



West Energy Ltd.

Application for a Well Licence
Pembina Field

July 6, 2010

ENERGY RESOURCES CONSERVATION BOARD

Decision 2010-027: West Energy Ltd., Application for a Well Licence, Pembina Field

July 6, 2010

Published by

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ENERGY RESOURCES CONSERVATION BOARD

Calgary Alberta

**WEST ENERGY LTD.
APPLICATION FOR A WELL LICENCE
PEMBINA FIELD**

**Decision 2010-027
Application No. 1623557**

1 DECISION

Having carefully considered all of the evidence, the Energy Resources Conservation Board (ERCB/Board) hereby approves Application No. 1623557, subject to the conditions set out in this report and summarized in Appendix 2.

2 INTRODUCTION

2.1 Amalgamation of West Energy Ltd. and Daylight Energy Ltd.

At the public hearing into this application, evidence was brought forward about the possible and pending acquisition of the applicant, West Energy Ltd. (West), by Daylight Energy Ltd. (Daylight). West anticipated that it would continue to exist as a corporate entity and a wholly owned subsidiary of Daylight. West submitted that the licence, if approved, should be granted in the name of West. Daylight wrote to the Board on April 6, 2010, stating that Daylight would abide by and honour any conditions or commitments imposed upon, or made by, West. West reasserted that, to the best of its knowledge, it would continue to exist as a wholly owned subsidiary of Daylight.

However, Daylight's actual acquisition of West took a different form. On May 14, 2010, two days after the acquisition, the two corporate entities amalgamated to form Daylight Energy Ltd. This latter corporation is the successor to the applicant and is accountable for the obligations and liabilities of the amalgamating corporations.

The Board is prepared to issue the licence for the proposed well in the name of the successor corporation, Daylight Energy Ltd. and fully expects it to meet the various commitments made by West and to comply with conditions imposed upon it. It is for convenience only that this decision refers to West throughout as the applicant despite the corporate changes.

2.2 Application

West applied to the ERCB, in accordance with Section 2.020 of the *Oil and Gas Conservation Regulations*, for a licence to drill a directional well from a surface location in Legal Subdivision (LSD) 11, Section 32, Township 49, Range 5, West of the 5th Meridian, to a projected bottomhole location in LSD 4-32-49-5W5M. The maximum hydrogen sulphide (H₂S) concentration is predicted to be about 211.5 moles per kilomole (21.15 per cent), and the cumulative drilling H₂S release rate would be 1.51 cubic metres per second (m³/s) with a corresponding emergency planning zone (EPZ) of 2.10 kilometres (km). There are 29 residences within the drilling EPZ.

The purpose of the well would be to obtain oil production from the Nisku Formation. The proposed well would be located about 4.8 km northwest of the Hamlet of Lindale. Figure 1 shows the project location.

2.3 Interventions

Interventions were filed by John Logan and Bonnie Logan (the Logans). The Logans own and have a residence on the southwest quarter of Section 33-49-5W5M. Their residence is about 1.4 km from the proposed well. The main concerns expressed by the Logans pertained to health and safety; the proximity of the well to the Modeste Creek Natural Area (the natural area), their property, the Birchwood Village Condominium Association (Birchwood), and Lindale; the adequacy of and ability to implement the emergency response plans (ERPs) for both drilling and production operations; flaring; the adequacy of consultation; compliance history; the effects of sulphur dioxide (SO₂); and privacy.

The Board also heard concerns from Cheryl Kerpan and Dr. Timothy C. Losey, who own lands and reside on the northeast quarter of Section 23-50-6W5M, about 7 km from the proposed well. Ms. Kerpan and Dr. Losey were granted discretionary participation rights in the form of oral submissions.

2.4 Hearing

The Board held a public hearing in Drayton Valley, Alberta, which commenced on April 7, 2010, and concluded on April 9, 2010, before Board Member G. J. Miller (Presiding Member), Vice-Chairman B. T. McManus, Q.C., and Acting Board Member R. J. Willard, P.Eng. A site visit was conducted by the panel on the afternoon of April 6, 2010.

The Logans provided evidence regarding their medical history and health concerns in a confidential in camera session.

Those who appeared at the hearing are listed in Appendix 1.

3 ISSUES

The Board has grouped the various concerns regarding this application into four primary issues:

- well classification,
- environment,
- flaring, and
- the ERPs and public safety.

In reaching the determinations contained in this decision, the Board has considered all relevant materials constituting the record of this proceeding, including the evidence and argument provided by each party. Accordingly, references in this decision to specific parts of the record are intended to assist the reader in understanding the Board's reasoning relating to a particular matter and should not be taken as an indication that the Board did not consider all relevant portions of the record with respect to that matter.

4 WELL CLASSIFICATION

Considerable time was spent discussing the issue of well classification in this hearing. The Logans expressed the view that the well should be classified as an E622 or proximity critical well (as defined by ERCB *Directive 056: Energy Development Applications and Schedules*) since the well is within 5 km of Birchwood. The Logans understood that a well has more stringent safety requirements when it lies within close proximity to populated areas, and therefore were of the view that the proposed well should be classified as a proximity critical well.

In consultation with Brazeau County and Birchwood, West concluded that Birchwood and Lindale would not be described as urban centres pursuant to the definition in *Directive 056*. Therefore, West determined that the well was a D570 well, as set out in *Directive 056*, and applied for a licence accordingly. Regardless of the actual classification, for the purposes of its site-specific ERP, West committed to drilling and operating the well as if it were classified as a critical well.

