



Husky Oil Operations Limited

707 8th Avenue S.W.
Box 6525, Station D
Calgary, Alberta, Canada
T2P 3G7

Bus: (403) 298-6111
Fax: (403) 298-6378

December 3, 2012

Sahtu Land and Water Board

P.O. Box #1
Fort Good Hope, NT
X0E 0H0
By e-mail: sahtuwat@allstream.net

Attention: Angela Love, Regulatory Specialist

Dear Angela:

**Re: Land Use Permit Application S12X-006
Land Use Permit S11A-003 and Water Licence S11L1-003 Amendment
Applications
Land Use Permit Application S12F-007 and Water Licence S12L8-007
Comments received from the Sahtu Renewable Resources Board**

Husky Oil Operations Limited (Husky) has received comments from the Sahtu Renewable Resources Board (SRRB) dated November 21, 2012 regarding the subject application. Husky submits the following information in response to the letter. SRRB's comments are listed below with their respective responses.

Application for Land Use Permit (S12X-006)

Parameters

Recommendation 1: A comprehensive baseline water well testing program would include testing of water wells for all parameters that may be introduced into groundwater by oil and gas operations. The parameters to be tested should include methane/ethane/propane.

Recommendation 2: The proponent should indicate which specific parameters it will use to test for frac fluids.

Recommendation 3: Isotopic fingerprint analysis should be conducted for any naturally occurring methane/ethane/propane found in the groundwater. Groundwater can contain naturally occurring methane/ethane/propane but its isotopic fingerprint will be different from gases produced from an oil and gas formation. This information should be made accessible to government and the public.

Recommendation 4: Isotopic fingerprint analysis should be conducted for each gas-bearing zone that is encountered while drilling, as well as the target production zone. If gas or other substances are detected in groundwater in the future the isotopic fingerprint of the gas will allow the proponent/government/public to determine if the contamination is linked to oil and gas activity, or whether it is naturally occurring. This information should be made accessible to

government and the public. We refer the SLWB to the attached 2008 Science Review Panel report published by Alberta Environment recommending that Alberta's Energy Resources Conservation Board (ERCB) "develop a complementary or sister database containing the composition and isotopic composition of produced gases, gases in co-produced waters, and surface casing ventflows."

Recommendation 5: The proponent should use the Alberta government's baseline water-well testing protocols (document attached). The Alberta government's baseline water-well testing requirement provides detailed testing protocols that could be applied in this case. It should be noted that at the present time, baseline water-well testing standards only apply to coal bed methane wells completed above the base of groundwater protection (relatively shallow). However, the Alberta government is considering extending the requirement to cover hydraulically fractured wells below the base of groundwater protection.

Recommendation 6: The proponent should clarify under what circumstances baseline water wells will be re-tested, and who can make a request for a re-test. The data and analysis should be made publicly available.

Response 1: This has been proposed in our application.

Response 2: Frac fluid constituents are covered in the proposed analyses. Additional analyses may be requested for any fluids that contain constituents not already in the list.

Response 3: Isotope analysis has been proposed in the application.

Response 4: There were no indications of shallow gas or coal beds during the drilling of Little Bear N-09 or H-64, so we do not anticipate producing natural gas from any of the groundwater test wells. Preliminary interpretation of the newly acquired 3D seismic has not identified any shallow drilling hazard that could indicate the presence of shallow gas accumulations. TEDLAR bags will be used to sample free gas for the deep groundwater test wells. If hydrocarbons are detected in amounts sufficient for analysis, gas samples will be sent for isotope analysis

Response 5: The protocols recommended in the "*Alberta Environment Standard for Baseline Water Well Testing for CBM Operations- Scientific Review Panel Final Report*" were developed to monitor groundwater in developed Coal Bed Methane producing areas. These standards have not been recommended or required practice for exploration wells. The consultant that has been retained for this project is familiar with the Alberta requirements. In the absence of other guidance, Alberta practices will be followed for the 2012/2013 groundwater testing program.

