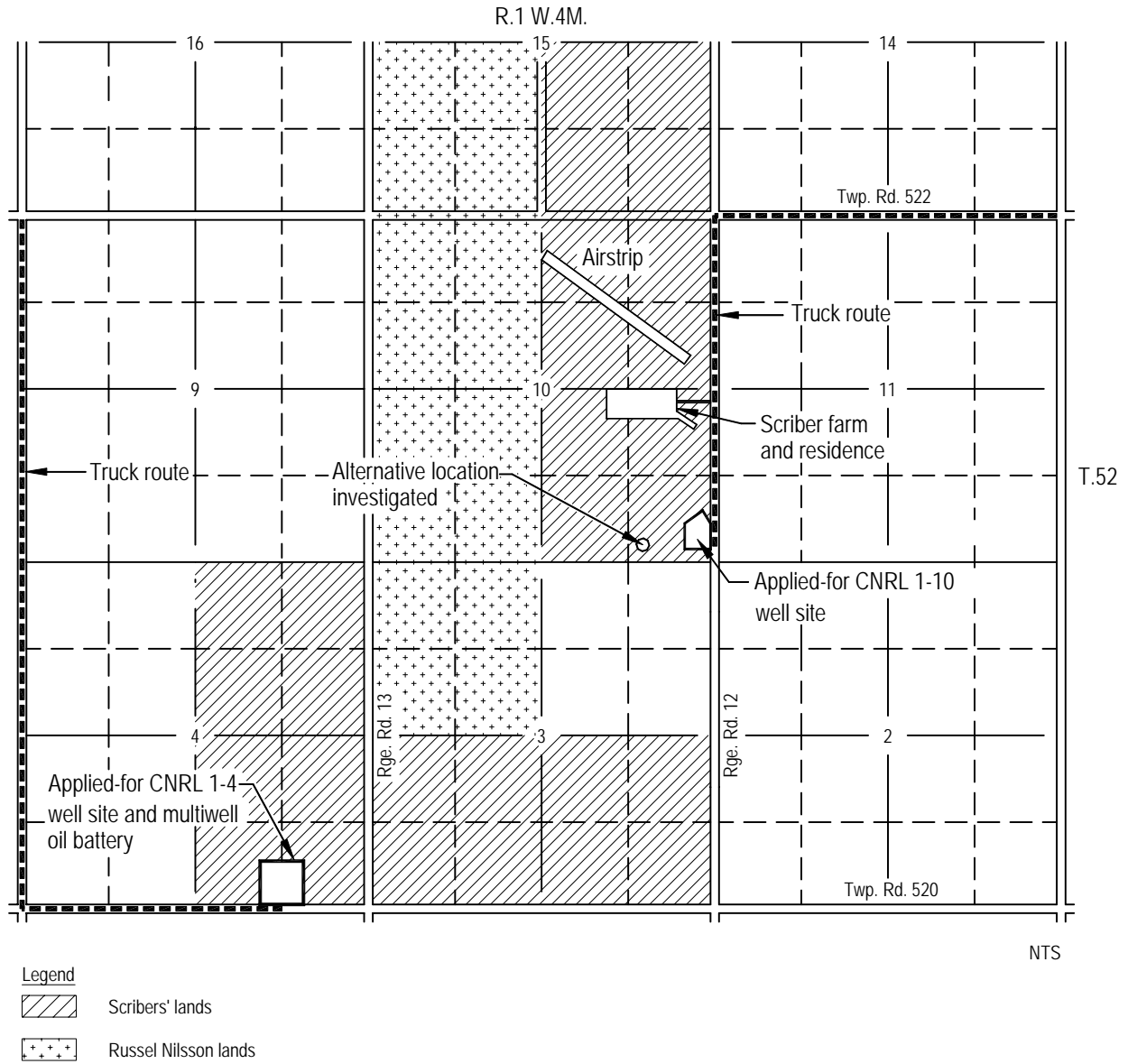


Figure 1. Map of area