

**Bashaw Oil Corporation
Applications for Proximity
Critical Sour Wells
Nisku Formation, Drayton Valley
Area**

March 28, 2018

Alberta Energy Regulator

Decision 2018 ABAER 002: Bashaw Oil Corporation; Applications for Proximity Critical Sour Wells, Nisku Formation, Drayton Valley Area

March 28, 2018

Published by

Alberta Energy Regulator

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2018 ABAER 002

Bashaw Oil Corporation Applications for Proximity Critical Sour Wells Nisku Formation, Drayton Valley Area

Applications 1842705, 1851246, 1851250, and 001-00400207

Decision

[1] Having carefully considered all of the evidence, the Alberta Energy Regulator (AER) has decided, for the reasons set out in this report, to deny Bashaw Oil Corp.'s (Bashaw) well applications 1842705, 1851246, and 1851250 and *Water Act* application 001-00400207 without prejudice to any future application.

Framework for the Decision

[2] Subsection 2(1) of the *Responsible Energy Development Act (REDA)* states that the mandate of the AER is to provide for the efficient, safe, orderly, and environmentally responsible development of energy resources in Alberta. The AER is also mandated to regulate, in respect of energy resource activities, the protection of the environment and the conservation and management of water.

[3] In respect of applications for well licences, paragraphs 4(b) and (c) of the *Oil and Gas Conservation Act (OGCA)*, provide that the purpose of the OGCA is

(b) to secure the observance of safe and efficient practices in the locating, spacing, drilling, equipping, constructing, completing, reworking, testing, operating, maintenance, repair, suspension and abandonment of wells; and

(c) to provide for the economic, orderly and efficient development in the public interest of the oil and gas resources of Alberta

[4] As required under section 15 of *REDA* and section 3 of the *Responsible Energy Development Act General Regulation*, when considering the well licence applications, the AER must consider:

- the social and economic effects of the proposed wells,
- the effects of the proposed wells on the environment,
- the interests of landowners, and
- the impacts on a landowner as a result of the use of the land for the proposed wells.

[5] References in this decision report to specific parts of the record are intended to assist the reader in understanding the panel's reasoning on a particular matter and do not mean that the panel did not consider all relevant portions of the record with respect to that matter.

Introduction

Applications

[6] On October 29, 2015, Bashaw filed application 1842705, and on February 2, 2016, it filed applications 1851246 and 1851250 under section 2.020 of the *Oil and Gas Conservation Rules*. The applications were to drill and operate three proximity critical sour wells on a multiwell pad in Legal Subdivision (LSD) 9, Section 35, Township 49, Range 7, West of the 5th Meridian, about 2.3 kilometres east of Rocky Rapids, Alberta (see appendix 2).

[7] The wells would be directionally drilled to bottomhole locations at LSD 04-01-050-07W5, LSD 15-35-049-07W5, and LSD 08-34-049-07W5, targeting crude oil in the Devonian Nisku Formation. The wells would have a maximum hydrogen sulphide (H₂S) content of 211.5 moles per kilomole (21.15%), and the cumulative completion/servicing H₂S release rate would be 1.34 cubic metres per second with a corresponding emergency planning zone of 0.94 kilometres.

[8] A proximity critical sour well is one that could potentially release large quantities of hydrogen sulphide (H₂S), causing significant harm to nearby people. The AER considers the H₂S release rate and the well site's proximity to an urban centre when categorizing a critical sour well.

[9] On August 31, 2017, Bashaw applied to the AER for approval under the *Water Act* to infill one seasonal marsh wetland during the construction of the proposed multiwell pad and to infill or otherwise affect two seasonal marsh wetlands, one shrubby swamp, one deciduous swamp, and one ephemeral drainage area during construction of the access road to the proposed multiwell pad.

Background

[10] The AER issued the notice of hearing on December 20, 2016. The panel granted full participation rights to forty-nine landowners who subsequently chose to collaborate as the Drayton Valley Landowners Group (the landowners) and partial participation rights to the Brazeau County (the County) and the Eagle Point-Blue Rapids Parks Council (Parks Council).

[11] We held a prehearing meeting on March 13, 2017, in Drayton Valley to hear the parties' views on the scope of the hearing and a number of procedural matters. We issued our decision on the prehearing meeting on March 22, 2017.

[12] On June 14, 2017, in response to an information request from the AER, Bashaw advised that it had new H₂S information that resulted in the calculation of a higher H₂S release rate and larger

corresponding emergency planning zones. As a result of the change, on June 19, 2017, the AER advised the parties by letter that the proceeding would be placed in abeyance until Bashaw had updated all materials associated with the well applications. On October 4, 2017, the AER rescheduled the hearing for December 13, 2017, and incorporated the *Water Act* application (00400207-001) into the proceeding.

[13] On October 3, 2017, the landowners submitted a motion to compel Bashaw to provide full and complete responses to sixty of their information requests. In response to the motion, the panel directed Bashaw to provide complete answers to nineteen of the landowners' requests. On October 26, 2017, Bashaw filed a motion to strike portions of the expert evidence filed by the landowners. The panel declined to strike the evidence, ruling that it would determine the relevance and weight of the evidence at the end of the hearing.

[14] In a letter dated November 24, 2017, the Parks Council informed the AER that it would not be participating in the oral portion of the hearing but requested that its written submissions be considered by the panel.

[15] The oral hearing before hearing commissioners H. Kennedy (presiding), B. Zaitlin, and C. McKinnon began on December 13, 2017, and ended on December 21, 2017. Those who appeared at the hearing are listed in appendix 1.

Issues

[16] The issues in the proceeding were as follows:

- location of the proposed wells
- potential effects on safety, nuisance, animal safety, health, and the environment (including effects from pollution and flaring) and social and economic effects of development
- emergency preparedness and response, including how the plan is tailored for this site and the activities planned; whether the level of consultation with the local authority and the public is adequate; and Bashaw's capability to effectively lead the response and coordinate with the public and local authority should an emergency arise
- the calculation of the emergency planning zones and ERCBH2S model inputs and the outputs (the methodology or parameters of the ERCBH2S model, *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting* requirements, AERflare, AERSCREEN, AERMOD, or the *Alberta Ambient Air Quality Objectives* were not within the scope of the proceeding)
- Bashaw's operational capability to safely carry out and manage the activities authorized by the well licences
- the *Water Act* application

[17] Bashaw's financial capacity to safely carry out its responsibilities was noted as an issue in the prehearing meeting decision if the parties provided relevant information relating to Bashaw's financial capacity. But since no evidence related to this concern was provided, it was not considered in the hearing.

[18] In its decision on the landowners' information request motion, the panel stated that the hearing is not intended to be a review of the adequacy or the appropriateness of the AERs requirements for well licences.

[19] The County's participation was limited to Bashaw's consultation with it on the emergency response plan (ERP) and the *Water Act* application on the proposed access road.

[20] The Parks Council participation was limited to a written submission regarding park use, including numbers of users and type of use by time of year for the park area that falls in Township 49, Range 7, West of the 5th Meridian (area on the west side of the North Saskatchewan River).