The Board accepts the argument from West that the proposed well is not a proximity critical well as defined in *Directive 056*. *Directive 056* defines a critical well as having a specific H₂S release rate and being “located within 5.0 km of an urban centre.” As Birchwood has not been incorporated, the Board does not consider Birchwood to be an urban centre pursuant to the definition in *Directive 056*.

The Board notes that West committed to exceed requirements and to drill and complete the well as if it were classified under *Directive 056* as a critical well. The Board accepts this commitment and believes that some companion regulatory process normally used for critical wells should also apply. Accordingly, the Board directs West to submit a complete and detailed drilling plan for Board approval prior to drilling.

5 ENVIRONMENT

Environmental issues were raised by the Logans regarding the proximity of the well to the natural area, for which they are volunteer stewards, and potential effects on a wetland within the natural area. The Logans are founders of the Modeste Creek Watershed Protection Society. The location of the natural area in relation to the proposed well site is shown in Figure 1.

5.1 Views of the Applicant

West stated that it had originally considered five or six alternative surface locations, including a vertical well, but determined that those were inferior to the proposed surface location because of proximity to water bodies or existing residences or topographic constraints. It indicated that the proposed well site would have minimal environmental effects as it would be located in an area previously disturbed by tree clearing for pasture. West further indicated that its choice of location for surface facilities was not challenged by interveners in the sense that alternatives were not offered for consideration.

In response to concerns expressed by the Logans about disturbances to a wetland and effects on the natural area, West retained Summit Liability Solutions Inc. (Summit) to conduct a presite

assessment. This assessment focused on the area within 100 metres (m) of the proposed well site and access road. Lyndsey Deutsch, appearing on behalf of Summit, stated that she conducted a site visit on January 26, 2010. Ms. Deutsch described the area as improved pasture with tree groves consisting of spruce and poplar. She indicated that no rare plant or wildlife surveys were completed, partly due to the timing of the survey. However, her search of the Alberta Natural Heritage Information Centre database identified no records of rare plants or sensitive wildlife. Ms. Deutsch agreed noise and light could have an effect on wildlife; however, this effect would be lessened if the well were drilled outside of the period when migratory birds were present. West expected that constructing the well site would take about 7 days and drilling the well would take 21 days, which would be followed by completion operations by a service rig.

West stated that the well site, access road, and potential future pipelines would not be located in the natural area. In the view of West, the Logans did not provide any evidence to demonstrate potential effects on the natural area. West pointed out there was a historical well site, drilled in 1983, located inside the natural area in the northeast quarter of Section 32. In the view of West, the admission by the Logans that they were not aware of this well site was evidence that its environmental effects were minimal. West agreed that a catastrophic release of sour gas could have an impact on the natural area.

West stated that it did not prepare an environmental assessment for the project to evaluate effects on the natural area and surrounding lands because none is required for this type of project. However, it submitted that since the natural area was used recreationally and the use of all-terrain vehicles was permitted, wildlife using the natural area would be accustomed to some of these types of disturbances and activity. West indicated that it had consulted with Alberta Sustainable Resources Development (SRD) and SRD had expressed no concerns with development adjacent to the natural area.

Ms. Deutsch explained that a surface disposition had been obtained from SRD as a portion of the access road traverses Crown land. Ms. Deutsch's opinion was that SRD would not have issued a licence of occupation for the access road if it had any concerns with the location of the well site.

West described the proposed site as a high point of land between two low areas. The survey plan submitted by West indicated a low, dry area on the east side of the lease, part of which was inside the lease boundary. These low areas were described as ephemeral wetlands by Ms. Deutsch.

West stated there would be no disturbance to the wetlands. The small portion of one wetland along the north boundary of the lease that was encompassed within the surveyed boundaries would be used for topsoil storage and would not be stripped of its soil. Ms. Deutsch indicated that because this was an ephemeral feature no *Water Act* approval would be required.

5.2 Views of the Interveners

Although the surface location of the proposed well is not in the natural area, the Logans expressed concerns about the potential for the well to affect the natural area as the well site is just over 100 m from the natural area boundary. They expressed concern that no assessment of ecological features of the natural area had been undertaken. Mr. Logan expressed the view that the area where the well would be located was an extension of the wildlife habitat provided by the natural area. He explained that this was a concern as habitat in the region has been increasingly

fragmented and cleared over the last several decades. Mr. Logan expressed concern about the potential effects of noise, light, and industrial activity on wildlife. Further, he was concerned that a release of sour gas could cause wildlife mortality in the case of a catastrophic event and that fugitive emissions could affect the health of wildlife using the area. Mr. Logan also noted that SRD was not present to explain its role in managing the natural area or express any concerns that it may have had.

The Logans also expressed concern that the project would affect a nearby spring-fed pond. Under examination, it was revealed that the pond of concern was not the wetland adjacent to the well site that was evaluated by West, but a pond located over 200 m from the proposed well site.

5.3 Findings of the Board

The Board accepts the argument of West that it considered alternative sites and selected a previously disturbed site that would have minimal environmental consequences. The interveners did not provide any alternative well site locations that they felt would be superior to the site selected by West.