Response 6: Water wells will be tested as part of an annual monitoring program which may include semi-annual or more frequent sampling to determine natural fluctuations. Once normal ranges have been established, additional testing may be warranted if anomalous results are encountered. Husky will use internal groundwater expertise, consultants and the advice/direction of regulators to determine "re-tests". Husky plans to make the data available to the public.

Waste Management

Question 1 for the proponent: Drill cuttings, produced fresh water, and freshwater clay drilling muds will all be disposed of on site after testing. The produced water will only be discharged if it meets Alberta ERCB Directive 55 (for chloride content, pH, and visible hydrocarbons). When and where will the produced water be released? Pooling water can cause permafrost to melt quicker in those specific areas. What mitigation measures will be in place to prevent water discharge from causing increased permafrost melt?

Question 2 for the proponent: What is the back-up plan for disposal of the dry cuttings / clay mix if the all-weather road application is not approved for this winter?

Response 1: Water will be discharged under winter conditions and will disperse naturally during the spring melt.

Response 2: Samples of drill cuttings from the groundwater wells will be sent to an accredited lab for analysis of pH, Salinity and Electrical Conductivity, and the results will be compared against the Canadian Council of Ministers of Environment (CCME) standards. And, if the solid portions of the waste meet the CCME criteria, the solids will be disposed of on-site if the all-weather road application is not approved. CCME guidelines for the parameters described below:

pH	6-8	Soil Quality Guidelines (Residential/Parkland)
Salinity	40mg/L	Protection of Aquatic Life (Freshwater)
EC	2 dS/m	Soil Quality Guidelines (Residential/Parkland)

The material will consist of drilling solids (dirt/rock cuttings), drilling mud consisting of freshwater and bentonite and groundwater. MSDS sheets for bentonite have been provided in the Spill Response Plan.

Amendments to Land Use Permit (S11A-003) and Water License (S11L1-003)

Groundwater Monitoring Program

Recommendation 1: Isotopic fingerprint analysis should be conducted for each gas-bearing zone that is encountered while drilling, as well as the target production zone. This information should be made accessible to government and the public. If gas or other substances are detected in groundwater in the future - the isotopic fingerprint of the gas will allow the proponent/government/public to determine if the contamination is linked to oil and gas activity, or whether it is naturally occurring.

Recommendation 2: Husky should revise and clarify its schedules of activities in both S11A-003 and S12X-006 applications, to ensure that groundwater testing is completed **before** well completion activities are carried out. This is an important opportunity to get good baseline information in a relatively pristine area before well completion activities commence.

Response 1: Sampling of produced gas is planned for both N-09 and H-64 testing programs. If sufficient hydrocarbons are captured, gas samples will be sent for isotope analyses.

Husky Oil Operations

Response 2: It is Husky's intent that a groundwater well close to N-09 be drilled and sampled prior to initiation of the proposed hydraulic fracture stimulation. Because the Canol shale at H-64 is already naturally fractured, the proposed completion will attempt to establish and test flow without hydraulic fracture stimulation. However, if no flow is established, a small hydraulic fracture stimulation similar to that proposed for N-09 may be conducted. A deep groundwater test well will be drilled and sampled near to the H-64 well site prior to conducting hydraulic fracture operations.

Transportation of Waste Fluids

Recommendation 3: Husky should provide calculations of the potential volumes of fluids that will need to be trucked out to Alberta, and estimate how many trucks would be required, the weight of each truck, and how the volume and frequency of traffic may impact the integrity of the winter road. Husky should lay out a back-up plan for what it will do with waste fluids if they cannot safely be trucked out before the end of the winter road season.

Response 3: The estimated volumes of waste materials are presented in the Waste Management Plan. Husky has discussed winter road traffic with the GNWT-DOT and has committed to contributing financial support to the maintenance of the winter road for the 2012/13 season. In the unlikely event that liquid waste cannot be trucked prior to breakup, it will be stored in tanks with secondary containment.