[21] The panel carefully considered all of the evidence filed in this proceeding. However, since we have decided to deny Bashaw's applications, only those issues that are pertinent to its decision are discussed here—namely emergency preparedness and response, consultation, adequacy of the ERP, egress, Bashaw's capability, and social and economic effects.

Emergency Preparedness and Response

ERCBH2S Model

[22] *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry* requires an ERP from companies drilling critical sour wells or developing facilities where H₂S is a factor. The AER must be confident that an applicant is sufficiently prepared to implement its ERP and is able to carry out an effective emergency response to incidents that could result in life-threatening or serious and possibly irreversible health risks on the public. Ensuring public safety is a paramount concern for the panel.

[23] *Directive 060* requires that the ERCBH2S model be used for calculating emergency response and planning zones for sour gas wells, pipelines, and production facilities using thermodynamics, fluid mechanics, atmospheric dispersion, and toxicology modelling. Applicants must also use ERCBH2S to model H₂S dispersion and determine three emergency planning zones: the initial isolation zone (IIZ), the protective action zone (PAZ), and the emergency planning zone (EPZ). The IIZ is an area in close proximity to a continuous hazardous release where indoor sheltering may provide limited protection due to the proximity of the release. The PAZ is an area downwind of a hazardous release where outdoor pollutant concentrations may result in life-threatening or serious and possibly irreversible health effects on the public. The EPZ is a geographic area surrounding a well, pipeline, or facility containing hazardous product that requires specific emergency response planning by the licensee.

[24] Bashaw filed its initial H₂S release rate on August 20, 2015, and updated it on June 15, 2017. The update changed the H₂S release rate from 0.2049 m³/s to 0.3948 m³/s. This increased the sizes of the planning zones: the IIZ increased from 0.19 km to 0.21 km, the PAZ increased from 0.75 km to 0.82 km, and the EPZ increased from 0.88 km to 0.94 km. The change in H₂S release rate also resulted in the wells changing from level 1 to level 2 as per *Directive 056 Energy Development Applications and Schedules*, Table 7.5. Level 2 wells have different setbacks to dwellings, unrestricted county developments, and urban centres.

[25] Bashaw's inputs into ERCBH2S were the H₂S release rate, the H₂S concentration, and wellbore casing measurements. Bashaw stated that it calculated the release rates for the proposed wells in accordance with the standard industry practice as set out in Canadian Association of Petroleum Producers' *H₂S Release Rate Assessment and Audit Forms* (December 2011 edition) and *Directive 056*. Bashaw submitted that the landowners did not provide any evidence that Bashaw's inputs or outputs for the ERCBH2S model were incorrect.

[26] The landowners engaged an expert, Dr. Brian Zelt, to review the ERCBH2S model inputs and outputs. Bashaw filed a motion to strike portions of Dr. Zelt's report on the grounds that it challenged the ERCBH2S model and was not within the scope of the issues in the proceeding. In its decision on the motion, the panel decided not to strike Dr. Zelt's report and stated that his evidence would be assessed for relevance and weight in its final decision. Dr. Zelt spoke to the value of considering additional information provided by the ERCBH2S program to better preplan the emergency response for all situations, which is not currently required by the AER, but confirmed that Bashaw did nothing wrong in its use of the ERCBH2S model.

Panel Views

[27] Bashaw used the ERCBH2S model correctly and included appropriate inputs in defining the IIZ, PAZ, and EPZ.

[28] Some of Dr. Zelt's evidence, including his evidence on the advantages of using additional outputs from the ERCBH2S program, went beyond the AER requirements for emergency response planning. This evidence did not factor into the panel's decision.

Consultation

Public

[29] Bashaw introduced the project at an open house in Drayton Valley on September 24, 2015. Bashaw's written evidence shows that initial personal consultation and notification occurred mid-October 2015, and the applications were submitted fourteen days later on October 29, 2015. Bashaw sent an information package to stakeholders and the AER on October 30, 2015. It sent subsequent packages on

February 2, 2016, and March 9, 2016. A third information package containing responses to the statements of concern was sent on May 17, 2016, and a final information package was sent on September 30, 2016. Bashaw hosted an open house and town hall meeting on November 16, 2016. Bashaw stated it received and responded to many questions from landowners during and after the open houses.

[30] Bashaw said that when it started its consultations, it was aware of local concerns about the project and encountered early, organized, and persistent opposition to the drilling of the wells. It knew sour development would be highly contentious and was aware of residents' expectations regarding an alternate egress road. Bashaw chose the project site despite strong local opposition because there are no other well bores in the area capable of evaluating the production potential of the formation, saying the chosen surface site minimizes surface impacts and provides a direct drill path and acceptable distance to all three bottomhole locations.

[31] Bashaw noted the difficulty of consulting meaningfully with people who are fundamentally opposed to the project and stated that residents were unwilling to engage in its consultation and notification efforts. Due to the perceived opposition, Bashaw testified that it chose to complete the majority of its participant involvement program after it submitted the well applications to the AER.

[32] Bashaw argued that there was plenty of consultation with the landowners, though it admitted that the consultation may have been positional or adversarial. Bashaw said it is prepared to accept responsibility for its part in that, but so must the landowners. Bashaw acknowledged that it could have been kinder and gentler but argued that it would not have "made a speck of difference with respect to resolving the concerns of the members of the [Drayton Valley Landowners Group]" given the opposition of the landowners to the project. According to Bashaw, the residents were opposed to sour development and refused to engage in consultations. The problem was not that Bashaw would not engage with them but that they did not want to hear the message.

[33] The landowners testified that Bashaw did a very poor job on consultations. One landowner said that Bashaw dug its heels in and shut the door on them right off the bat. Another landowner testified that at one of Bashaw's open houses, she asked how Bashaw would evacuate all of their horses in the event of an emergency. Bashaw's ERP representative, Mr. Brown, replied that she and her husband would have to figure that out for themselves. She further testified that she heard Mr. Brown commenting in a loud voice to another Bashaw representative, "Did you see how I shut her down?" She stated that she wasn't sure who he was referring to, but she thought the comment was "rude and disturbing."

[34] Some landowners stated that the notification packages were Bashaw's only preapplication attempts at one-on-one engagement. A landowner whose land is adjacent to the well pad site testified that Bashaw's representative entered through an unlocked door and left documents on his couch when he was not at home. He never met face-to-face with a representative from Bashaw.

[35] The landowners submitted that Bashaw could not take their specific issues into consideration in the drafting of its site-specific ERP because it had not consulted with them adequately. One landowner who resided in the egress area testified that she was not even clear on whether her home was in the EPZ. Another stated that he went to Bashaw's meetings with some concerns but also with an open mind because he has experience working with H₂S gas in energy operations. As the initial meetings went on, however, he and his wife became more concerned because Bashaw seemed to raise more new questions than answers.

