



**Aboriginal Affairs and
Northern Development Canada**
<http://www.aandc-aadnc.gc.ca>

North Mackenzie District
P.O. Box 2100
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July 5, 2013

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**Affaires autochtones et
Développement du Nord Canada**
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File S13A-002
S13L1-005

Re: Land Use Permit and Water License Application – S13A-002/S13L1-005
Husky Oil Operations Limited EL 463 in the Tulita District Drilling Project

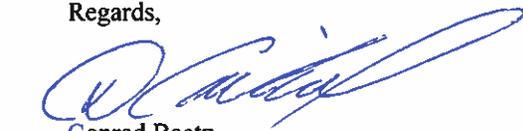
Aboriginal Affairs and Northern Development Canada (AANDC) has reviewed the above mentioned applications and submits our comments for review by the Sahtu Land and Water Board (SLWB). These comments are inclusive of the North Mackenzie District as well as those of the Water Resources Division in Yellowknife.

Please find attached your completed spreadsheet articulating AANDC concerns related to the Water License application. A security estimate for the water based component of \$361,659.00 is recommended to be sought from the proponent prior to commencement of operations (calculations attached).

Please find attached the recommended Land Use Permit conditions that AANDC requests be incorporated into the Permit should it be determined by the SLWB that one be issued. A security estimate for the land based component of \$244,946.00 is recommended to be sought from the proponent prior to commencement of operations (calculations attached)

Thank you for providing AANDC with the opportunity to comment on the above program. If you have any questions or concerns, please feel free to contact me at 867-777-8901 or Conrad.Baetz@aadnc-aadnc.gc.ca or Mr. Nathen Richea, Water Resources Division at 867-669-2657 or Nathen.Richea@aadnc-aadnc.gc.ca.

Regards,


Conrad Baetz
District Manager
North Mackenzie District Office – Inuvik

Enclosure: Water License security Estimate and comment table
Recommended Land Use Permit Conditions and Security Estimate

<p><u>GENERAL INSTRUCTIONS FOR EXCEL TEMPLATE:</u></p> <ol style="list-style-type: none"> 1. Do not leave blank rows above or between comments. 2. Do not modify or delete the instructions or the column headings (<i>i.e.</i> the grey areas). 3. Each comment must have an associated topic and recommendation. 4. All formatting (<i>i.e.</i> bullets) will be lost when this file is uploaded to the Online Comment Table. 5. If necessary, adjust the cell width and height in order to view all text. 6. Cutting and pasting comments from WORD documents cannot include hard returns (spaces between paragraphs). 7. If you would like to create paragraphs within a single cell, please use a proper carriage return (ALT & ENTER). 		<p>App #: S13L1-005</p> <p>Review of: Husky Oil Operations Ltd - EL 462 & EL 463 Slate River Drilling program</p> <p>Reviewing Agency: Aboriginal Affairs and Northern Development Canada (AANDC)</p> <p>Date: July 5th, 2013</p>
<p><u>TOPIC</u></p> <p><i>Be as specific as you think is appropriate; for example a section or page of the document, a recommendation #, general comment, etc.</i></p>	<p><u>COMMENT</u></p> <p><i>Comments should contain all the information needed for the proponent and the Board to understand the rationale for the accompanying recommendation.</i></p>	<p><u>RECOMMENDATION</u></p> <p><i>Recommendations can be for the proponent or for the Board. Recommendations should be as specific as possible, relating the issues raised in the "comment" column to an action that you believe is necessary.</i></p>
<p>Drilling wastes deposit into Quarry and separation water to be discharged onto adjacent lands - NWTWA and Regulations</p>	<p>AANDC has completed the review Husky last water licence application S13L1-005, for hydraulic fracturing exploratory operations of two vertical wells: Little Bear O-41 and G-70.</p> <p>The Waste Management Plan (WMP) specifies that there are currently no NEB or NT based guidelines for drilling waste management. However, the Northwest Territories Water Regulations do cover the proposed disposal of drilling waste and associated requirements.</p> <p>AANDC notes that the NWT Waters Act under oil and gas exploration, deposit of drilling waste in manners other than into a sump would require a Type A water licence.</p>	<p>The proposed disposal of drilling waste must be done in accordance with the NWTWA and Regulations.</p>