The Board acknowledges that there is no specific requirement or standard for conducting an environmental site assessment prior to development. Nevertheless, given the sensitivities of the project area and adjacent natural area expressed by the Logans during the consultation process, the Board notes that West did not undertake a predisturbance site assessment prior to January 2010. Given the timing of the initial application and public consultation, there was ample opportunity to undertake such an assessment. The Board is of the view that had this been done, it may have facilitated better communication between West and the Logans and assisted in site selection and planning.

West indicated that it consulted with SRD regarding the natural area and that no concerns were expressed. This was not disputed by the interveners and is supported by the fact that SRD issued a surface disposition for the Crown portion of the access road. The Board is of the view that if the Logans, as volunteer stewards of the natural area, had concerns with development they should have discussed these with SRD early in the consultation process.

West identified the low area adjacent to and within the lease as an ephemeral wetland and indicated that Alberta Environment does not typically require a *Water Act* approval for disturbances to these types of water bodies. Regardless of its ephemeral nature, the Board is concerned that West has indicated that it will store salvaged topsoil in the wetland and is not convinced that this does not constitute a disturbance. The Board directs West to delineate the boundary of the wetland within 100 m of the lease, identify a more appropriate location for soil storage, and submit a revised survey plan that shows avoidance of any activity or placement of any materials in the wetland area. Furthermore, should the well prove productive, West should place any facility equipment as far from the wetland as possible.

The Board is of the view that existing spacing and wellbore casing requirements will be protective of the spring-fed pond that was estimated to be about 200 m from the well site.

6 FLARING

6.1 Views of the Applicant

West stated that its flare assessment using a 36 m flare stack and its dispersion modelling report meet all the requirements of the ERCB. It also believed that additional modelling performed by the interveners showed similar results for flaring and did not show exceedances of the low risk criteria. West acknowledged that should the well application be approved, it would be required to submit a flare permit application, in accordance with *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting*.

West stated its intent to minimize the amount of flaring; however, it mentioned that it would need to flare long enough to enable an economic and commercial evaluation of the well. West submitted that according to past experience, 24 hours was seen as the maximum length of time required. West submitted that it would be able to safely increase the stack height from 36 m to 42 m without the need for additional equipment, but noted that this would not be needed based on its modelling.

West also noted that it offered to place a portable ambient air monitor at the Logans' residence and supply the Logans with a radio equipped with a global positioning system (GPS) during the projects phases that might experience flaring events in an attempt to mitigate some of their concerns.

6.2 Views of the Intervenors

The Logans acknowledged that the flare assessment report was only a sample report and, as such, West would need to submit a flare permit application, in accordance with *Directive 060*. The Logans stated that the hearing was their only opportunity to express their concern regarding potential flaring associated with the project.

The Logans stated that they did not view a portable air monitor and a GPS-equipped radio as realistic mitigation options. The Logans stated that the installation of a monitor at their residence would likely cause additional anxiety from their constant monitoring of the unit. The Logans further submitted that the GPS-equipped radio would be an invasion of their privacy and, in any event, would not expedite the evacuation process.

The Logans' expert witness, Dr. Shuming Du, reviewed the modelling performed by West and concluded that the results were unreliable. He submitted that West used screening meteorology that may not represent local conditions and that the dispersion model ISC-Prime was inappropriate for the assessment. Dr. Du expressed the view that for this application, the CALPUFF dispersion model would have been a more suitable model to use, in conjunction with local meteorology.

Dr. Du recommended that the panel disregard West's proposed flare management plan since it used on-site wind measurement and air monitoring as mitigation measures for potential exceedance of the ERCB low risk criteria. Dr. Du submitted that increased stack height and the addition of fuel gas to enhance plume rise were better ways to avoid potential exceedances.

6.3 Findings of the Board

The Board recognizes that West provided the flare assessment report for information purposes only and that it is required to submit a flare permit application prior to flaring. At such time, West's permit application will be reviewed in detail and will be required to meet all applicable *Directive 060* requirements.

The Board notes that a preliminary consideration of flaring during a hearing permits the parties to understand the drilling, completion, and initial testing of the proposed well and comment on some possible impacts should there be indications of potential air quality objective exceedances. However, the Board emphasizes that the actual drilling information is needed to accurately assess flaring operations.

The Board acknowledges West's commitment to minimize flaring. The Board anticipates that West will flare for less than 24 hours, subject to obtaining the necessary performance data during the test.

The question of a taller flare stack was discussed several times during the hearing. The Board notes that Dr. Du's model predicted some potential air quality objective exceedances and he recommended a higher stack height as a mitigation measure. The Board also understands that West did not identify any technical constraints to increasing the stack height by 6 m. However, the Board believes that standard modelling shows that *Directive 060* requirements will be met and notes that the complex terrain modelling using CALPUFF, as recommended by Dr Du, is not a requirement and that installing a higher stack would make flaring more visible to the community. Further, the Board notes that West determined that both a 36 m flare stack and a 42 m flare stack would meet Alberta Ambient Air Quality Objectives and that any further mitigation measures, if needed, would be outlined in the flare permit application prior to flare testing the well. The Board is encouraging West to re-engage the interveners in an appropriate manner in order to try to find common ground on several issues, listed in Section 8, and a further discussion on the stack height could potentially be included.

The Board notes that it held the in camera session to obtain the confidential evidence of the Logans with respect to existing health and medical concerns. However, the Logans did not present toxicological or medical evidence that indicated to the Board the effects a sour gas release or the products of flaring, such as SO₂, would have on them given their existing health concerns. The Board is well aware of the risks posed by H₂S and SO₂; however, in the absence of such evidence it is difficult for the Board to know specifically what these risks might mean to the Logans. Nonetheless, the medical evidence confirms that the Logans are properly described as special needs for ERP purposes and should receive additional and early consideration.