[36] Another landowner testified that he had been employed in places where serious injuries and death occurred through human error, poor planning, incompetence, or negligence. He said some companies are generous in their thought and philosophy, look at the regulations as a minimum, and go far beyond them to ensure the safety of people. There are others that go through the motions, follow the rules grudgingly, and believe that passing the minimum standards is acceptable. In his view, Bashaw took the latter approach. It included only the people that it absolutely had to and did the minimum it could to meet the regulatory requirements.

Panel Views

[37] Bashaw's consultations with the landowners were inadequate for these applications. Applicants are required by *Directive 056* to implement an effective consultation plan before filing an application. The *Directive 056* requirements are considered the minimum acceptable consultation and notification for routine applications and are clearly identified as the starting point for effective participant involvement, which is expected to take place throughout the life cycle of the project. Yet Bashaw admitted that, due to the perceived opposition, it chose to complete the majority of its participant involvement program after it submitted the well applications to the AER. While consultation does not have to satisfy concerns, the parties should be respectful, responsive, and responsible. The evidence on consultation does not persuade the panel that Bashaw's consultations met this expectation.

[38] It is through consultation that issues are raised so that proponents are able understand concerns and address them effectively. *Directive 056* provides that "in some areas of the province, public expectations regarding personal consultation and notification may be higher than in others." The panel is of the view that this project site is one of the areas of the province where public expectations regarding personal notification and consultation are higher. Bashaw argued that it exceeded the minimum requirements, but Bashaw's consultation did not meet the spirit or intent of the *Directive 056*. Bashaw's decision to do the minimum was not appropriate in these circumstances given the landowners' concerns and the potential risks of a high-consequence incident.

[39] The panel heard accounts from landowners that were troubling, especially for consultation for proximity critical sour wells. We learned that Bashaw did not meet with the landowner whose land was adjacent to the well site. We heard from several landowners that Bashaw shut down legitimate questions

in open houses and was not open to discussing certain issues, including alternate egress and animal evacuation. We find the landowner accounts of how the consultation happened were credible. The lack of details on local challenges in Bashaw's site-specific ERP suggests that Bashaw did not speak to the landowners directly to understand how to incorporate their particular needs into its emergency response.

[40] The landowners' opposition to the project made consultation difficult for Bashaw, and some landowners made it clear they did not want to deal with Bashaw at all. However, while members of the public are encouraged to engage in consultations, they are not required to do so. The onus is on the applicant to plan and implement effective consultation. The fact that some members of the public were opposed to Bashaw's project does not negate the requirement for Bashaw to carry out effective consultations. Applicants are still expected to make a genuine effort to create and conduct an effective consultation program, even in the face of local opposition.

County

[41] Bashaw said it met with County representatives on September 3, 2015, to introduce the project. County representatives attended the open house on September 24, 2015. Bashaw stated that its land agents provided the County with an information package on October 21, 2015, and met with the County on October 30, 2015 to discuss the County's role in the event of a well-site emergency. Bashaw believed it had a mutual understanding, and that it was "business as usual" with the County.

[42] The County submitted that Bashaw got its process fundamentally wrong when it filed its applications and then started the ERP planning process. Bashaw sent a person to the County office for fifteen minutes and recorded that as a "mutual understanding." The County argued that this was not right and not consistent with the high bar set by the AER for emergency planning.

[43] The County's position is that consultation on the ERP must be planned and implemented before an application for licences is filed and that this is done early to ensure that there is no misunderstanding regarding roles and responsibilities between the operator and the County. The problem is not that the ERP was not filed with this application; the problem is that there was no consultation on the ERP before filing the application. The County submitted that Bashaw decided there was no point in early engagement and went immediately to an application. This forced the County to file a statement of concern.

[44] The County submitted that as a result of the poor consultation process, it was unaware of what Bashaw would need in the event of an emergency or the expected role of the County in an emergency. It did not know who was responsible for responding to an emergency or evacuating the public outside of the EPZ. When Bashaw went out to talk to landowners, Bashaw asked the landowners how they would like to be consulted. Bashaw did not ask this question of the County. Bashaw never asked the County council if it would commit to a mutual understanding on the ERP.

[45] In its final argument, Bashaw submitted that the County's claims regarding lack of consultation were not credible. Consultation ended because the County turned away, not Bashaw. Bashaw also submitted that there is no requirement that the ERP be submitted with the application, as argued by the County.

Panel Views

[46] Bashaw should have made additional efforts to engage with the County. We agree with the County that the fifteen-minute meeting between a County employee and Bashaw should not have been treated by Bashaw as a "mutual understanding." By its own admission, Bashaw approached the County in the usual way and expected the County to engage with it as it always had with other operators for other applications. However, Bashaw was not able to obtain confirmation of nonobjection, and the County subsequently filed a statement of concern. Bashaw did not meet with the County subsequently.

[47] Bashaw's lack of consultation with the County meant that the County did not have an understanding of its role in emergency response. This was of concern to us because the County and Bashaw would each have important obligations in the event of a serious emergency and would have to mount a coordinated response. The evidence suggested that the County must accept some accountability for not engaging with Bashaw following its council decision to file a statement of concern in this proceeding. However, we find that Bashaw should have continued its efforts to try to reach a mutual understanding with the County after the filing of its applications.

[48] Consultation is an important part of the application process and is also essential to the gathering of information for the development of a strong site-specific ERP. Bashaw's inadequate consultations resulted in insufficient information from the landowners and County, which in turn led to significant gaps in the ERP.

Adequacy of the ERP

[49] In final argument, Bashaw stated that the key issue in the proceeding is whether Bashaw has demonstrated that its site-specific ERP will appropriately protect public safety in the unlikely event of an emergency at the wells. Bashaw submitted that this encompasses most of the issues raised by the County and the landowners, including the issue of a single egress, the proximity of the wells to the provincial park, the issue of poor cell coverage, the fact that many people spend a great deal of time outdoors, specific health and mobility issues that could affect landowners' ability to evacuate, and evacuation of pets and livestock. Bashaw submitted that its ERP adequately addressed all of these concerns and ensured public safety.

[50] Bashaw initially engaged Bissett Resource Associates (Bissett) to develop and carry out its ERP. Bissett began working in the Drayton Valley area in 1986 and was involved in the Lodgepole blowout inquiry. Bissett no longer exists but Bashaw contracted directly with Bissett's former representative, Mr.

Brown, to carry out the ERP process. Mr. Brown stated that he was personally involved in over 150 Nisku critical sour site ERPs in the Pembina area. Bashaw argued that it would be hard to find someone with more experience in the area.

[51] Mr. Brown was involved in early consultation efforts and testified that he would be on the ground in an emergency to coordinate Bashaw's response. Mr. Brown stated that in his opinion Bashaw developed a comprehensive ERP that meets or exceeds all regulatory requirements to ensure public safety.

[52] Bashaw acknowledged that the ERP is not up to date but said that it would be before the start of critical sour operations. The ERP was written in January 2016. Bissett was still active then, and the alternate emergency operation centre in the ERP would have been in Bissett's office. Bashaw said that when the ERP gets updated, the alternate emergency operation centre would be a new location that is able to manage an incident. In addition to the emergency operation centre update in the ERP, Bashaw would also need to update the ERP to reflect the people currently in positions with Bashaw.

