

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**RIDER RESOURCES INC.
APPLICATION FOR A SOUR GAS
SWEETENING FACILITY
APPLICATION FOR A SWEET PIPELINE
PEMBINA FIELD**

**Decision 98-23
Applications No. 1023576
and 1028406**

1 INTRODUCTION

1.1 Application

Rider Resources Inc. (Rider) applied to the Alberta Energy and Utilities Board (the Board), in accordance with Part 26 of the Oil and Gas Conservation Act and pursuant to Section 9.020 of the Oil and Gas Conservation Regulations, to construct and operate a sour gas sweetening facility at legal subdivision 11, section 17, township 49, range 4, west of the 5th meridian. The facility would be designed to process 85 000 cubic metres (m³) of raw gas, 15 m³ of condensate, and 2 m³ of water per day. The sulphur inlet rate would be 0.73 tonne per day (t/d) and the maximum hydrogen sulphide (H₂S) content of the inlet gas would be 6.0 moles per kilomole. The acid gas removed by the sweetening facility as a waste product, containing H₂S and carbon dioxide (CO₂), would be incinerated to convert the H₂S to sulphur dioxide (SO₂). The SO₂ emitted from the facility would contain not more than 0.73 t/d sulphur.

Rider also applied, pursuant to Part 4 of the Pipeline Act and Section 2 of the Pipeline Regulations to construct and operate an 8.3 kilometre (km) sweet natural gas pipeline. The pipeline would transmit sweet natural gas from the proposed sweetening facility referenced above to the Wascana Keystone Gas Plant (the Keystone Plant) located in legal subdivision 5, section 35, township 48, range 4, west of the 5th meridian. A map of the facilities in the area is shown as Figure 1.

1.2 Interventions

An intervention objecting to the sweetening facility application was filed with the Board on 28 May 1998 by Mr. Thomas Wall on behalf of certain area residents. The letter of objection expressed concerns with SO₂ emissions and contained the area residents' request for acid gas re-injection. A submission on behalf of the residents, dated 16 September 1998, further outlined their concerns with respect to the sweetening facility. By letter dated 27 April 1998, Anderson Oil and Gas Inc. (Anderson) expressed its opposition to the proposed sweetening facility. In a letter received 22 June 1998, Anderson indicated it was withdrawing its objection. Letters supporting the sweetening facility application were received from Gulf Canada Resources Limited (Gulf), Encal Energy Ltd. (Encal), Marathon Canada Limited (Marathon), and Jim and Diane Ross.

With regard to the pipeline application, Rider indicated that two area residents had not given consent for the pipeline, and did not want to discuss the pipeline routing until there was a decision regarding the proposed sweetening facility. The Board deemed the two applications to be related and gave notice of a public hearing to consider both applications concurrently. The pipeline application is discussed in section 9 of this decision report.

1.3 Hearing

The applications and interventions were considered at a public hearing in Drayton Valley, Alberta, on 22 and 23 September 1998, before B. T. McManus, Q.C., Board Member; R. N. Houlihan, Ph.D., P.Eng., Acting Board Member; and H. O. Lillo, P.Eng., Acting Board Member. The Board viewed the proposed facility site on 21 September 1998. Those who appeared at the hearing are listed in the following table:

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)

Witnesses

Rider Resources Inc.
B. K. O’Ferrall

E. Horner, P.Eng.
M. Buschau, P.Eng.
Dr. Douglas Leahy, Ph.D.

Tom and Linda Wall
R. W. Elander

T. Wall
L. Wall

Vant and Ethel Hayes
R. W. Elander

V. Hayes
E. Hayes

Don Cramer

Anthony Heinrich

Encal Energy Ltd.
J. Marchak

J. Marchak

Pembina Agricultural Protection Association
C. Whitelock

Alberta Energy and Utilities Board staff
K. Eastlick, P.Eng.
T. Donnelly, Board Counsel
M. Drake

2 ISSUES

The Board considers that the issues respecting the sweetening facility application relate to:

- need for the facility,
- operations,
- impacts,
- alternatives to the project,
- proliferation,
- public consultation.

3 NEED FOR THE FACILITY

3.1 Views of the Applicant

Rider indicated that the sweetening facility was required to allow the existing sour gas well located at 11-17-49-4 W5M (the 11-17 well) to be produced. Rider explained that existing sour gas plants in the area were at full capacity. However, there was available gas processing capacity at the Keystone Plant. In order to access this plant, the gas first had to be sweetened. Rider stated that sweetening the gas at the wellhead had the advantage of eliminating the need for a high pressure sour gas pipeline. Rider stated that its proposal would take advantage of existing capacity and would represent the shortest route with the lowest pressure pipeline of all the options that were available.

Rider indicated that the production from the 11-17 well had the potential to double the company's cash flow, positively impact its share price and allow Rider to further raise equity. Rider indicated that the proposed project would have a tremendous impact on the company.

3.2 Views of the Interveners

The interveners indicated that they were not opposed to Rider producing the well, but were opposed to the SO₂ emissions that would result from the incineration of acid gas and the effects the emissions would have on their health, the health of their livestock, and their crops. They indicated that the area had existing facilities where sulphur could be conserved. They viewed the facility as unnecessary in view of the alternatives available and the environmental harm that would occur. Mr. Heinrich indicated that, as the landowner of the quarter section on which the Keystone Plant was located, he had concerns regarding the transporting of the processed sweet gas to that plant because it would lead to extension of the plant life.

3.3 Views of the Board

The Board recognizes that the interveners are not objecting to Rider producing the well or to the sweetening facility itself, but rather to the method of disposing of the acid gas produced at the facility. As such, the Board believes that the need for the facility itself was not challenged.

The Board is satisfied that Rider has the rights to produce gas from the 11-17 well and has a need for a facility to process the gas. The Board notes the benefits of the facility for Rider, as well as to the people of Alberta by way of facilitating additional royalties to the Crown. However, there are impacts, operational issues, and alternatives that require consideration, as discussed further in this report.

4 OPERATIONS

4.1 Views of the Applicant

In response to questioning at the hearing, Rider conceded that it had no corporate experience with sour gas operations in Alberta. Its intention was to contract a company to operate the facility. Arrangements for backup were to be the responsibility of the contractor. Rider indicated that the expected response time to a callout from the facility would be within an hour, but admitted that it might take longer.