7 THE ERPS AND PUBLIC SAFETY

7.1 Views of the Applicant

In conjunction with its well application, West submitted two ERPs for the proposed surface location at LSD 11-32-49-5W5M (11-32). West indicated that one ERP would be in effect for the drilling and work-over operations of the well, while a separate ERP would be in effect during completion and testing operations. West stated that both ERPs exceeded the current requirements

set out in *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry* and were the result of years of experience preparing such plans, as well as listening to stakeholder concerns. West emphasized that both ERPs incorporated all critical ERP components even though the proposed well was not applied for as a critical well, in accordance with *Directive 056*.

West stated that its ERP for the drilling and work-over operations was built on an EPZ size of 2.1 km, while the completion and testing operation ERP was built on a 0.86 km EPZ. Both EPZ sizes were calculated using the ERCB's ERCBH2S Version 1.19 (update) modelling tool. However, West indicated that it had also calculated the EPZ sizes using Version 1.20 Beta, which was out for stakeholder feedback. The EPZ sizes calculated using Version 1.20 Beta were about half the size of the EPZs calculated using Version 1.19 (update). West asserted that its ERPs were based upon the larger EPZ calculated by Version 1.19 (update). West further submitted that the proposed well location encompassed fewer residents within the EPZ as compared to other surface locations that it considered.

West stated that the ERPs were in compliance with *Bulletin 2009-041: Processing of Applications for Sour Oil and Gas Development in Light of the Court of Appeal Decision in the Matter of Kelly v. Alberta (Energy Resources Conservation Board) and Grizzly Resources Ltd.* and exceeded many *Directive 071* requirements, including the notification and evacuation requirements. West indicated that if a level-1 emergency were declared, all residents within the initial isolation zone (IIZ) would receive notification of the incident and be requested to evacuate the area. Notification would occur by two separate emergency response means: in person by rover and by telephone. West indicated that at a level-2 emergency, its ERPs were designed to consider evacuation of the public from the entire EPZ. West noted that there were no such requirements in *Directive 071*. West also noted that gas would not be at surface during a level-1 or -2 emergency. It contended that such early notification at a time when gas was not at surface would provide every member of the public ample opportunity to safely evacuate the area.

West recognized that the Logans were included within the EPZ associated with the drilling and work-over operations, but were outside the completion and testing EPZ. West stated that should the Logans request to be included within the completion and testing ERP, it would do so, and noted that its ERPs contained several other "entities" outside of the EPZ who were already included in this manner. West stated that this was a further exceedance of *Directive 071* requirements.

West recognized that it did not have any personal information about the Logans, as required by *Directive 071*. It submitted that it attempted several times to obtain this information, but was unsuccessful. West acknowledged that it could have done a better job in its initial communication with the Logans and that this negatively affected the subsequent efforts by personnel to gather and incorporate ERP-related information. Given the limited information it had on the Logans, West stated that it deemed the Logans to be "special needs," in accordance with *Directive 071*, as well as in need of evacuation assistance should an emergency occur. Such designations would allow the Logans to be notified at the early stages of an incident. West stated that it was willing to work with the Logans to obtain their personal information, as well as the number and location of any structures on their land, and incorporate this information into the ERPs.

West submitted that it designed its ERPs to include notification and evacuation provisions for the recreational users of the Modeste Creek and the Modeste Creek Natural Area. West stated that the protection measures incorporated into its ERPs assumed that there would be people in the natural area, regardless of the season. West indicated that the ERPs included dedicating rovers to the Modeste Creek and provided for the use of a helicopter rover for assistance in locating transients should an incident occur and weather permit. West indicated that at a level-1 emergency, two rovers would be deployed to the Modeste Creek to monitor and search for transients. Should the incident escalate to a level-2 emergency, three rovers would be dedicated to this area. During the hearing, West indicated that it recognized the benefits of ground truthing the natural area and committed to doing so prior to the drilling of the proposed well. It further indicated that it was willing to provide the gathered mapping information to the Logans, in addition to the ERCB. West stated that it recognized the Logans' concerns over the location and notification of recreational area users within the natural area. During West's closing remarks it stated that its use of dedicated rovers for the Modeste Creek and its updated mapping of the natural area would address the Logans' concerns.

West stated that it understood that recreational users could be located in areas outside of the natural area. It submitted that its ERPs provided that at a level-2 emergency, up to 19 rovers could be deployed to search for persons within the EPZ should an incident occur. West calculated that based on the 27 residences currently within the drilling and testing EPZ, each rover would monitor about 1.5 residences. To further assist in notification of area users and residents, West committed to placing notification signs at the edge of the EPZ prior to operations in the first sour formation. West stated that these signs would identify the location of the well site in relation to the reader and would provide West's 24-hour emergency phone number, as well as its public safety supervisor's direct line. West also stated that during normal operations, two rovers would be continuously traversing the EPZ monitoring recreational activity.

West stated that its ERPs also addressed concerns about poor cellular service and how this would impact response capabilities. West stated that at the declaration of a level-1 emergency, each residence would receive a call from its telephone personnel. West stated that it understood that there was no landline at the Logans' seasonal residence. However, it indicated that should any notification need to occur, it would contact the Logans at their permanent residence, in addition to sending a rover to the Logans' seasonal residence. West stated that it had offered two-way radios to the Logans for use during any of West's operations within the Nisku Formation. West indicated that, upon request, these radios could be equipped with GPS capability, which could aid in locating the Logans. West noted that it had not received any indication of acceptance from the Logans of this offer.