[53] Bashaw submitted that it would exceed *Directive 071* requirements regarding air monitoring to ensure that the public was adequately protected. Bashaw stated that during critical sour drilling it would have one mobile air-monitoring unit and one rover using a personal handheld air monitor. (A rover is a person that is tasked, as outlined in the ERP, with air monitoring, driving public roads, and assisting evacuees as required.) Bashaw stated that additional air monitoring would be available if there was a well-control issue. If an incident occurred, there would be air-monitoring readings taken by mobile air-monitoring units and personal handheld air monitors, and if the PAZ needed to be expanded, it would be. Bashaw stated it has the resources to expand the PAZ to whatever distance in whatever direction.

[54] In the event of a level-1 emergency (a well-control issue but no release of H₂S gas and no immediate danger to the public), on-site personnel would control the situation. Bashaw would alert the mobile air-monitoring units in the EPZ, notify sensitive residents who might wish to voluntarily evacuate, and advise company, contract, and government personnel of the situation in order to activate the ERP. In a level-2 emergency there is a limited hazard to the public from a controlled low-volume flow of H₂S gas occurring at surface. In a level-3 emergency an uncontrolled release of H₂S gas from the well could pose a serious hazard to the public. In these cases, if the circumstances required, Bashaw said it would ignite the well within fifteen minutes. If safe evacuation were not possible, residents would be directed to shelter in place if a suitable structure were available. Roadblocks and rerouting of traffic would be carried out to ensure that no one entered the evacuation zone. Thirty-one air-monitoring units and personal handheld air monitors would be used to track the H₂S plume.

[55] Bashaw stated that the AER *Directive 071* decision tree is clear: in the IIZ, PAZ, and EPZ, the public protection measure is to shelter in place. Members of the public are only to evacuate when it is 100 per cent safe and when they are directed to do so by emergency responders.

[56] Bashaw stated that they would be conducting training sessions within 96 hours of reaching the first sour formation of each of the wells, with a second session per well before entering the Nisku Formation.

[57] Mr. Brown and Mr. McDonald made multiple commitments on behalf of Bashaw to “get big fast” in an emergency by securing buses, rovers, roadblocks, and large-animal evacuation vehicles. They also testified a number of times that Bashaw would do what it takes to ensure the safety of the public, though they did not provide specific details regarding how Bashaw would carry out these plans.

[58] Eagle Point Provincial Park and Blue Rapids Recreational Area are recreational areas used in the summer by campers and hikers and in the winter by cross-country skiers. Bashaw stated that it is aware that the recreational areas are used by large numbers of people throughout the year and that young people may be dropped off in the park to ski or hike on their own. There is also a speedway located just east and adjacent to the hamlet of Rocky Rapids that could have up to 2500 people attending an event there in the summer. The local speedway is not within the EPZ, so Bashaw did not notify those responsible. However, Bashaw testified that it would work with parties to understand recreation usage in order to schedule sour operations in ways not to interfere with recreational activities.

[59] Bashaw said it would work with landowners to develop individualized animal evacuation and care plans. Bashaw said it understands that each household is different and stated that it would deal with these on a case-by-case basis to meet their needs to evacuate animals safely with trained personnel. Mr. Brown testified that he could engage two former barrel racers to wrangle horses. Bashaw would bring in trucks to evacuate cattle if necessary. Bashaw said it would be willing to do what it takes to keep the landowners’ animals safe should an incident occur.

[60] Many landowners testified that they would be fearful for their safety and that of their family members and animals if the licences were granted. They said the ERP lacks sufficient detail that would reassure them that Bashaw has the wherewithal or competence to deal with a sour well incident this close to their homes. They said Bashaw wants them to shelter in place and evacuate only when it is safe to do so, but they are often outside where there is poor cell phone coverage. Furthermore, their homes are not airtight and, in their view, sheltering in place would not adequately protect them from an H₂S release.

[61] The landowners submitted that while Mr. Brown says he has a plan and people can be reassigned in an emergency, they questioned how the plume would be tracked if mobile monitors are to be reassigned as road blockers. The landowners’ expert witness, Dr. Batterman, questioned whether Bashaw’s air-monitoring program would be sufficient to measure the levels of H₂S. The landowners also asked how the rovers would be able to reach people in their gardens or children playing by the river. The landowners submitted that all they have from Bashaw are vague assurances that it will meet or exceed standards but no specific details on how this would be done.

[62] The landowners argued that Bashaw has no detailed plan for evacuating animals in the ERP; it just said it would do it. The landowners' expert witness, Dr. Coppock, testified that many people do not understand what to do in an emergency when animals need to be sheltered. Animal welfare, both in his opinion and according to scientific literature, is absolutely essential in an emergency plan because the human-animal bond can affect people's behaviour. Dr. Coppock testified that it has been documented that the bond might cause some people to remain in an unsafe area to rescue their pets. Furthermore, animals have complex social interactions and often cannot be safely housed together.

[63] The landowners noted that there are a large number of horses and cattle that would have to be evacuated, and the location of the wells would pin a horse-training centre and a large grazing lease against the river valley with no alternate egress. One landowner testified that it would take three riders to corral the livestock and two trips with a trailer hauling forty-five cattle at a time to evacuate them. The landowners were not confident that Bashaw could carry out such a complex series of operations.

[64] The landowners submitted that Bashaw's ERP reflects the sort of cavalier approach that should not be taken with residents' health and safety. If Bashaw wants to "get big fast," as Mr. Brown said, it should have coordinated with the County, which has local resources. The landowners argued that if Bashaw wants to deal with the emergency on its own, it needs to have on-the-ground resources and not rely on far-flung people that it would bring in after the emergency occurred. They submitted that the ERP did not adequately consider all of the measures that would be necessary in the event of an emergency. In final argument, the landowners said that their testimony and the confidential medical evidence highlighted some of the local complexities that would arise in an emergency, and they feel Bashaw is not prepared to deal with such complexities.

[65] The County identified a need for tabletop exercises to determine the viability of the ERP. It argued that exercises should occur well before the spudding of the first well and not just 96 hours before the start of drilling into the first sour zone. The exercises should occur as part of the assessment of the ERP under *Directive 071*. The County said that the purpose of sound planning is so that responders like the County have a clear understanding of what they are supposed to do and submitted that there is no certainty in this area at all in Bashaw's ERP.

[66] The County stated that Bashaw must have the appropriate resources available to respond to an emergency in the area if it is the responsible party. It pointed to the evidence of Mr. Brown stating that zero assistance would be required from the County and Bashaw's answer to an information request where it stated that it was unaware of any circumstances relating to its project that would require assistance from the County. Yet, the County noted, the ERP states that if public protection measures are required beyond the EPZ, they will take place in accordance with Bashaw's arrangement with the local authority. The County argued that there is no such arrangement between Bashaw and the County.