With respect to the design of the facility, Rider indicated that all fugitive emissions, including those from vessels and storage tanks, would be recovered or incinerated. It confirmed that there would not be a flare stack installed in addition to the incinerator and that acid gas routed to the incinerator would be metered. In response to questioning, Rider stated that its incinerator would be a third party supplied package and acknowledged that it was unsure about the incinerator's minimum stack top temperature controls. Rider stated that gas and H₂S detection would be provided which would shut in the well in appropriate circumstances. It indicated that the plant would operate on automatic control and be unmanned the majority of the time. As a result, an automated callout system would be installed for the facility.

Rider stated that it would control vapour emissions during truck loading; however, it declined to make commitments to control odours during trucking of sour liquids.

4.2 Views of the Interveners

The interveners stated concern about Rider's lack of sour gas experience in Alberta. The interveners noted that Rider appeared to defer responsibility to its operating contractor to ensure adequate staffing and back-up for the 11-17 well facility operations. There was concern expressed regarding Rider's approach to controlling odours related to trucking liquids from the facility. The interveners stated that Rider needed to be more involved in its operations and to accept responsibility for activities under its control.

4.3 Views of the Board

The Board notes that Rider is ultimately responsible and accountable for the safe operation of its facilities. The facilities must be in compliance with conditions of approvals, as well as with resource conservation, environmental protection, and occupational health and safety regulations. Rider cannot relinquish these responsibilities to contractors.

The Board notes that Rider indicated that a number of features would be built into the sweetening facility to control emissions, detect problems, and initiate callout of operators. It is the Board's view that these features would be critical to the safe operation of the facility. However, as Rider is planning to operate this as a semi-attended facility, the Board has concerns that adequate safety equipment and measures are in place. The Board notes Rider's commitment that the sour gas processing building will be equipped with H₂S detection, alarm, and shutdown devices. In addition, the Board further directs that the facility be equipped with an automated alarm, shutdown and callout system which will be activated, as a minimum, by H₂S detection, gas detection, fire detection, incinerator low temperature, incinerator failure, or plant shut-down.

The Board notes Rider's statement that the flare line connected to the incinerator would be equipped with an appropriate separation vessel.

The Board requires that sour gas processing facilities be properly operated and that problems be attended to promptly. Rider must ensure adequate operator coverage and response times for any of its operated facilities. It is the Board's view that since residences are nearby, operator response times should be less than one hour. Accordingly, the Board directs Rider to ensure that all automated callouts are responded to in not more than one hour. The Board also directs Rider to continuously staff the facility during the initial start-up and until it can demonstrate to the satisfaction of EUB field inspectors that the facility has achieved stable operations and that automated alarm, shut-down, and callout systems are fully functional.

The Board notes that emissions from the trucking of sour liquids are a significant source of public concern and complaints. The Board further notes that the means to prevent truck tank emissions or control odours from such emissions are available in Alberta. Given that produced hydrocarbon liquids and water from the 11-17 well will contain some level of sulphur compounds, including H₂S, it is reasonable to expect the control of odours from related trucking operations. Rider is directed to Section 4.4 of the Alberta Recommended Practices entitled, *Loading, Unloading and Transportation of Fluids* for further information regarding the appropriate measures to be taken for the transportation of sour liquids. It is the Board's expectation that Rider will ensure that the trucking of any sour liquids will meet or exceed these standards.

5 IMPACTS

5.1 Lifestyle

5.1.1 Views of the Applicant

Rider submitted that its small scale project would not impact the residents. It argued that the area had been exposed for many years to impacts of the oil and gas industry and the facility would not change the nature of the neighbourhood. Rider noted that the evidence of both the Walls and the Hayes confirmed that there were already other wells on their property. They had also indicated that the area already had numerous flares and a lot of traffic. Rider conceded that lifestyles may have been affected by overall oil and gas activity, and that short of doing away with that activity, lifestyles would continue to be affected. Rider believed that the concerns of the interveners were

not about the proposed facility, but about the cumulative effect of the oil and gas industry on their lifestyles. When questioned about the rights of landowners, Rider responded that it believed that landowners were entitled to protect their land and that Rider respected their right to intervene and participate in a public process.

Rider submitted that coexistence of the oil and gas industry and farmers might best be accomplished by putting faith in the Board, Alberta Environmental Protection (AEP), and Environment Canada to objectively look at the situation and to try to balance the interests of the two groups. Rider stated that it was committed to establishing an Area Action Committee, with resident participation, to share information and address any ongoing concerns.

In response to concerns raised about local roads, Rider noted that these roads were maintained by the County of Brazeau and that Rider itself was only responsible for its own private roads. Rider stated that it contributed to the construction and maintenance of local roads through its municipal taxes. Rider indicated that some of the roads in the area had been used by the oil and gas industry for 35 to 40 years and were still in good condition. Rider anticipated that the 11-17 well would be producing up to 15 m³/d of condensate and very little water. This volume would result in one truckload of condensate from the facility every three to four days. Rider did not believe that the roads would be overloaded as a result of the proposed facility.

In response to Board inquiries regarding the lack of a noise impact assessment, Rider stated that it expected noise levels to be negligible, although it had not completed a noise impact assessment as required by Interim Directive (ID) 94-4, *Noise Control Directive*.

In response to concerns regarding Rider's apparent focus on the most economic alternatives, Rider readily acknowledged that economics played an important role in its business decisions. Rider stated that a company was free to make its investments based on its insight.

5.1.2 Views of the Interveners

The interveners stated that they were longtime residents of the area. Mr. Hayes indicated that his family came to the area 92 years ago and that he was still farming the original homestead as well as other lands. The Hayes stated that they operated a mixed farm consisting of a variety of animals and a commercial trout farm. Mr. Wall indicated that he had lived in the community for 22 years. He stated that he operated a commercial beef cattle business on 10 quarter sections which he owned or leased. The lands of the Walls, Hayes, and Mr. Heinrich are shown on Figure 2. The Walls indicated that they respected the oil and gas industry, that they have had dealings with many oil companies in the past, and wanted to continue an amicable relationship with that industry. However, Mrs. Wall stated that they wanted to protect their way of life. She said that they deserved protection for their health, land, and livestock from acid rain when there were alternatives to incineration. Mrs. Wall stated that they had invested all their money and dreams in their farm and one wrong decision could put them out of business.

The interveners were concerned with a number of statements made by Rider during the hearing regarding economics. These statements led the interveners to believe that Rider had no consideration for the lifestyle of the area residents or of the farmer's ability to meet his

commitments and to expand and grow. The interveners argued that Rider had only been in the area for a short period of time and had not gained the trust of area residents. Concerns were raised that Rider had not previously operated a sour facility in Alberta. Mrs. Wall stated that she believed that Rider intended to do the right thing, but did not have the expertise to do it. Mr. Heinrich indicated that oil companies had to understand the needs and concerns of farmers.