Wildlife Mitigation and Monitoring

The proposed mitigation measures in the application do not seem to reflect any site-specific data on wildlife patterns, for example any data on which areas are frequented by boreal caribou at which times of year, migration patterns, or which areas could be considered 'critical habitat'.

Recommendation 4: The proponent should cooperate with the RRCs and SRRB in establishing clear monitoring standards and protocols, as part of an adaptive management system. Proposed monitoring methods are vague and it is not clear how exactly data will be collected on observation, or where they will make these observations from. In addition, it is unclear who monitors will be reporting to or how often.

Response 4: Husky supports the establishment of standards and protocols for monitors; and due to the lack of standards provided by local agencies, Husky has developed our own environmental and wildlife monitor standards (roles and responsibilities) and has provided those to the RRC's. Husky has purchased digital GPS cameras and will provide one to each of the wildlife and environmental monitors while employed on the program. Husky will also provide daily environmental checklists as well as wildlife observation data cards to all monitors.

During our 2011/2012 Slater River program, some of the monitors were not always on site and did not complete and submit the paper work as required. After voicing our concerns to TRRC, improvements were made and replacement monitors were brought in. All monitors are obligated as part of their contract to report daily with checklists and photographs to the Husky Field Supervisor. Husky encourages the monitors to communicate their observations to the TRRC.

Husky Oil Operations

At the completion of the 2012/2013 winter program, Husky will prepare a digital map of all of the wildlife sightings throughout the entire program area and will submit a copy of the map to the NWRRC, TRRC, SRRB, and ENR. During the 2011/2012 winter program, Husky developed an external file transfer (FT) site in order to collect and post all of the monitor's checklists and photographs and sent a link to the NWRRC, TRRC, SRRB, and ENR (Norman Wells office). Husky did not receive any feedback that these agencies found the information useful but we will continue to share this information.

Cumulative Impacts

Recommendation 5: As with the MGM and ConocoPhillips applications earlier this year we feel thresholds for levels of impact on wildlife must be established. The potential impacts of the activities could extend beyond the proposed project area; therefore, a cumulative effects assessment should consider an area larger than set out in the application. The SRRB welcomes the opportunity to work with Husky developing a proper cumulative impact assessment framework, since the framework used by Husky does not appear to be adequate. The proponent includes in its list of 'future actions' to be considered under cumulative effects assessment "longer term oil and gas development and facilities". However, no longer term scenarios are actually described or considered in the analysis / evaluation section. As a result, the cumulative effects are deemed to be 'low' for all valued components, including wildlife.

Response 5: Husky agrees that a regional cumulative effects assessment is warranted prior to any proposed oil and gas development for the area. In Husky's opinion, conducting a regional cumulative effects assessment is premature at this time. All of the licensees are in early stages of exploration of their respective properties and there is a lack of historical baseline data with which to do an assessment. A primary objective of the exploration phase is to gather the information necessary to properly evaluate the hydrocarbon potential of a property and long term development plans. The information obtained will ultimately be used to determine if an economic project is present, at which time options for oil and gas development can be considered. Stakeholder engagement and environmental impact are critical elements in the generation of a development plan. It should be noted that during the exploration phase it is very difficult to predict the long term plans of other operators in adjacent exploration licences which would be included in the "larger area" that TRRC is referring to.

Husky acknowledges that there are several exploration programs proposed for the 2012/2013 winter season in the Tulita District. The scope and pace of exploration activity is likely to be different for each operating company. The goal of Husky's proposed testing and completions program is to further evaluate the reservoir and obtain samples of the hydrocarbons contained therein. This information will be used to determine the best location on Husky's acreage to drill the next exploration wells. These next wells will evaluate the potential of Canol shale to be oil producing reservoir. Husky believes that our LUP and WL applications are appropriately scoped for the activity proposed.