Panel Views

[67] In accordance with *Directive 071*, an ERP must address three core principles: (1) what could go wrong, who could be impacted, and who needs to be involved; (2) what resources and training are needed; and (3) does the licensee have the capacity to respond during a real incident. Licensees have a responsibility to ensure that they are fully prepared and capable of responding to any level of emergency, considering the site-specific area terrain and demographics. We must be confident that an applicant has a sufficient level of preparedness and the capability to implement its ERP.

[68] There are currently multiple regulatory requirements for drilling a critical sour well to prevent an H₂S release. These include requirements for well design, proper operational drilling practices, and safety precaution measures. In the event of an uncontrolled release of H₂S from the well, there would commonly be time to ignite the release so that no H₂S would escape the well pad. If the well could not be ignited and an H₂S plume escaped the immediate area of the well site, people in the EPZ would be directed to shelter in place until the plume dissipated. For those sheltering in place, it is unlikely that they would be exposed to H₂S at a concentration that could seriously injure them. The plume would disperse, and the H₂S concentrations would not likely be at a high enough level to cause injury from the short-term exposure.

[69] Despite the many layers of safety precautions, however, drilling a sour well is still not risk free. A full-scale prolonged blowout of a sour well, while a remote possibility, would be a high-consequence incident with the potential for serious injuries or deaths. In this scenario, an uncontrolled release of H₂S at concentrations high enough to cause harm to people and animals in the area, an evacuation would have to be carried out. We heard evidence from all parties that an evacuation process in the event of a serious incident would be extremely complex and would have to be fluid in terms of reacting to the situation at hand. Addressing an incident could be hampered by the complicated circumstances of the residents, frequent poor road conditions in the area, intermittent cell phone coverage, and the area's deep valleys, large hills, and the river valley where people live and engage in outdoor recreational activities. Bashaw has not convinced the panel that it has the capability and planning in place to carry out such a complex evacuation.

[70] We accept the accounts of the landowners that many of their concerns, including spotty cell phone coverage, health and mobility issues, plans for evacuation of horses and companion animals, and egress towards the well site were not sufficiently taken into consideration by Bashaw in its ERP. The fact that a landowner within the egress zone did not know whether she was in the emergency response planning zone suggests that Bashaw had clearly not engaged in effective communications with that individual. The purpose of consultation under *Directive 071* is to gather specific information from people within the EPZ in order to prepare the ERP and to familiarize residents with emergency protection measures. As a result of its poor consultations, Bashaw did not have a strong enough understanding of the many local challenges that it would face in an emergency situation. The result was that Bashaw's ERP does not have sufficient site-specific information.

[71] One of the specific issues for this proceeding was how the ERP is tailored for this site and activities. It was not apparent to us that the ERP was sufficiently tailored in this respect. Bashaw filed a basic ERP and planned to work out site-specific details after it received its licences from the AER. For critical sour wells in this location, more of the site-specific details should have been worked out in advance of the hearing.

[72] Bashaw acknowledged its rocky relationship with landowners and the County. The lack of trust in these relationships was very apparent. We heard few details from Bashaw on how it would go about building the relationships required to get the information it needs from local residents and the County to update its site-specific ERP after it received its licences. In this case, where emergency response and preparedness was one of the main issues for the proceeding, it is not an acceptable approach to grant the licences and then allow Bashaw to revise its ERP afterwards.

[73] To address the lack of specific and local details in the ERP, Bashaw made a number of commitments at the hearing to address the many landowner safety concerns and to cover off areas that had not been included in its ERP. In this case, where public safety is a paramount concern, good faith undertakings are not sufficient. The panel considered whether including conditions on the licences might have addressed the gaps in the ERP. However, the list of conditions would have been extensive, and with our concerns regarding egress and Bashaw's capacity, we did not consider that conditioning the licences would have been sufficient to ensure public safety.

[74] We are also concerned about the contradictory evidence from Bashaw about the role the County would play in the event of an emergency. As counsel for the County pointed out, Bashaw's answers on how it would coordinate with the County ranged from saying it needs "zero" assistance to a statement that public protection measures beyond the EPZ will take place in accordance with Bashaw's arrangement with the local authority. Yet there is no arrangement with the local authority. Bashaw asked the panel to rely on its commitment that it can get this sorted out a few weeks before it spuds the well. This is not enough time, particularly given the difficult relationship it has had with the County to date. We are therefore not convinced this critical issue would be resolved in a way that would ensure public safety.

[75] Some of Dr. Batterman's expert evidence was outside of the scope of this proceeding and was not relied on by the panel in reaching its decision. Dr. Batterman's evidence on Bashaw's air-monitoring program was potentially relevant, but in view of the panel's decision to deny the applications, Dr. Batterman's evidence on this issue did not factor into the decision.

Egress

[76] Bashaw stated that when it started consultation on the project, it was open and honest with landowners and the County that it was not prepared to build an alternate egress road.

[77] Bashaw testified that it knew from the start that a single egress route from the EPZ would be a controversial issue. It expected that local residents would want Bashaw to build an alternate egress road as West Energy was conditioned and committed to in 2007 when it applied to drill similar wells in the area. Bashaw evaluated the feasibility of building an alternate egress road and found it was not an economically viable option. Bashaw submitted that the evidence demonstrated there were no suitable routes available for alternate egress.

[78] Bashaw said it understood that some local residents felt that they were not being listened to on this issue but there was no point in discussing the matter further when it had reviewed the issue closely and decided an alternate road was not feasible.

[79] Bashaw submitted that *Directive 071* has never required multiple egress routes. Residences adjacent to the EPZ or on dead-end roads that require egress through the EPZ must be identified, and Bashaw did this; it included thirty-four additional houses in the EPZ because people in those homes had no alternative egress route. All of the parties agreed that the private road on the large hill leading out of the northeast quadrant of the river valley cannot be considered passable and could not reliably be considered an alternate egress.

[80] The County provided evidence on three potential alternative egress routes but acknowledged that none of these routes was viable. The first, referred to as the original West Energy road, would cost up to ten million dollars to build. The second egress, “the updated road,” applied for by West Energy, was considered by the AER’s predecessor, the Alberta Energy and Utilities Board (EUB), and rejected due to public opposition at the time. The third egress, in the northeast quadrant of the river valley, is also not viable because it is steep, frequently impassable, and on private land. Bashaw argued that the alternative egress routes are not viable, *Directive 071* does not require alternative egress, and that the panel should find that its plan to use the single egress meets regulatory requirements.

[81] The County was clear that in its view there should be an alternate egress for people located east of the wells site if these applications were to be approved. It submitted that changes in road and weather conditions may degrade the proposed access road and recommended that the AER require Bashaw to find an alternate egress route to ensure the safety of residents and County emergency personnel. The lack of an egress route was a significant issue for the County.

[82] The lack of an alternate egress route was also a major concern of the landowners. There are 34 residences within the EPZ that would be required to egress if an evacuation were required: 8 would be able to egress away from the well site, 26 would have to head towards the well site. Of those 26, 23 would have been served by the possible alternate egress route. The landowners stated that since H₂S is heavier than air, it could accumulate in the valley bottom if the wind drove the plume to the northeast. This would leave them pinned between the well site and the river with no choice but to drive through the EPZ,

towards the well. They said there is no road in existence that could serve as an effective alternate egress for them.