The interveners expressed concerns regarding the use of roads for the trucking of condensate and water. The interveners said Rider's proposal to truck out condensate would result in approximately 191 m³/d being hauled on roads which would not support this type or volume of traffic. The interveners argued that Rider should be directed to take full responsibility for the construction and maintenance of all roads it would use for hauling. Some interveners argued that the area roads had been designed to be used by local farmers, ranchers, and light truck traffic. However, Mr. Hayes indicated that the Sardine Lake Road (the main north-south road accessing the 11-17 well site) had been built by Imperial Oil in 1958. He stated that the road had been built out of logs and debris from the clearing of the road. Mr. Hayes indicated that he used the Sardine Lake Road for access to his home and buildings. He stated that Rider had used the road to haul production from Rider's previously developed 12-17 oil well. He also indicated that this road was used generally by the oil, gas, and forestry industries and that heavy oilfield trucks had ripped up the road on numerous occasions. In response to questioning, Mr. Hayes clarified that a key concern was the use of the road by drilling rig and service rig trucks.

5.1.3 Views of the Board

The Board notes that the proposed facility is located in an area with considerable oil and gas activity and that there are existing oil and sour gas wells on the interveners' properties. However, the Board recognizes that sour gas has not commonly been processed in the immediate vicinity of the proposed facility and accordingly, it creates new concerns for local landowners. Many of these concerns will be dealt with in later sections of this report.

With respect to the deterioration of area roads, the Board recognizes that road construction and maintenance of county roads are the responsibility of the individual municipal district or county. Oil and gas developers contribute to road construction and maintenance through their municipal and provincial taxes. The Board also notes that Rider's proposed liquid production would be much lower than the 191 m³/d stated by the interveners. The Board supports Rider's commitment to establish an Area Action Committee. It is the Board's view that this committee should be a forum for Rider and area residents to communicate regarding issues such as roads.

Rider did not conduct a noise impact assessment for the subject facility as required by ID 94-4. Therefore, such an assessment must be performed prior to commissioning of the facility to ensure that the requirements of ID 94-4 are met.

Regarding concerns raised by the interveners with respect to Rider's focus on economics, the Board is of the view that economics alone should not dictate alternatives available to industry when planning a project. Issues of safety, resource conservation, environmental protection, and impacts on lifestyle are all elements of the broader public interest which must be considered by the Board when addressing the economic, orderly, and efficient development of Alberta's oil and

gas resources. Therefore, the Board expects proponents of projects to appropriately address these elements of public interest.

5.2 Emissions

5.2.1 Views of the Applicant

Rider indicated in its application that the sulphur inlet rate would be 0.73 t/d and that the maximum continuous sulphur emission rate would be 0.73 t/d. However, Rider clarified in its evidence that the actual maximum amount of sulphur emitted would be 0.70 t/d. Rider stated that the SO₂ emissions would meet the Alberta Ambient Air Quality Guidelines. The following table compares guideline ground level concentrations with concentrations predicted by an ambient air quality evaluation based upon modeling carried out by Rider's expert witness, Dr. Leahy.

Maximum Time	Predicted Ground Level Concentrations (micrograms/m³)	AEP Guidelines (micrograms/m³)
1 hour	374.0	450
24 hour	145.7	150
Annual	13.8	30

Dr. Leahy stated that Environment Canada believed that these levels provided adequate protection against the adverse effects of pollutants on humans, animals, vegetation, soil, water, materials, and visibility. He was satisfied that ground level air quality would be maintained at desirable levels and saw no reason for concern as to any potential adverse effects. He also indicated that the model tended to overestimate ground level concentrations. In response to questioning, Dr. Leahy indicated that he did not explicitly take into account the background emissions from neighbouring gas plants. However, he stated that emissions from both the Anderson Genessee Gas Plant (Genessee Plant) and the Penn West Minnehik-Buck Lake Gas Plant (Buck Lake Plant) were small and at appreciable distances from the proposed facility. He further stated that, under the predominant southeasterly winds, there would not be any overlap from either the Genessee Plant or Buck Lake Plant and he was confident that regional emissions would not play a role in the maximum daily emission rates.

5.2.2 Views of the Interveners

The interveners were concerned about the emissions from the incinerator. They stated that, for farmers, the effects of sulphur deposition were a great concern. They indicated that sulphur deposition would affect their health, livestock, and crops. The interveners indicated that exposure to sulphur would change the pH of the soil, ultimately turning it acidic. If the exposure were severe enough, a farmer would have to treat the soil with lime to correct the pH. This would affect crops such as alfalfa and clovers which were typically grown in the area. Mr. Whitelock indicated that he had operated a wet deposition monitor for five years. Samples taken to the government for analysis indicated the water pH had changed from 5.7 to 4.7.

Mr. Whitelock and Mr. Hayes both stated that they had cattle abort when flaring was occurring in the area. They were concerned that no studies had been undertaken by the oil and gas industry to monitor the effects of SO₂ emissions on livestock. Mr. Whitelock stated that the effects of emissions might not affect the closest individual to the source, but could affect individuals further away. Mrs. Wall shared this concern, stating that Rider's air emission study indicated that the highest concentration of SO₂ would occur in the vicinity of the Alsike - Bat Lake Provincial Natural Area where there would be no monitoring. She indicated that this area was used by the general public as a recreation area.

5.2.3 Views of the Board

Based on Rider's evidence, the Board will stipulate a maximum sulphur emission rate limit of 0.7 t/d for the sweetening facility. The Board is satisfied that Alberta's guidelines for ambient air SO₂ concentrations are stringent and that, based upon the evidence of Rider's expert, the emissions from the proposed facility would be within those guidelines. Nevertheless, a reasonable degree of air, soil, and water monitoring should provide actual data to address intervenor concerns. This monitoring will be discussed in the next two sections of this decision report.

5.3 Air Monitoring

5.3.1 Views of the Applicant

Rider stated that it would monitor air quality at three different locations surrounding the proposed facility. The location would be at the Wall's residence, the Hayes' residence, and in the southeast corner of section 17-49-4 W5M. The monitoring would take place one week prior to and three weeks after initial plant start up. The data from the monitoring would be collected and analyzed by an independent third party and shared with the owners of the monitored properties. In response to the intervenors concerns that the monitoring time period was not sufficient, Rider stated that it would accept a monitoring program laid out by a joint effort of the Board, AEP, Rider, and area residents. However, Rider qualified that commitment by stating that any air monitoring program must take into account the small scale of the project, economic restrictions on Rider, and the existing distances between the proposed facility and residences. Rider committed to join the West Central Air Shed Consortium (the Consortium) which has a bio-monitoring site near Breton. The bio-monitoring site was down wind of the proposed facility and made use of vegetation that is susceptible to small volumes of SO₂ pollution.