West submitted that it would make its absolute best effort to create the best and most workable ERPs possible. It stated that it intended to accomplish this through testing the implementability of the ERPs, including the public protection measures. West highlighted its past involvement in other area operators' and responders' ERP exercises. West indicated that this cooperative approach to incident response was reflective of how the Pembina Area Operators Group would assist in responding should an incident occur. West indicated that it would hold internal meetings before penetrating the sour Nisku Formation to review the ERP with its staff and responders. West committed to notifying the ERCB's Drayton Valley Field Centre of these meetings so that ERCB staff could attend.

West acknowledged that a longer time to ignite a release would result in a larger EPZ. West noted, however, that on its last wells drilled in the area, it had conducted “man down drills” and simulated ignition drills that demonstrated its capability to ignite a well within 15 minutes. For this proposed location, West indicated that an ignition simulation drill would be conducted prior to entering the sour Nisku Formation.

7.2 Views of the Interveners

The Logans cited numerous issues surrounding West’s emergency response planning as reasons for denying the well application. They contended that the ERCBH2S modelling may not provide a reliable representation of potential impacts and that West’s ERPs lacked critical information and testing to ensure that an effective response could be implemented.

The Logans’ expert witness, Dr. Du, submitted that West’s ERPs were based on a 15-minute ignition time, the minimum ignition time allowed by the ERCB. He indicated that if a longer ignition time were used, the EPZ size would increase. The Logans questioned whether or not 15 minutes was a fair representation of time within which ignition could occur and if it accounted for the additional time needed to make the decision to ignite.

Although Dr. Du acknowledged West’s application was based on ERCBH2S Version 1.19 (update), he provided comments with respect to the ERCB’s draft ERCBH2S Version 1.20 Beta. He stated that as ERCBH2S Version 1.20 Beta used a weighted probability of occurrence of dispersion and meteorological conditions, it did not provide a reliable EPZ delineation. He stated that the occurrence of certain meteorological conditions would result in distances greater than the predicted EPZ and that if these meteorological conditions were to occur during an accidental release, some residents outside of the EPZ (such as the Logans during completion and testing operations) could potentially be impacted. The Logans expressed concern that they would not be included in the completion and testing ERP even though they may be required to evacuate if there were a release during these phases of operations.

The Logans expressed concern regarding West’s ability to notify them during an emergency. They stated that West’s ERPs did not contain their contact information. They suggested that West had many opportunities to request the necessary information and maintained that the information West did have for the Logans should have been included in the ERPs. The Logans stated that their residence did not have a landline and there was limited cellular coverage in the area. The Logans identified that their property is used year-round by themselves and numerous visitors and expressed concern that they were referred to as “seasonal” residents in West’s ERPs. They indicated that this was not a true representation of the use of their land.

Additionally, the Logans stated that it would not be apparent from the county road if someone was at their property and questioned how West would be able to identify if anyone was at their residence, especially considering the gate that was across their access road. They stated that their property was accessed via a long road, part of which was a trail that often became impassible during adverse weather. They acknowledged West’s commitment to suspend drilling operations if adverse weather conditions were encountered prior to entering the Nisku Formation. However, they remained concerned that drilling operations would not be suspended if adverse weather conditions were encountered while drilling in the Nisku.

The Logans stated that they and their family and friends are often out on their land or in the natural area, both during the daytime and evening, which would make it difficult to be located or notified during an emergency. They were concerned that the proposed use of helicopters to locate them may not be reliable since there could be situations in which a helicopter could not fly. They also expressed concern that West did not have better knowledge of the natural area, including the location of trails, area users, and levels of activity. The Logans indicated that West's offer to ground truth the natural area was prudent emergency planning that should have been conducted in the initial development of the ERPs.

The Logans expressed some concern regarding sheltering in place. They stated that their residence had purposeful vents to allow air exchange, which they believed could impact the effectiveness of sheltering in place.

The Logans indicated a high level of concern with West's lack of familiarity with the Brazeau County Municipal Emergency Plan (MEP), the lack of detail surrounding the West-Brazeau County mutual understanding contained in West's ERPs, and West's ability to implement its ERPs. They suggested that since West would be relying on Brazeau County to provide assistance during an emergency response, such as notifying the public beyond the EPZ, West should have a better understanding of Brazeau County's MEP and the county's capacity to provide assistance.

The Logans also submitted that participation in the October 2008 Highpine Oil & Gas Limited major ERP exercise did not automatically demonstrate West's capability to manage an emergency situation. The Logans maintained that the lessons learned from previous tabletop exercises should be more appropriately characterized as shortcomings, since these findings demonstrated a lack of basic emergency response skills on the part of the emergency responders. Additionally, Mrs. Logan stated that after hearing other area residents' opinions of past ERP exercises, she has no confidence in West's ability to protect them during an emergency.

The Logans stated that should the application be approved, they would be willing to further engage with West regarding emergency planning.

7.3 Findings of the Board

The Board recognizes that the purpose of emergency preparedness and response planning is to establish a decision framework and action plan so that licensees can quickly and effectively respond to an emergency. The overall goal of an ERP is to protect public safety. The Board notes that West's intended notification and evacuation procedures exceed *Directive 071* requirements. While not required, the Board believes that in this particular case, early notification and evacuation of the public within the EPZ may be appropriate due to the Logans' concerns regarding their personal situation and the users of the natural area.