Panel Views

[83] Bashaw is correct that *Directive 071* does not explicitly mandate an alternate egress route for proximity critical sour wells and allows for egress through the EPZ. Evacuation is only necessary in a worst-case scenario when the well cannot be ignited and a blowout occurs. It is therefore unlikely, given the many safety precautions required in the case of proximity critical sour wells, that an evacuation will ever be necessary. Nevertheless, given the potential threats to human safety from sour wells, it is essential that applicants such as Bashaw plan for all levels of emergencies and the safe evacuation of people potentially in harm's way.

[84] *Directive 071* sets out the minimum requirements for alternate egress. Sometimes applicants may need to go beyond the minimum requirements in order to ensure public safety. This is one of those cases. A number of factors in this matter make an alternate egress road necessary to ensure safe development of the resource:

- The occupants from 26 residences in the EPZ that would need to egress towards the well site if required to evacuate.
- The people engaging in outdoor activities east and northeast of the well would not be easily reached or able to shelter in place.
- The local terrain, with its deep valley where the release could potentially flow and stagnate, increases the risk that certain residents may be exposed to H₂S at levels that could cause health impacts. People living northeast of the well site would be particularly vulnerable in this regard, and they are the ones who have no alternative egress route.
- The County, which has jurisdiction over the roads, advised us of its concerns about the problems with the existing roads in certain conditions and that it recommends an alternate egress for the safety of residents and its employees.

Bashaw's Capability to Safely Carry out the Project

[85] Bashaw's objective in the hearing, according to its CEO, Mr. McFeely, was to demonstrate that it has the technical expertise, oilfield experience, and resources to drill the proposed proximity critical sour wells in a responsible and safe way that satisfies AER requirements and makes safety the top priority. Mr. McFeely confirmed that the three proposed wells would be the first proximity critical sour wells that the company drilled. Mr. McFeely stated that he was president and CEO of another company that in 2006 had completed a 4900 metre sour gas well near Hinton that cost forty-five million dollars to drill, complete,

and tie in. Though that well was not a sour well proximate to people, it was a deeper and more difficult well to drill than the wells in this application.

[86] Bashaw committed to comply with all well-site personnel qualification requirements for drilling and completing the wells. It prepared a list of twenty-seven commitments that it submitted at the oral hearing, a number of which related to improving the ERP and ensuring that the wells would be drilled safely.

Panel Views

[87] Key aspects of Bashaw's evidence did not give the panel confidence that Bashaw is capable of ensuring that the project can be carried out in a safe manner. The panel's concerns in this area arose primarily from Bashaw's inconsistent or contradictory evidence and promises and a number of undertakings that were vague, overly broad, and unlikely to be successfully carried out:

- Bashaw made the commitment to ignite the well within fifteen minutes of an H₂S release. On this key matter of public safety there was confusion in Bashaw's evidence, and this undermined the panel's confidence in the company. Under questioning, Mr. Darling, the drilling supervisor and operations sections chief, stated that Bashaw would ignite the well within fifteen minutes of an H₂S release. Mr. Brown interjected that the ignition would be within fifteen minutes of the decision to ignite, which is the AER requirement. Mr. Darling acknowledged Mr. Brown's assertion but then restated that ignition would be within fifteen minutes of the release. Bashaw's written commitment echoed Mr. Darling's statement that ignition would be within fifteen minutes of a release of H₂S. This inconsistent and contradictory evidence is particularly concerning given that the well supervisor, the person with the authority to ignite the well during an uncontrolled release, would report directly to Mr. Darling. This evidence is also an example of Bashaw overstating its ability to respond in an emergency and undertaking commitments that it may not be able to meet. This commitment does not take into account the possibility that there may be unforeseen circumstances that could impact the ability to ignite within fifteen minutes of the release. This could include scenarios such as a worker at the site becoming incapacitated or injured and having to be removed before ignition could occur.
- Bashaw's direct evidence was clear that it was necessary to flare the wells for seventy-two hours to adequately test the reservoir. However, during rebuttal testimony, Bashaw committed to reduce the flaring for each of its test wells from seventy-two hours to twelve hours. Mr. McFeely testified that it was Bashaw's belief that less flaring is better for area residents but that Bashaw had not done a technical analysis on whether twelve hours was adequate to test the reservoir. Rather, Bashaw said it had made a "judgement call" that a reduction in the flaring was "the right thing to do." The panel therefore does not know if the undertaking to reduce flaring to twelve hours is scientifically sound. As a result the panel was left with questions about Bashaw's judgement on important technical matters such as flaring.

- Bashaw’s ERP testimony lacked clarity in a very important area. Mr. Brown reiterated on several occasions that Bashaw would “get big fast” in the event of an emergency and that it would not need any help from the County. On other occasions he stated that local responders would help manage the response in the PAZ. He stated that people that are not local but within a few hours travel time would handle things and that Bashaw might set up a response centre in the County’s offices. Bashaw said at some points that it didn’t need local resources at all and then at other points that it would welcome their help and work with them, particularly in the PAZ. Bashaw also stated that Bashaw and the County could both be enacting their ERPs at the same time without communicating. The panel finds this to be confusing and, if true, would be certain to decrease the likelihood of a successful emergency response. The evidence left the panel unclear on how or when additional resources would be used. Some of the government authorities have legally mandated roles, which Bashaw did not appear to fully acknowledge. The evidence on this matter suggested that Bashaw had an off-the-cuff attitude towards emergency planning. This did not give the panel confidence that Bashaw would be able to respond effectively to an emergency situation.

[88] As a relatively new company, Bashaw does not have a track record of safe operations. Mr. McFeely confirmed that the three proposed wells would be the first proximity critical sour wells that the company drilled. The panel had to rely on the Bashaw’s evidence, including its testimony at the hearing, to assess Bashaw’s capability to respond in an emergency. The examples cited above did not reassure us in this regard.

[89] Bashaw made numerous promises and undertakings with respect to the public safety issues raised by landowners in the hearing. It said it would consult with landowners on their specific needs and concerns so that people in the EPZ and egress areas could be assured of their safety in an emergency. From the outset of this process, Bashaw and the landowners have had a difficult relationship with each other. The panel is not convinced that Bashaw has the capability to re-establish trust and work effectively with the landowners to ensure the safety of the public in an emergency situation.

[90] Of the twenty-seven commitments Bashaw made during the hearing, some would be easy to meet, such as conducting a wildlife sweep or addressing lighting issues on the pad site. However, the panel was concerned that a number of these commitments were quite broad and not backed up by a solid plan or sufficient analysis:

- Bashaw said it would be “making sure that the Emergency Response Plan works, is executed properly and that it has enough resources on the ground” and “We will implement reasonable precautions and appropriate safeguards to minimize the risk of incidents.”
- “Bashaw commits to attempting to reach agreement with Brazeau County on a communication schedule for the purpose of the Emergency Response Plan”; “Bashaw commits to making every effort to work with Brazeau County to address and attempt to address any questions about roles and

responsibilities in the context of the Emergency Response Plan and to, if required, create a matrix of roles and responsibilities”; and “engaging in consultations with Brazeau County and the gravel pit operator regarding alternative egress towards Range Road 65.”