5.3.2 Views of the Intervenors

The intervenors understood that Rider would have monitors at each of three locations during the four week pre and post start-up period. However, they were concerned that this period of monitoring would not be sufficient to properly analyze the effects of SO₂ emissions. The intervenors suggested that a more suitable monitoring program would utilize permanent monitoring stations at the Wall and Hayes residences and additional monitoring on surrounding hilltops and in valleys. The intervenors were concerned that there would be no monitoring in the vicinity of protected areas such as the Alsike – Bat Lake Provincial Natural Area. The

interveners were also concerned that the Consortium monitoring to be undertaken at the bio-monitoring site at Breton was not sufficiently comprehensive. They argued that without air monitoring at the Breton site there would be no baseline data to establish what the vegetation was exposed to and what chemicals may have caused the plants to deteriorate.

The interveners did not believe that Rider's estimated monitoring budget of \$5 000 would be sufficient to carry out an adequate air monitoring program. They indicated that \$3 000 of that money would be paid to the Consortium, leaving only \$2 000 for actual monitoring. In response to questioning, Mr. Whitelock clarified that he viewed Rider's proposal to join the Consortium as a positive step. He further indicated that he would like to see any operator flaring in the area join the Consortium.

The interveners confirmed that they would accept a monitoring program developed with input from the Board, AEP, Rider, and area residents.

5.3.3 Views of the Board

The Board recognizes Rider's effort to assess air quality from the proposed development and notes Rider's commitment to join the Consortium. This commitment appeared to be acceptable to the interveners. The Board also notes the willingness of Rider and the interveners to accept an air monitoring program developed with the input of the Board, AEP, Rider and area representatives. The Board therefore expects Rider to implement an air quality monitoring program consistent with the commitments it has made to landowners. It would be the Board's expectation that the program would be developed and coordinated with the guidance of AEP through its approval process.

5.4 Soil and Water Sampling

5.4.1 Views of the Applicant

At a community meeting held in the Breton area, Rider had told area residents that it was willing to establish baseline data on soil and water quality near the facility prior to the start-up of the plant. During the hearing Rider again committed to doing soil and water sampling, subject to the qualification that the sampling had to be done within reason, given the size of the proposed project.

Rider indicated that literature regarding the area indicated that the soil was considered moderately well buffered with respect to acidic deposition. An AEP study published in June 1997 stated that the soil was at only 25 per cent of the critical loading factor. Rider also stated that the most recent report of the Consortium indicated that there were currently no adverse effects of sulphur deposition.

5.4.2 Views of the Interveners

Mr. Hayes indicated that he wanted Rider to take soil samples from six different locations on his property and have them analyzed for pH. He stated that other companies had previously sampled

his soil and he wanted the further samples to keep track of what had been happening to his soil. However, he was not prepared to share his existing data with Rider. He indicated that the samples were his property, noting that Rider had lost samples given to them previously.

Mr. Hayes also stated that he wanted Rider to sample the creek flowing west through his property as it was the back-up water supply for his fish hatchery operation. Mr. Hayes wanted the samples analyzed for pH and other parameters which could affect his fish hatchery.

5.4.3 Views of the Board

The Board recognizes the concerns raised by the interveners regarding soil and water sampling and notes Rider's commitments in this regard. It is the Board's view that Rider should work with the area residents and AEP to develop a reasonable soil sampling protocol which would include testing the pH of the soil, its buffering capacity, and the sensitivity to acidifying deposition. With respect to water sampling, the Board notes Mr. Hayes concerns with the pH of the water. It is the Board's view that Rider should work with Mr. Hayes to analyze water for pH and other parameters that could adversely affect fish. The Board expects that the sampling and analysis program would be developed and coordinated with input from AEP.

6 ALTERNATIVES TO THE PROJECT

A number of alternatives to the proposed project were suggested prior to and at the hearing. These alternatives have been considered to determine if, in the circumstances, they presented preferable options to the proposed project.

6.1 Flaring

6.1.1 Views of the Applicant

Rider stated that its original project had incorporated flaring rather than incineration. Rider indicated that it changed the project to include incineration based on input from the public. Rider stated that incineration was a much more reliable method of ensuring that the H₂S was completely combusted.

6.1.2 Views of the Intervenors

The intervenors stated that they were opposed to any combustion process that would emit SO₂.

6.1.3 Views of the Board

The Board notes Rider's efforts to maximize combustion of emissions through the use of incineration. The Board believes that incineration is an appropriate process in this instance to ensure a higher combustion efficiency and a superior process to flaring the acid gas.

6.2 Acid Gas Re-Injection

6.2.1 Views of the Applicant

Rider stated that it had studied well injection as a means of acid gas disposal. Rider stated that the most important consideration for acid gas reinjection was an acceptable reservoir. The reservoir had to be sour and have sufficient porosity, permeability, pay thickness and volume to accept injection. It could not have economic reserves that would be rendered unproducable. Its boundaries should be clearly defined and should not extend onto lands where other mineral holders might have economic reserves. Acid gas injection should not take place within the same reservoir that was responsible for the gas production as this could result in acid gas breakthrough that could render the gas too sour to produce. Rider indicated that it had searched for a suitable reservoir, but there were few known sour reservoirs in the area.

In the case of the 11-17 well, Rider indicated that the reservoir itself was believed to be small. There were five dry holes drilled directly around the 11-17 well, all within one mile. The boundaries of the reservoir were extremely difficult to establish from seismic interpretation. If an injection well were to be drilled in this reservoir Rider argued that there was a real possibility that the well would miss the reservoir. The injection well would have to be drilled within a quarter mile of the producing well, increasing the probability of acid gas breakthrough. Rider stated that the facilities required for acid gas reinjection were quite expensive in relation to the volume of gas expected to be produced from the 11-17 well. Rider estimated the capital and operating costs for installing an acid gas reinjection scheme and an incineration scheme as follows:

Scheme	Capital Costs (\$)	Operating Costs (\$)
Acid Gas Reinjection	1 820 000	158 000
Incineration	75 000	68 000

Rider concluded that there was not a suitable reservoir available for the reinjection of acid gas. Rider further stated that the large expense and safety risk of operating an acid gas reinjection scheme was not warranted by the quantity of gas expected from the 11-17 well.