The Board finds that the ERPs submitted in support of West's well licence application will be protective of the public. The Board believes that the commitments made by West during the hearing will enhance the emergency response measures used should an incident occur.

During the hearing, a substantial portion of time was spent discussing the means West used to calculate the EPZ sizes. There are currently two versions of the ERCBH2S model available for licensees to use, Version 1.19 (update) and Version 1.20 Beta. ERCBH2S models are calculation tools that are based on a number of conservative assumptions, including dispersion conditions. In

ERCBH2S Version 1.20 Beta, the ERCB introduced a weighted “probability of occurrence” factor to the dispersion and meteorological conditions obtained from Alberta Environment and used in the ERCBH2S models. Version 1.19, including the update, calculated the absolute worst case release scenario for EPZ size regardless of the likelihood of these dispersion conditions occurring and did not take into consideration the probability of a particular weather event occurring. Version 1.20 Beta takes this into account and calculates EPZ under the most “realistic” worst case scenario. While the ERCB does have ERCBH2S Version 1.20 Beta out for stakeholder feedback and has permitted companies to use this version when calculating EPZs, West has maintained the larger EPZ sizes calculated by Version 1.19 (update). The Board is satisfied with the EPZ sizes upon which West has developed its ERPs.

The Board also recognizes that the issues with the ERCBH2S models, as compared to an alternative calculation tool, have been expressed by Dr. Du in the past. The Board wishes to reiterate that a hearing is not the most effective forum in which to provide feedback or positions about the ERCBH2S models. Opinions about the appropriateness of the conservative assumptions made by the ERCB during the development of the ERCBH2S models are best dealt with outside of the hearing process, which is designed to address the merits or lack of merits of a licensee’s application. In this regard, the ERCB has received feedback from Dr. Du regarding the use of ERCBH2S Version 1.20 Beta and has subsequently provided a detailed explanation of the continued use of the weighted probability of occurrence of dispersion conditions in the ERCBH2S model. Continued criticism of this decision is better directed to the ERCB and not to applicants that must abide by the requirements to use the ERCBH2S model.

Both parties indicated there had not been effective communication throughout the application process. Open and honest communication is vital for both understanding a proposed energy development and to support efficient and effective emergency response measures. Companies must understand the needs of the residents, and the residents must understand what may be required of them should an incident occur. The Board heard evidence that early attempts to engage the Logans occurred during a period of time when health matters took precedence. The Board believes that West was not appropriately sensitive to these matters and adopted a different approach too late. The Board also heard evidence that the information contained within the ERPs for the Logans was incomplete as a result of the initial communication problems. However, this does not automatically indicate that the emergency response measures contained in the ERPs will be ineffective with respect to the Logans.

Directive 071 requires, in those instances where receipt of personal information is not obtained, that persons be designated as “special needs.” The Board notes that West has designated the Logans as such. While the Board finds that West is compliant with this requirement, it does believe that gathering personal information related to the Logans’ situation would make West’s response more efficient. Therefore, the Board strongly recommends that further communication occur between the Logans and West. This communication is not only for the gathering and dissemination of ERP information, but should also be viewed as an opportunity to build trust and establish good neighbour relations between the two parties. The Board notes and is pleased by both West’s offer of further ongoing communication and the Logans’ willingness to participate in further consultation efforts and emergency response discussions. If any personal and confidential information is obtained by West about the Logans or any agreement is obtained about the Logans’ receipt and use of two-way radios during Nisku operations, this information is to be included in the ERPs and submitted to the ERCB prior to their approval.

The Board also heard concerns expressed about West's ability to communicate with the Logans and recreational users of the Modeste Creek and Modeste Creek Natural Area, given the remoteness of these areas and lack of reliable communication channels. The Board agrees that the opportunity exists for numerous recreational users to be in the vicinity of Modeste Creek and the Modeste Creek Natural Area. During the ERCB's site visit, it was noted that densely wooded areas could shield individuals from view of existing roadways and may hinder the identification of recreational users. The Board notes that during the development of its ERPs, West took such factors into consideration and dedicated rovers specifically to the Modeste Creek should an incident occur. The Board notes that West committed at the hearing to field mapping the natural area by identifying access points, main trails, and natural features such as cliffs that could hinder movement of searchers or evacuation efforts. While *Directive 071* does not require this, the Board believes that such field verification is prudent and expects this information to be contained in the updated ERPs that are submitted for approval.

The Board notes that West further committed to posting information placards in the area surrounding the EPZ as an additional tool to raise awareness of the commencement of sour operations. The Board agrees that such placards would provide an increased awareness of the project for area users, including transients, and could provide an additional layer of public protection measures should an incident occur. As such, the Board believes that this information needs to be formally incorporated in the updated ERPs that are submitted for approval.

The Board believes that sheltering in place is a viable public protection measure. While the Board does appreciate the Logans' concerns with the number of air vents in their residence, the building itself does provide a "buffer" in which relatively uncontaminated air will be contained. Persons who are advised to shelter in place should remain in that buffer until such time as West is able to dispatch response personnel for safe evacuation. The sheltering-in-place public protection measure is continuously evaluated by responders during the course of an emergency.