[91] Several of these commitments were Bashaw’s attempt to cover off areas where its evidence was not adequate. The vagueness, inconsistencies, and contradictions in Bashaw’s evidence cannot be addressed by these proposed commitments. Furthermore, Bashaw has not established a high level of trust with either the landowners or the County. The panel is not confident that Bashaw would be able to work effectively on issues that were contentious from the outset of this process. Bashaw admitted in its closing argument that “it has to build a productive relationship with local residents and stakeholders and that doing so will be challenging.”

[92] The panel considered whether the problems with Bashaw’s applications could be addressed by the imposition of a number of conditions in addition to the twenty-seven commitments Bashaw tabled at the hearing. However, the panel is not confident that Bashaw would be able to successfully carry out such conditions. In addition, the condition for an alternative egress road is something that Bashaw made clear it could not accept.

[93] The drilling and completion of proximity critical sour wells presents a potential risk to public safety, and the AER must be satisfied that the applicant can carry out the project in a safe and responsible manner. Bashaw has failed to demonstrate to the panel that this company has the ability to execute the applications and to effectively lead the emergency response and coordinate with the public and local authority should an emergency arise.

Social and Economic Effects

[94] Bashaw submitted that its project would bring economic benefits to the Drayton Valley area and the province. Sour development is permitted in Alberta, even in proximity to people. The economic benefits from energy development benefit all Albertans. If its exploratory wells were successful and further assets were built, Bashaw said the project could generate roughly \$40–80 million in royalties over a twenty-five year period as well as about \$22 500 per year in municipal taxes. Bashaw estimated just \$10 000 of tax revenue to the County for the scope of the applications before the panel. Bashaw anticipated there would be a 10% chance of success in the exploratory wells and acknowledged that if the wells are not brought on production, no royalty or tax revenue will be generated.

[95] In its written evidence, Bashaw estimated the project would involve 135 direct jobs for its duration, which includes 55 jobs related to hydraulic fracturing. At the hearing Bashaw clarified that it would not be fracking these wells, and therefore the number of jobs generated would be about 80 short-term positions. Bashaw noted that it recognizes that drilling crews are transient by nature but that Drayton Valley would benefit from the creation of jobs in the area.

[96] In final argument, counsel for Bashaw submitted that the landowners tried to downplay the economic benefits of the project by arguing they were minor compared to the annual budgets of the County and the province. But if every project were turned down because its contribution to the provincial was small, the province as a whole would be a much poorer place.

[97] The landowners disagreed with Bashaw about the financial benefits the project would bring to the area. The landowners stated that the jobs Bashaw claimed would be created by the project would be short-term, and the majority would be drilling personnel who are not part of the community. A number of the landowners also questioned the actual economic benefit to the province, stating it would be a small percentage of the provincial budget.

[98] The landowners stated that the project would not contribute to the betterment of the social and economic fabric of the region. They said it is unfair for them to assume a greater exposure to potential harm than other Albertans. They believe they are bearing more of the burden of risk than of reward, and that while Bashaw's shareholders have chosen the investment risks, the landowners have not had that choice.

[99] The landowners testified that they experienced significant stress and anxiety from repeated sour applications in close proximity to their homes and that they were forced to organize opposition time and time again. They believe that the health hazards and risks are far too high for the community.

[100] One landowner testified that she is very worried about pollutants from flaring contaminating her home and organic garden. Other landowners also expressed concerns about the impacts of the project on the values of their properties and their chosen rural lifestyle. These concerns included fear about an H₂S release, health risks from flaring, impacts of noise and nuisance, a decrease in the value of their property, safety of their animals, impacts to local businesses, and the logistical challenges that they would encounter during an evacuation.

Panel Views

[101] Energy development benefits all Albertans. Those who live in areas where the hydrocarbons are located will inevitably bear more lifestyle disruption than people who live elsewhere in the province, but they will also realize more local economic growth. Drayton Valley has seen a great deal of economic development as a result of the energy industry, and most of the landowners in this proceeding seem to recognize and accept that as part of living in the area. But it is clear that the landowners do not accept the idea of sour development near their homes. The panel understands their concerns but it is not prepared to say sour development should not happen in Drayton Valley. Sour wells, even proximity critical sour wells, can be drilled and operated safely.

[102] The panel agrees with Bashaw that the Drayton Valley area and the province would realize some economic benefits from this project. However, the economic benefits of this project must be weighed

against considerations of public safety. We have outlined the concerns it has with respect to public safety in these reasons. The evidence in this case has led us to conclude that the risk of safety-related impacts outweighs the economic and social benefits this project might bring.

Water Act

[103] Bashaw applied for approval under the *Water Act* to disturb wetlands and one ephemeral drainage during the construction of the proposed multiwell pad site and access road. In this proceeding, the panel considered the well licence applications and the *Water Act* application jointly in accordance with section 30(2) of *REDA*. For the reasons that follow, the panel is refusing to issue the approvals.

[104] Given that the well licences are not approved, the panel is not prepared to authorize the activities for which the approvals are needed. In this case, the panel is not satisfied that granting the approvals would be consistent with the purposes of the *Water Act* as set out in section 2, particularly the need to manage and conserve water resources. Furthermore, the Alberta Environment and Parks *Guidelines Regarding Appurtenance* provide that the activity for which *Water Act* approval is needed should be concrete and substantive. The panel is not satisfied that the activities for which the approvals are needed in this case are concrete and substantive as a result of the denial of the well licences. The approvals are not needed. Accordingly, the panel is refusing to issue the approvals.

Other Matters

Public Inquiry

[105] During the hearing, several members of the landowner group requested that the panel call a public inquiry into critical sour exploration and production in proximity to communities and in particular the Rocky Rapids community; some members want resources associated with the well licence applications at issue to be sterilized.

[106] The AER may conduct public inquiries as set out in section 17 of *REDA*. However, as set out in section 12(1) of *REDA*, this panel's authority is limited to the conduct of this hearing on behalf of the AER, which includes deciding on the applications before it. We have no authority to call a public inquiry into this matter.

Canadian Bill of Rights and Charter of Rights and Freedoms

[107] The landowners testified that approving this application would violate the landowners' rights under the *Canadian Bill of Rights*, with particular emphasis on the right to enjoyment of property. Further, the landowners argued that they cannot be deprived of their life, liberty, and security of person under the *Canadian Charter of Rights and Freedoms* except in accordance with the principles of fundamental justice. The panel notes that questions of constitutional law must be posed in the manner outlined in section 12 of the *Administrative Procedures and Jurisdiction Act*. That was not done in this

case and so the panel will not address the Charter arguments. Furthermore, the panel notes that the *Canadian Bill of Rights* is only applicable to federal legislation.

Conclusion

[108] Obtaining a licence or approval for energy development in Alberta is a privilege, not a right. The AER's responsibility is to provide for the safe development of resources and to consider the social and economic effects of the proposed wells, the interests of landowners, and the impacts on landowners.