6.2.2 Views of the Interveners

The interveners submitted that if the applicant must have a facility to remove the sour gas, the Board should direct that the acid gas be injected back into the reservoir as opposed to being flared or incinerated. The interveners rejected Rider's argument that the costs of installing an acid gas re-injection scheme were prohibitive. The interveners believed that such extra cost would provide a more favourable alternative and would be a small price to pay for the protection of the environment and the rural lifestyle of the area residents.

6.2.3 Views of the Board

As noted earlier, it is the Board's view that economics alone should not dictate the alternatives available to industry when planning a project. The Board expects industry to look at the broader public interest as well. In this case, the Board believes that the relatively small volume of gas to be processed and the unavailability of a suitable reservoir nearby precludes acid gas re-injection as a practical alternative.

6.3 Sulphur Recovery

6.3.1 Views of the Applicant

Rider acknowledged that it did not fully investigate the potential for sulphur recovery at the plant. It stated that the small volume of sulphur in the gas and the expense of sulphur recovery made sulphur recovery uneconomic. Rider indicated that the most economic option was to flare or incinerate the acid gas.

6.3.2 Views of the Interveners

The interveners did not comment on the possibility of sulphur recovery at the plant. However, they indicated that other plants in the area, the Buck Lake Plant in particular, recovered sulphur. The interveners believed that the gas should have been transported to these plants so that the sulphur could be recovered.

6.3.3 Views of the Board

The Board notes Rider's evidence indicating that it gave limited consideration to sulphur recovery. Rider should be aware that although the Board's Sulphur Recovery Guidelines set forth in IL 88-13, *Sulphur Recovery Guidelines for Sour Gas Plants in Alberta*, August 1988, do not specifically require sulphur recovery below 1.0 t/d, companies are expected to seriously consider whether sulphur recovery is justified in the circumstances. The Board continues to endorse the view, set forth at page 4 of the Sulphur Recovery Guidelines, that the long-term objective must be to limit atmospheric loading of pollutants, such as sulphur dioxide, to the extent that is practical.

The Board notes that Rider's project is well within the Sulphur Recovery Guidelines and is satisfied that in the circumstances of this case, sulphur recovery is not required. Rider has demonstrated that its project would comply with the Alberta Ambient Air Quality Guidelines and that no alternative sour gas processing facilities exist in the vicinity.

6.4 Anderson Genesee Gas Plant

6.4.1 Views of the Applicant

Rider stated that it had investigated the possibility of using the Genessee Plant to process its gas, having had discussions with Anderson for over two years in anticipation of drilling the 11-17 well. Rider indicated that six months to one year prior to the hearing Anderson had advised it that there was no capacity at the Genessee Plant. In response to Anderson's preliminary nominations to expand the Genessee plant, Rider stated that the time delay and capital outlay did not justify pursuing that option. Rider also indicated that the Genessee Plant currently flared its acid gas and would not resolve the concerns regarding SO₂ emissions. It would just move the emissions to another location. Rider submitted that the Genessee Plant expansion would have created more public concerns and caused further time delays in bringing the 11-17 well on production.

6.4.2 Views of the Interveners

The interveners believed that the Genessee Plant had sulphur recovery systems. They understood that the Genessee Plant had proposed expansion and would consider acid gas injection as part of the expansion. The interveners submitted that the Genessee Plant was a viable alternative to emitting SO₂. They were willing to remove their request for acid gas reinjection if Rider were to take the gas to the Genessee Plant.

6.4.3 Views of the Board

The Board notes that the Genessee Plant currently does not recover sulphur and its approval is limited to 0.23 t/d of sulphur emissions. Transporting Rider's sour gas to this plant would not eliminate emissions. At the time Rider's application was made, Anderson had only sent out preliminary nominations for gas plant expansion. There was no guarantee that the plant would have been expanded. The Board accepts that the Genessee Plant does not presently have capacity to process Rider's gas and is not an option.

6.5 Penn West Minnehik-Buck Lake Plant

6.5.1 Views of the Applicant

Rider stated that it had been approached by Northrock Resources Ltd. (Northrock) to participate in a pipeline to tie into the Gulf gathering system which took gas to the Buck Lake Plant, where sulphur recovery took place. Those discussions related to pipelining the gas from the 11-17 well and Northrock's 14-18 well to a tie-in point on the Gulf pipeline that fed into the Buck Lake Plant. The Northrock wells were subsequently found to be less prolific than originally anticipated and consequently, the pipeline would not be proceeding. Rider stated that it rejected tying into the Buck Lake Plant because of the capital involved and the construction of a pipeline over very rough terrain and across a watercourse. Rider indicated that the Buck Lake Plant was near

capacity and could only take its production on a best-efforts arrangement. Rider indicated that one of the partners involved in the 11-17 well was a participant in the Gulf pipeline. Rider submitted that if the Buck Lake Plant option were feasible, it would have been compelled to use this option.

In response to questioning, Rider stated that its evaluation of pipelining its gas to the Buck Lake Plant was based solely on production from the 11-17 well. It did not consider the participation of other operators of potential sour gas wells in the area.

6.5.2 Views of the Interveners

The Hayes stated that Northrock had approached them in June 1998 with respect to constructing a 12 km pipeline from the 14-18 well to a tie-in point on the Gulf pipeline. They were concerned that Rider had only considered its own production when creating a cost estimate for the pipeline to the Gulf tie-in. The interveners suggested that if the potential production from nine new wells in the area plus the 11-17 well had been taken into account, the pipeline to the Gulf tie-in would actually have been the cheaper alternative. The interveners concluded that transporting the gas to the Buck Lake Plant via the Gulf pipeline was a viable alternative.

6.5.3 Views of the Board

The Board accepts Rider's statements that it had been offered capacity at the Buck Lake Plant on a best-efforts basis and that the plant was near capacity. Given that a well is brought on production to generate revenue for the well owners, the Board appreciates that operators need access to reliable processing facilities. The Board also accepts that economics and the environmental effects of the Buck Lake Plant option make it less attractive. For these reasons, the Board does not view transporting Rider's gas to the Buck Lake Plant as a viable alternative to the Rider proposed facility.

7 FACILITIES PROLIFERATION

7.1 Views of the Applicant

Rider stated that it believed it had met the intent of the Board's Proliferation Guidelines summarized in Informational Letter (IL) 91-1 and in Volume 2 of Guide 56, the Board's *Energy and Development Application Guide and Schedules*, as issued in October 1997. Rider stated it had contacted operators in the area and advised them of the proposal. Rider believed that once other operators were notified the onus was on them to raise concerns if a better alternative existed. The initial objection to the project by Anderson, which was later withdrawn, was offered as an example that the process worked.