The Board also notes that there was a significant amount of time spent on evidence surrounding designation of the well. While the Board has discussed this issue in Section 4.3, it does note that West designed the ERPs as critical site-specific ERPs.

There are several emergency response components that distinguish a critical site-specific ERP from a noncritical site-specific ERP. These include the need for dual ignition systems (one capable of remote activation and one manual system, such as a flare gun) and dual supervision on site to ensure that no supervisor is required to work a shift longer than 12 hours. The Board notes that West's ERPs contain both of these requirements. The Board recognizes West's commitment to maintain these ERPs as critical ERPs for the duration of the time the plans are in place.

Concerns were expressed surrounding the level of interconnectivity and knowledge sharing between West and Brazeau County pertaining to emergency response duties and activities. The Board finds that the ERPs submitted do address the communication channels and process that would be used between these two stakeholders during an emergency.

The Board further notes that its own levels of inspections are higher for wells that receive a critical designation. For critical wells, companies are required to hold a meeting, wherein the ERP is reviewed prior to entering the critical zone. Licensees are required to notify the

appropriate ERCB Field Centre at least four business days prior to holding this meeting to facilitate the attendance of Field Centre representatives.

According to the information before the Board, West is not drilling a well that exceeds the release rate value for critical well designation (2.0 m³/s or greater). When the licence is issued, it will be documented in the ERCB records as a noncritical D570 well.

Despite the ERCB well classification, the Board directs West to conduct all precritical sour notifications and meetings consistent with the ERCB critical well expectations prior to drilling into the Nisku Formation. The Board will require that a field inspector from the ERCB attend the ERP review meeting.

The Board also heard from discretionary participants about past experiences with ERP exercises. The Board thanks these participants for their insight and opinions, as well as their suggestions. ERP exercises afford responders one means in which to train and build on existing emergency response knowledge. Other means include the presour meetings discussed above. ERP exercises essentially enable responders to “learn by doing.” As in any training or testing scenario, missteps do occur. This does not mean that the licensee is unable to respond or that the exercise was a failure. ERP exercises allow for missteps to be identified at a time when public safety is not in jeopardy. Once identified, mitigation measures can be developed and included in response planning so as to prevent them from occurring again, thus potentially increasing the effectiveness of the response for any future incidents. However, the Board does understand how landowners could be concerned about a company’s response capability if they received a list of items that need to be improved to increase the efficiency of emergency response measures.

Directive 071 requires that production ERPs be tested and exercises performed a minimum of once per year. Every third year, a full deployment or major exercise is to be conducted. West indicated that if the well was found to be economically viable, then it would be placed on production and incorporated into its Crossfire Production ERP. Should the Crossfire Production ERP be due for its *Directive 071*-required major exercise at a time that is in proximity to the scheduled drilling, completion, or testing of the 11-32 well, the Board encourages West to incorporate aspects of these operations into its Crossfire Production ERP exercise.

The Board would like to reiterate that the ERPs are compliant with *Directive 071* requirements, which are designed to ensure public safety in the unlikely event of an incident. The application of the conditions detailed above will enhance West’s ERPs and should not be interpreted as standard conditions for all future ERPs for the area. Additionally, such conditions should not be interpreted as being required in order for the ERPs to become compliant with the ERCB’s public safety regulations.

8 CONCLUSION

The Board heard evidence that communication between the Logans and West was not effective. The Board strongly encourages both parties to re-engage in the communication process. This communication should, at a minimum, include discussions relating to ERP information, knowledge of the Modeste Creek Natural Area, and stack height issues, but should also be viewed as an opportunity to build trust and establish good neighbour relations between the two

parties. The Board notes West's offer of further ongoing communication and the Logans' willingness to participate in further consultation efforts and emergency response discussions.

The ERCB has carefully considered the submissions, argument, and evidence provided at the hearing and approves West's Application No. 1623557 for a well licence subject to the conditions in Appendix 2.

Dated in Calgary, Alberta, on July 6, 2010.

ENERGY RESOURCES CONSERVATION BOARD

<original signed by>

G. J. Miller
Presiding Member

<original signed by>

B. T. McManus, Q.C.
Vice-Chairman

<original signed by>

R. J. Willard, P.Eng.
Acting Board Member

APPENDIX 1 HEARING PARTICIPANTS

Principals and Representatives (Abbreviations used in report)

Witnesses

West Energy Ltd. (West)
G. S. Fitch

D. Sheridan
T. Bouchard, P.Eng.
K. McCagherty
D. Cronkhite
K. Chow, of
Bissett Resources Consultants Limited
L. Deutsch, of
Summit Liability Solutions
R. Brown, of
Bissett Resources Consultants Limited

J. Logan and B. Logan
J. Klimek

Dr. S. Du

Energy Resources Conservation Board staff
K. Stilwell, Board Counsel
A. Allum
J. Fulford
J. Koppe
E. Rahn
C. Ravensdale
M. Richardson

APPENDIX 2 SUMMARY OF CONDITIONS AND COMMITMENTS

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 ERCB. 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. The conditions imposed on the licence are summarized below.

The Board notes that West has made certain undertakings, promises, and commitments (collectively referred to as commitments) to parties involving activities or operations that are not strictly required under ERCB requirements. These commitments are separate arrangements between the parties and do not constitute conditions to the ERCB's approval of the application. The commitments that have been given some weight by the Board are summarized below.