Recognizing the lack of historical data, Husky has already voluntarily initiated collection environmental baseline data for wildlife, habitat and surface water and ground water for our properties. Initial results of these baseline studies can be found in the Land Use Permit Application S12F-007 and Water Licence S12L8-007 application binder for the All-weather Access and Associated Facilities. Husky is willing to share our baseline data with other

operators and the public, and is willing to cooperate with SRRB and government agencies in compiling a regional environmental database.

Husky suggests that the TRRC contribute to a cumulative effects assessment by collecting data on wildlife harvesting and sharing that information with Husky.

Application for a Land Use Permit (S12F-007) and Water License (S12L8-007)

Wildlife Mitigation

One mitigation measure proposed by Husky is: "Use of the all-weather road and of the airstrip will be limited between the dates of May 1 and July 15, and October 1 and November 30 of each year in order to avoid important seasonal activities of most resident wildlife and migratory bird species."

Question 1: for the proponent: What is specifically meant by use being "limited"? The precise dates of calving and rutting seasons may vary year-to-year (and may not necessarily fall between the dates listed above). How will Husky determine when these sensitive times will fall in a given year, and will Husky commit to adjust its activities accordingly?

Another proposed mitigation measure: "Den, dam, lodge, and nest sites will be actively avoided."

Question 2: for the proponent: How and when will these sites be identified, and how will TEK be incorporated?

Little attention is paid in the Environmental Protection Plan to small furbearers, and potential impacts on trapping, particularly given that construction activities (and proposed activities for the first two applications above) are concentrated between January to March, during prime trapping season.

Question 3: for the proponent: What are potential impacts on furbearers and trapping, and how will these impacts be mitigated?

An additional commitment by the proponent: "On-going wildlife and habitat assessments will be performed by Husky, as conditions and circumstances allow, in order to gain an understanding of the wildlife species utilizing the program area."

Question 4: for the proponent: What specific kinds of wildlife and habitat assessments will be conducted? What conditions and circumstances would allow these to happen? How will Husky work with the RRCs and the SRRB in conducting these assessments, and how will TEK be incorporated?

Response 1: During identified sensitive periods, road use will be limited to small vehicle traffic required to maintain camp operations and security. Given the lack of historic baseline data specific to the Slater River program area, we will have to rely on regional guidelines until local information can be obtained.

Husky Oil Operations

Response 2: A nesting study was conducted as part of the wildlife and habitat baseline assessment this summer, and bear and wolf denning surveys were conducted in the fall; none were identified in the proposed 2012/2013 program area. No historic trap lines were identified in the project area by information gathered by the 2011 TEK study, nor were there any indications of active trapping observed during the pre-scouting and surveying or during field operations. During the 2011/2012 Slater River program all field staff (not just the monitors) were asked to report wildlife sightings; this information, was compiled and recorded on a program base map.

Response 3: No historic trap lines were identified in the project area by information gathered by the 2011 TEK study, nor were there any indications of active trapping observed during the pre-scouting and surveying or during field operations. If a trapper wishes to establish a new trap line in the Slater River program area, Husky will work with the trapper to provide reasonable access during field operations and to avoid conflict with current and projected future operation. .

Response 4: Husky conducted wildlife assessments during the summer 2012, the results are described in the all-weather road application. During the 2011/2012 winter program all wildlife observations were recorded and compiled onto a base map. It is Husky's intent to track and record all wildlife sightings during the 2012/2013 winter program to monitor trends. Husky intends to apply for a research license in 2013 to add to the baseline wildlife assessment database

In 2011, the TRRC was commissioned by Husky to complete a TEK study of the greater EL462 and EL463 area. Information compiled by the TEK study was utilized in the design of the 3D seismic and drilling programs. Subsequent pre-disturbance and archaeological assessments were conducted to verify that no historically significant sites were present in the program area. Monitors for the 2011/2012 program were supplied by the TRRC and NWRRC.