While it did not deliberately look at the area's future production potential, Rider stated that its notification process had provided for consideration of the potential of the area. However, no parties came forward with alternative long-term plans. Rider also noted that Gulf, Encal, and Marathon, co-owners of the 11-17 well, supported the proposed project as appropriate even though they owned other production and facilities in the area.

7.2 Views of the Interveners

The area landowners were concerned about proliferation of single well facilities. They noted that Rider's industry consultation stated its intent to proceed with the 11-17 facility and did not invite participation in the project or consultation regarding its alternatives. They stated that there were several shut-in wells in the area that could result in expansion of the Rider facility.

The interveners indicated that Rider's failure to include other sour gas sources in its evaluations may have prejudiced consideration of alternatives to incinerating or flaring the acid gas at 11-17. They suggested that if other sour wells in the area had been included in the evaluation of the tie-in to the Buck Lake Plant gathering system, then that alternative might have been less costly for Rider.

7.3 Views of the Board

The Board's Sulphur Recovery Guidelines and its Proliferation Policy are somewhat related. The intent of the Sulphur Recovery Guidelines is pollution prevention with consideration given to the use of feasible technology at reasonable cost. Among other things, the intent of the Proliferation Policy is to avoid development or duplication of numerous small sour facilities in an area. As indicated in Guide 56, Volume 2, Appendix 1, page 3, the Board expects applicants to investigate the use of all existing facilities in the area that afford viable alternatives; the area's future potential to ensure the proposed facility is designed to meet the area's longer-term oil and gas processing/handling needs; and all inactive commercial wells in the area with a view to inviting well owners to participate in the new facility in some manner.

The Board notes Rider's consultation with industry in the area and efforts to satisfy the Proliferation Policy. This included Rider's notification letter to operators in the area with respect to its plan and consideration of gas processing and pipeline capacity in the area. However, since Rider's letter did not invite operators of potential shut-in sour gas to nominate capacity as intended by the Proliferation Policy, but rather advised that there would be no excess capacity for production of others, the Board considers that production capability from shut-in wells in the area and related potential sulphur recovery requirements could have been more fully addressed by Rider.

The Board notes Rider's contention that the Proliferation Policy put the onus on other operators to come forward with concerns with respect to Rider's sweetening facility once they were notified. The Board concludes from the lack of response to Rider's letter and the hearing notice that potential sour gas production in the vicinity is limited. Notwithstanding that Rider's industry consultation could have been more extensive, the Board believes that the sweetening facility application satisfactorily addresses the requirements of the Sulphur Recovery Guidelines and the Proliferation Policy.

The Board does not wish the approval of this application to provide a misleading guideline for future applicants. The Board expects applicants for sour gas processing facilities to make appropriate efforts to investigate future production potential and consider all inactive wells in the

vicinity. This should include an assessment of shut-in sour gas production potential, a request to owners of shut-in sour gas wells for information on potential processing requirements, and an invitation to those owners to participate in the facility in some manner. Opportunities to reduce sulphur emission should be pursued at the same time. These efforts by applicants should ensure that facility proliferation is minimized and sulphur recovery is maximized so as to avoid multiple small sour gas processing facilities with associated flaring or incineration systems in close proximity when a single larger facility, allowing for sulphur recovery, has potential.

8 PUBLIC CONSULTATION

In addition to the industry consultation requirements discussed in the previous section, applicants have a responsibility to consult with members of the general public.

8.1 Views of the Applicant

Rider stated that its public consultation program included the following:

- securing consent of the landowner of the actual land on which the facility would be constructed,
- sending out notices to area landowners and occupants, advising them of the intent to construct and operate a facility to sweeten the slightly sour gas from the 11-17 well,
- personally visiting all persons residing within 1.5 km of the proposed sweetening facility,
- sending written notification to all landowners within 2 km of the facility,
- holding a public information session near Breton on 8 March 1998 where the technical details of the sweetening facility were explained. Rider stated that at this meeting the area residents suggested the alternative of acid gas reinjection, and
- holding a public information session on 21 May 1998 where a detailed cost analysis was presented showing the feasibility of acid gas reinjection.

As noted previously, Rider stated that it was willing to form an Area Action Committee, with the participation of area residents, to address any outstanding concerns of the residents. Rider believed that it had conducted an exhaustive public consultation program and was disappointed that it was unable to resolve the concerns of the area residents.

8.2 Views of the Interveners

The interveners were concerned that Rider had not notified them when the 11-17 well was actually drilled and more importantly, when the 11-17 well was discovered to be a sour well. They stated that the first indication they had that the well was sour was when they were contacted by Rider's land consultant regarding the sweetening facility. They also expressed

concerns about not being notified when sour flaring occurred in December 1997 during well testing.

The interveners were concerned that Rider was not open to suggestions during the public consultation program. They suggested that Rider's position during the information sessions was "their way or no way".

8.3 Views of the Board

In an effort to improve public consultation, the Board and AEP developed IL 89-4, *Public Involvement in the Development of Energy Resources*. The essence of IL 89-4 is the expectation of regulators that industry will proactively consult with the general public, industry, and government prior to making an application, during the application review process, and throughout the operational phase of the development. Industry is expected to bring affected people together and establish effective two-way communication. Industry should also make every reasonable effort to resolve concerns. Members of the public can assist by taking advantage of opportunities to learn more about proposed developments, the regulatory processes and the monitoring operations. Where there are unresolved concerns, they need to be brought forward clearly. Rider appears to have followed the expectations as set out in IL 89-4. The Board notes Rider's two public information meetings and the attempts Rider made to resolve the concerns of the area residents respecting the sweetening facility.

Many of the concerns raised by the interveners dealt with Rider's past performance in notifying area residents that the 11-17 well was a sour well and with respect to flaring during the testing of the 11-17 well. Although this application did not deal with the 11-17 well itself, the Board reminds Rider that it is required to notify all rural residents and the administrators of any incorporated centres or hamlets within a 3 km radius of a gas well at least 24 hours in advance of any flaring operation, as outlined in Section 7.060, subclause 9.5(c) of the Oil and Gas Conservation Regulations.

The Board also notes a number of commitments that Rider has made to area residents including the implementation of an Area Action Committee. The Board wishes to emphasize the importance of ensuring commitments are met. When a company undertakes operations in an area, it becomes a member of that community and its reputation can easily be tarnished by the action, or inaction, of its employees or contractors. Therefore, the Board expects that Rider will meet all its commitments made to the local residents.