[109] In considering these matters, we took into account all the evidence but focused on the issues of emergency preparedness and response, consultation, adequacy of the ERP, egress, Bashaw's capability to safely carry out the project, and social and economic effects. Bashaw's evidence did not adequately address the panel's concerns in these areas. The panel considered whether its concerns might have been addressed through conditions and commitments but, when the evidence was considered as a whole, such an approach would have been untenable.

[110] Bashaw asked the panel to trust that once it got its licences it would fix the deficiencies in its ERP, work towards building a better relationship with landowners and the County, and carry out its lengthy list of commitments. Bashaw did not have a solution for the absence of an alternate egress route, other than saying that it was not a requirement of *Directive 071*. When applications are for proximity critical sour wells, the AER must ensure that the safety of the public will not be compromised. For the reasons set out in this decision the panel cannot conclude that public safety would be ensured if the licences were to be issued and therefore determines that the issuance of the well licences to Bashaw at this time would not be consistent with the AER's mandate to ensure the safe development of energy resources in Alberta.

Dated in Calgary, Alberta, on March 28, 2018.

Alberta Energy Regulator

<original signed by>

Heather Kennedy, P.Eng.
Presiding Hearing Commissioner

<original signed by>

Claire McKinnon, B.A., LL.B
Hearing Commissioner

<original signed by>

Brian Zaitlin, Ph.D., P.Geol., CPG
Hearing Commissioner

Appendix 1 Hearing Participants

Principals and Representatives
(Abbreviations used in report)

Witnesses

Bashaw Oil Corp. (Bashaw)
G. Fitch
M. Barbero

N. Darling
R. Brown
S. McDonald
T. McFeely
D. Chadder
I. Cooke
J. Gillespie

Drayton Valley Landowners (the landowners)

C. Anderson
B. Belva
E. Belva
K. Dingwall
T. Dingwall
B. Dodd
B. Dodd
C. Dodd
M. Dodd
N. Douglas
C. Douglas
J. Doyle
S. Dusterhoft
R. Fertig
T. Fertig
J. Huber
C. Huber
C. Huber
C. Huber
I. Jaffray
D. Johnson
C. Kelly
R. Kelly
S. Kelly
R.J. Kiehlbauch

C. Wallis
B. Zelt
R. Coppock
S. Batterman
E. Belva
D. Kisser
G. Mastre
B. Dodd
C. Dodd
J. Kiehlbauch
C. Anderson
S. Dusterhoft
C. Kelly
D. Schmidt
D. Schmidt
A. Peck
R. Poissant
I. Jaffray
S. Kelly
C. Huber
J. Huber

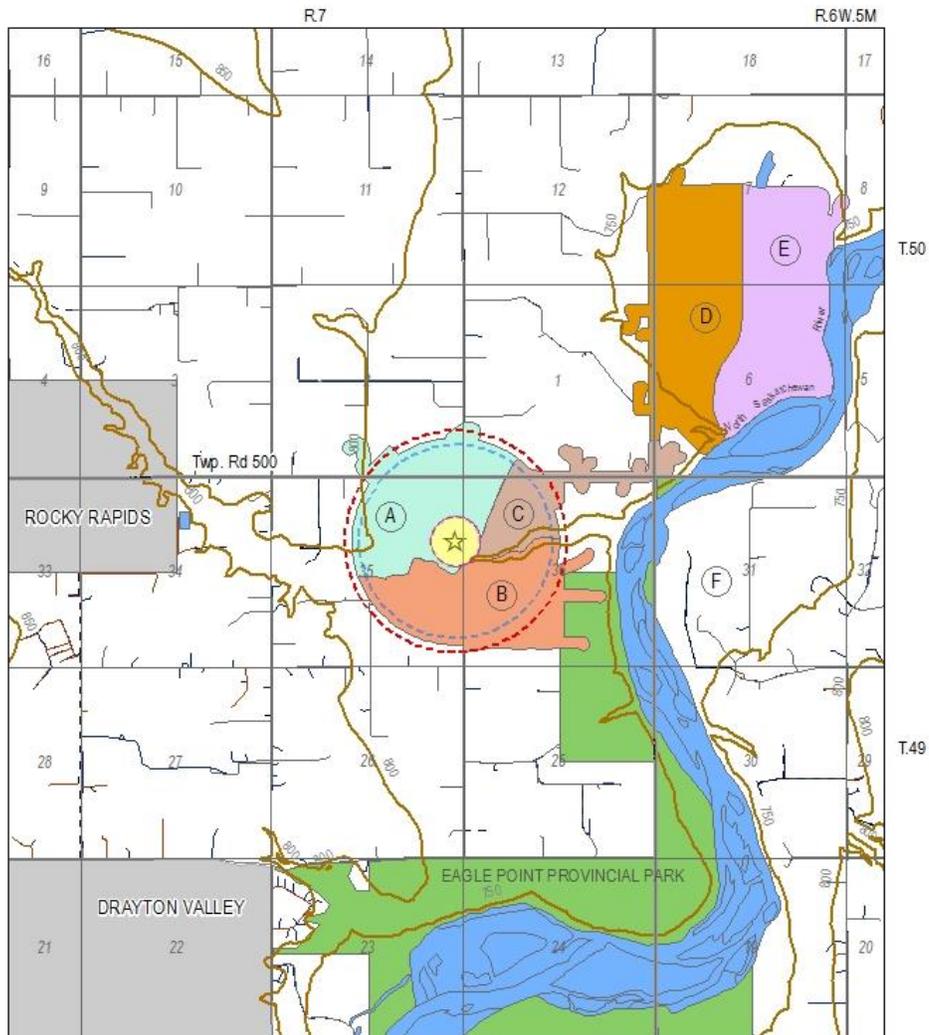
D. Kisser
L. Larsen
C. Lindsay
L. Mastre
G. Mastre
D. McGinn
R. Mercredi
R. Mulligan
C. Mulligan
C. Parel
A. Peck
R. Poissant
H. Scharr
C. Scharr
M. Scharr
D. Schmidt
D. Schmidt
C. Skinner
J. Skinner
R. Skye
T. Skye
B. Sullivan
D. Sullivan
D. Sullivan
 B. McElhanney
 E. Pentland

Brazeau County (the County)	M. Klassen
K. Lambrecht	K. Lasek
J. Redmond	M. Verhaeghe

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 A. Koper, AER Counsel
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 A. Ansell
 E. Arruda

E. Berg
G. LaPlante
G. McLean
L. Olsen
M. Russell
T. Sawchuk
M. Schuster
A. Shukalkina
M. Xhaferllari
M. Zelensky

Appendix 2 Map of Project Area



Legend

- | | | | |
|---|--|---|--|
|  | 50m Contours |  | New emergency planning zone EPZ 0.94 km radius |
|  | Rover areas |  | PAZ 0.82 km radius |
|  | Proposed well location
LSD 09-35-49-07W5M |  | IIZ 0.21 km radius |
| | |  | Paved & gravel roads |