The Board expects the applicant to comply with commitments made to all parties. However, while the Board has considered these commitments in arriving at its decision, the Board cannot enforce them. If the applicant does not comply with commitments made, affected parties may request a review of the original approval. At that time, the ERCB will assess whether the circumstances regarding any failed commitment warrant a review of the original approval.

CONDITIONS

- The Board directs West to submit a complete and detailed drilling plan for Board approval prior to drilling.
- The Board directs West to delineate the boundaries of the wetland within 100 m of the lease, identify a more appropriate location for soil storage, and submit a revised survey plan that shows avoidance of any activity or placement of any materials in the wetland area.
- The Board directs West to conduct all precritical sour notifications and meetings associated with critical wells prior to drilling into the Nisku Formation. The Board will require that a field inspector from the ERCB attend the ERP review meeting.

COMMITMENTS BY WEST ENERGY LTD.

- To drill, complete, and test the well as if it were a critical well.
- To meet with the Logans to gain all the information relevant to the ERP.
- To minimize flaring during completions and testing.
- To suspend operations when technically possible and safe to do so during normal sour operations if an egress road inside the EPZ becomes impassable due to weather.
- To advise the Logans of the actual H₂S content of the well if it is successful.
- To place an air monitor on the Logans' property, if requested, during drilling, completions, and testing of the well.

- To include the Logans, if requested, in the completion and testing ERP.
- To ground truth the Modeste Creek Natural Area before the well is drilled. To locate and mark out main trails using GPS and to update its maps. To provide copies of the updated map to the Logans, the Board, and the Modeste Creek Valley Watershed Society.

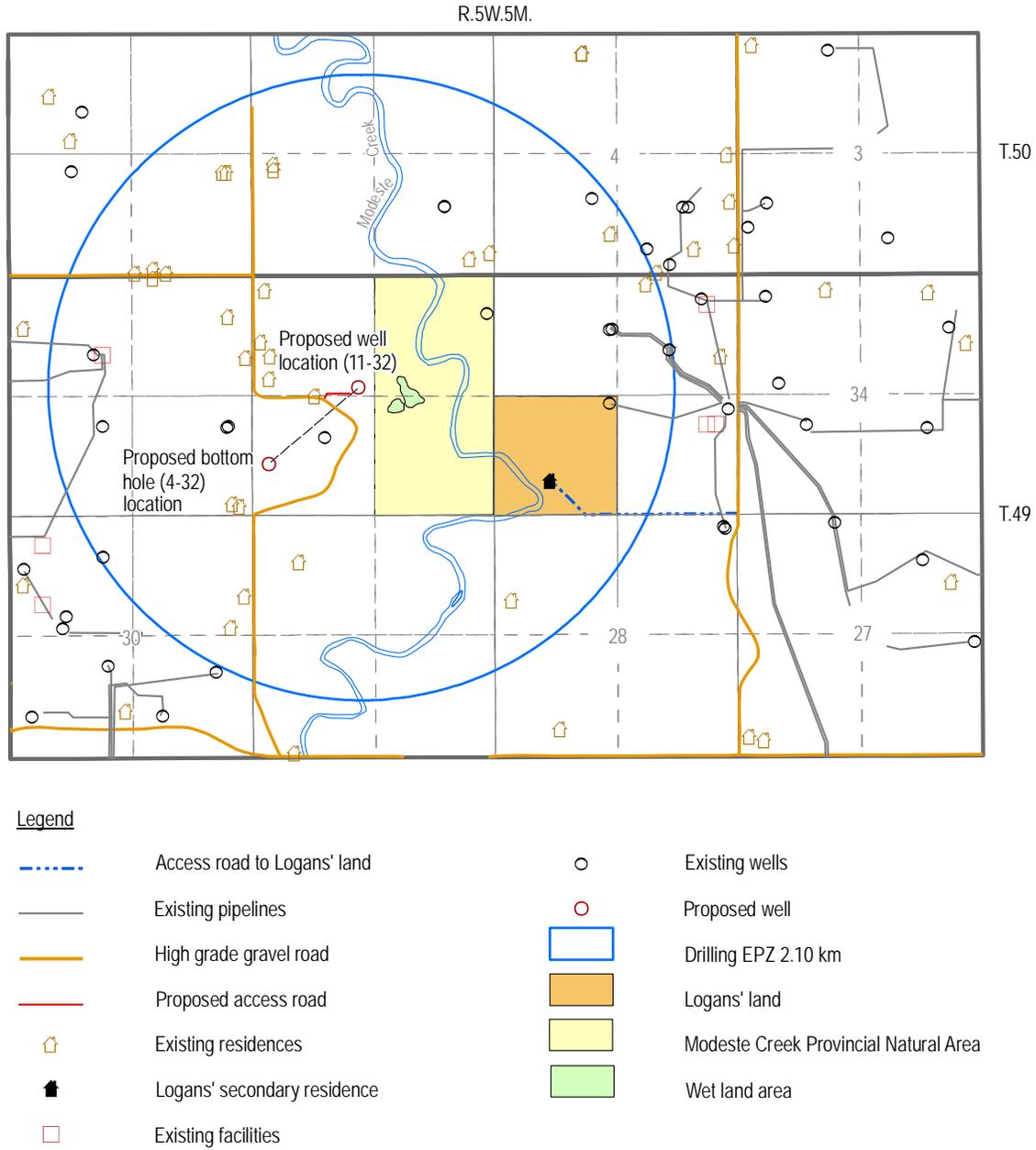


Figure 1. Project location