9 THE PIPELINE

9.1 Views of the Applicant

Rider indicated that its proposed pipeline would be required to transport the gas processed at the proposed sweetening facility to the Keystone Plant. Rider stated that the pipeline application had not been controversial. It stated that all but one landowner had consented to the route of the pipeline. Rider also stated that the easements had been signed by all but two landowners. One landowner, Mr. Heinrich, would not consent and the other did not agree to the compensation offered.

9.2 Views of the Interveners

The Walls and Hayes indicated that they did not object to the sweet pipeline. Mr. Heinrich stated that he objected to the transportation of gas to the Keystone plant. He was concerned with extending the life of the Keystone Plant located on his property. Mr. Heinrich indicated that the Keystone Plant was constructed around 1965 and that he had been given a forecast of the plant's life expectancy. Mr. Heinrich stated that the plant had far exceeded that life expectancy.

9.3 Views of the Board

The Board appreciates that if Rider's proposed sweetening facility application is to be approved, the proposed sweet gas pipeline will be required to transport gas to the Keystone Plant. The Board notes that the Walls and the Hayes were not opposed to the pipeline and that Mr. Heinrich did not present any alternatives to the pipeline. The Board is satisfied that the pipeline application is acceptable from an environmental, technical, and safety standpoint.

10 DECISION

Having carefully considered all of the evidence, the Board is prepared to approve Rider's sweetening facility application and pipeline application, subject to Rider meeting all regulatory requirements and all of its undertakings in its application and at the hearing. The approval of the sweetening facility is also subject to the conditions set out in this decision report.

For ease of reference, undertakings and conditions of particular note are restated on the attached Appendices 1 and 2.

ALBERTA ENERGY AND UTILITIES BOARD

DATED at Calgary, Alberta on 22 December 1998.

<Original signed by>

B. T. McManus, Q.C.

<Original signed by>

R. N. Houlihan, Ph.D., P. Eng.

<Original signed by>

H. O. Lillo, P.Eng.

APPENDIX 1 - CONDITIONS

Conditions of note in this decision report include, without limitation:

- (a) The facility shall be limited to a sulphur emission rate of 0.7 tonne per day. (section 5.2.3)
- (b) The facility shall be equipped with an automated alarm, shutdown callout system which will be activated, as a minimum, by H₂S detection, gas detection, fire detection, incinerator low temperature, incinerator failure, or plant shut-down. (section 4.3)
- (c) Rider will ensure that all automated callouts are responded to in not more than one hour. (section 4.3)
- (d) Rider will continuously staff the facility during the initial start-up and until it can demonstrate to the satisfaction of EUB field inspectors that the facility has achieved stable operations and that automated alarm, shut-down and call-out systems are fully functional. (section 4.3)
- (e) Trucks used to transport sour hydrocarbon liquids or produced water will be equipped to control odours in accordance with the Alberta Recommended Practices. (section 4.3)
- (f) Rider will consult with AEP to develop its air, soil, and water monitoring programs and will carry out those programs consistent with its undertakings (note undertakings (i) and (j) of Appendix 2) and to the satisfaction of AEP (sections 5.3.3 and 5.4.3).

APPENDIX 2 – UNDERTAKINGS

Undertakings of note given by Rider include, without limitation:

- (a) Acid gas will be incinerated and not flared. *(Transcript page 29, lines 16-21)*
- (b) The facility will be equipped with H₂S and gas detection systems, which will shut in the well in appropriate circumstances. *(Tr. page 160, lines 1-6).*
- (c) Rider will provide facilities and implement procedures to control vapour emissions and odours during the loading and unloading of hydrocarbon liquid and produced water. *(Tr. page 161, lines 4-13)*
- (d) Vents from storage tanks, process pressure safety valves, and process depressuring valves will be connected to the incinerator. No flare stack will be installed at the facility. *(Tr. page 163, lines 15-19)*
- (e) The incinerator will be equipped with an uninterruptable power supply capable of supplying the needs of related instrumentation and the combustion air blower during power outages. *(Tr. page 164, lines 4-15)*
- (f) The flare line connected to the incinerator will be equipped with an appropriate separation vessel. *(Tr. Page 164, lines 16-27)*
- (g) Rider will become an active member of the West Central Air Shed Consortium. *(Tr. page 165, lines 4-8).*
- (h) Rider will establish an Area Action Committee consisting of Rider representatives and at least three community members. *(Tr. page 165, lines 9-13)*
- (i) Rider will conduct monitoring for a pre start-up baseline air quality assessment and post start-up air quality evaluation. The assessment will include, as a minimum, monitoring of SO₂ and H₂S. The period of continuous air quality monitoring will not be less than one week prior to and three weeks after start up of the facility. *(Tr. pages 165, lines 14-27, Tr. page 166, lines 1-19)*
- (j) Rider will conduct baseline assessments of soil quality prior to start up. *(Tr. page 167, lines 1-6)*
- (k) The combined acid gas and LP flash gas to flare stream will be metered according to EUB requirements for gas plant meters. *(Tr. page 168, lines 7-14)*