Wildlife Monitoring

Proposed monitoring methods are quite vague – wildlife monitors “will be directed to look for evidence of activity near the work area” and “will be expected to observe and document wildlife and potential wildlife impacts to ensure that environmental protection measures are being implemented as appropriate. The monitor will be expected keep a wildlife log, and will be instructed to collect data on observations, such as: species observed, date, time, location, and animal activity.” It is not clear how exactly monitors will “ensure that environmental protection measures are being implemented as appropriate”, and how monitoring activities are linked to enforcement powers. Details like this could be key to the effectiveness of the monitoring program.

Recommendation 1: The proponent should cooperate with the RRCs and SRRB in establishing clear monitoring standards and protocols, and communication mechanisms, as part of an adaptive management system.

Response 1: During our 2011-2012 Slater River program, some of the monitors were not always on site and did not complete and submit the paper work as required. After voicing our concerns to TRRC, improvements were made and replacement monitors were brought in. All monitors are obligated as part of their contract to report daily with checklists and photographs to

the Husky Field Supervisor. Husky encourages the monitors to communicate their observations to the TRRC. Husky supports establishment of standards and protocols for monitors..

Cumulative Impacts

Recommendation 2: A regional cumulative impact assessment that takes into account scenarios for projected operations by various companies holding leases in the region should be conducted to establish impact thresholds for wildlife. The proponent assessed cumulative effects on caribou in the RSA to be considered moderately significant due to the year round access creation south of the Mackenzie River, long duration of road use, and potential for future developments within the Husky leases and neighbouring exploration leases. Also as stated in the EPP the current linear corridor density in the RSA is 0.8 km/km². This current linear density is already above the current management threshold of 0.4 km/km² suggested by Antoniuk et al. (2009). In the EPP it was concluded that 55% of the RSA is disturbed which is above the 35% threshold suggested for the Northwest Territories range by Environment Canada. A regional cumulative impact assessment would help address such issues and also develop impact thresholds for wildlife.

Response 2: Husky agrees that a regional cumulative effects assessment is warranted prior to any proposed oil and gas development for the area. In Husky's opinion, conducting a regional cumulative effects assessment is premature at this time. All of the licensees are in early stages of exploration of their respective properties and there is a lack of historical baseline data with which to do an assessment. A primary objective of the exploration phase is to gather the information necessary to properly evaluate the hydrocarbon potential of a property and long term development plans. The information obtained will ultimately be used to determine if an economic project is present, at which time options for oil and gas development can be considered. Stakeholder engagement and environmental impact are critical elements in the generation of a development plan. It should be noted that during the exploration phase it is very difficult to predict the long term plans of other operators in adjacent exploration licences which would be included in the "larger area" that TRRC is referring to.

Husky acknowledges that there are several exploration programs proposed for the 2012/2013 winter season in the Tulita District. The scope and pace of exploration activity is likely to be different for each operating company. The goal of Husky's proposed testing and completions program is to further evaluate the reservoir and obtain samples of the hydrocarbons contained therein. This information will be used to determine the best location on Husky's acreage to drill the next exploration wells. These next wells will evaluate the potential of Canol shale to be oil producing reservoir. Husky believes that our LUP and WL applications are appropriately scoped for the activity proposed.

Recognizing the lack of historical data, Husky has already voluntarily initiated collection environmental baseline data for wildlife, habitat and surface water and ground water for our properties. Initial results of these baseline studies can be found in the Land Use Permit Application S12F-007 and Water Licence S12L8-007 application binder for the All-weather Access and Associated Facilities. Husky is willing to share our baseline data with other operators and the public, and is willing to cooperate with SRRB and government agencies in compiling a regional environmental database.

Husky suggests that the TRRC contribute to a cumulative effects assessment by collecting data on wildlife harvesting and sharing that information with Husky.

I trust the additional information and clarifications provided are sufficient for your requirements to deem the application complete. Should you have any further requests for information, please contact the undersigned by telephone at (403) 298-6655, by fax at (403) 750-1722, or by email at ken.hansen@huskyenergy.com.

Sincerely,
HUSKY OIL OPERATIONS LIMITED



Kenneth F. Hansen, P. Geol.
Slater River Project Manager, NWT

Cc: Debbie Simmons, SRRB