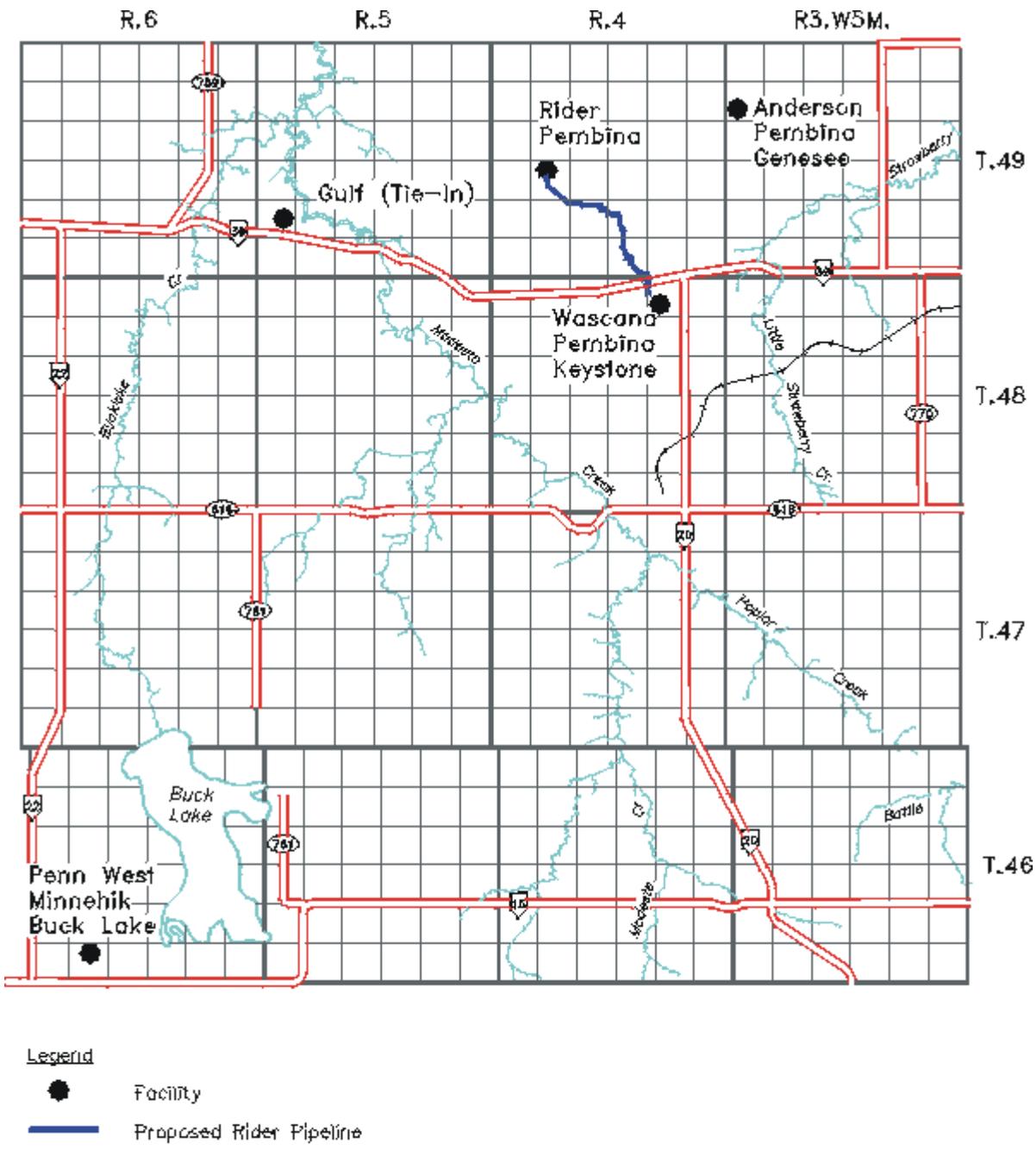
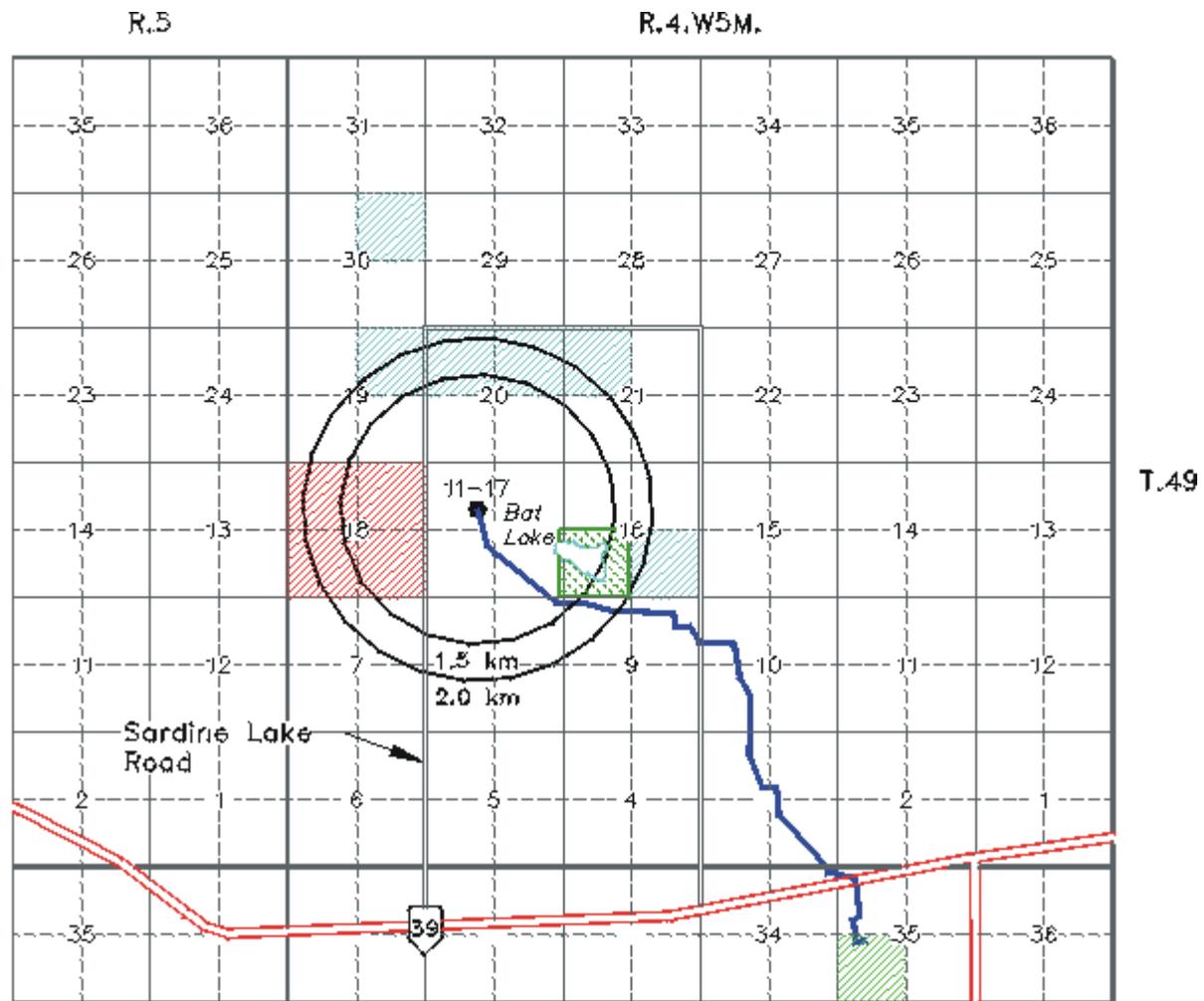


Figure 1
Pembina Area
Application No. 1023576
Rider Resources Ltd.

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Legend

-  Walls' Lands
-  Hayes Lands
-  Heinrichs' Lands
-  Proposed Rider Pipeline
-  Aisike-Bat Lake Provincial Natural Area
-  Proposed Rider Sweetening facility

Figure 2
 Pembina Area
 Application No. 1023576
 Rider Resources Ltd.

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