<p>Project Authorization Amendments</p>	<p>Husky Oil has a number of different land use permits and water licences that cover its activities associated with EL462 & EL463. AANDC would like to stress to the Board and to the proponent the importance of conducting a signal and clear application and review process for exploration undertakings in the region. This could involve only one water licence and one-two land use permits to cover the anticipated exploration activities for the next few years. With single authorizations that cover the anticipated activities only slight modifications or amendments to the original authorizations would be required. This would simplify tracking of project components, securities and approvals. Further, the same would apply to each company that is active in the region.</p> <p>AANDC is already struggling to handle the complexity associated with issuing several licences and permits for exploration work in the region.</p> <p>AANDC is available to work with both the proponent and the Board to facilitate the consolidation application to transition into single land and water related authorizations.</p>	<p>AANDC believes it is imperative that future planning be incorporated into the regulatory permit application and review process and that the existing permits and licences be amalgamated into single authorizations, if possible.</p>
<p>Surface and Groundwater Monitoring Recommendation towards monitoring goals</p>	<p>In its approval letter to Husky on May 16 2013, the Board stated that it is currently working on creating a Surface and Groundwater Monitoring framework that will promote consistency in the development of credible, comparable data and information pertaining to water quality. This framework will set out minimum standards for monitoring programs.</p> <p>At the moment, AANDC understands that Surface and Groundwater Monitoring Plans (SGWMP) are recognized as living documents enabling them to evolve overtime in conjunction with the growing scale of exploration and available data.</p>	<p>AANDC commends the Board for taking the steps to develop a framework to establish the minimal requirements for surface and groundwater monitoring programs.</p> <p>AANDC provides the following recommendations in order to help Husky reached its monitoring goals of representing baseline water quality and associated project monitoring to detect potential impacts to both surface and groundwater.</p>

<p>Surface Water Monitoring Husky SGWMP - Surface Water Monitoring for Monitoring of Operations at O-41 and G-70, Not yet established</p>	<p>Section 7.4.1.1.2 of the EPP specifies that surface water samples were collected in 39 locations in July and September 2012 as part of the baseline surface water quality assessment. All 39 sampling locations are represented on Figure 2 of Husky Surface and Groundwater Monitoring Plan (SGWMP) submitted as part of S12X-006 Land Use Permit.</p> <p>AANDC acknowledges that Husky collected samples across both EL 462 & EL 463 areas, allowing for the assessment of potential impact of future development or expansion in the two claim blocks. Such baseline is important and will be required if the exploration program was to advance to production and additional oil and gas wells are drilled.</p> <p>However, surface water sampling locations have not yet been established to monitor potential effects from the current application (for wellsites O-41 and G-70). When choosing water sampling locations, Husky should locate the stations as close as possible to wellsite and other waste management activities such as tanks storage locations, trucks, etc. or beside transportation corridors.</p> <p>To differentiate between natural and anthropogenic influences, monitoring stations should be located upstream (no effects - control site) and downstream (potential effects) from operations.</p>	<p>AANDC recommends that surface water quality sampling location be determined by Husky and submitted to the Board prior to the commencement of the project.</p>
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<p>Surface Water Monitoring Baseline Water Quality Exceedences</p>	<p>The EPP indicates, in Table 7-18, that there were numerous exceedences of aquatic life and drinking water guidelines recorded during the 2012 baseline monitoring events. As such, 39 exceedences were recorded for Total coliforms; 30 for Iron (total), 23 for Aluminum; 11 for Manganese (total) and Copper (total), etc.</p> <p>Does Husky have a rationale for these exceedences? How can Husky be assured that they represent background conditions (e.g. E.coli, fecal colliforms, etc.)? Did any sampling errors or sample contamination occur during the water sampling program?</p> <p>Conducting baseline data is important to assess potential effects. It is equally important to ensure that QA/QC procedures are adequately followed to avoid sampling/analytical errors. While exceedences may be linked to background conditions, exceedences should be further explained in order to validate the quality of the data sets and ensure comparison can subsequently be made once operations have started.</p>	<p>AANDC understands that Husky has submitted the results of the 2012 sampling program to the SLWB. AANDC looks forward to reviewing the documents.</p> <p>AANDC recommends that Husky further assess the results and ensure that monitoring methods are conducted according to QA/QC protocols. This analysis is required to guarantee that the sampling results are reliable for future comparisons.</p>
<p>Groundwater Monitoring Sampling locations potentially monitoring impacts of N-09, but not O-41, G-70 and H-64</p>	<p>At present, section 7.4.2.1 specifies that 4 groundwater wells were installed during the winter 2013 under LUP S12X-006 (2 bedrocks groundwater monitoring wells, 2 shallow groundwater monitoring wells), as well as 7 permafrost monitoring stations. The information that is current available appears to indicate that groundwater monitoring may only occur at the N-09 groundwater well. How will groundwater be monitored and assessed for the O-41 and G-70 wells.</p> <p>Note the upstream and downstream method also applies to groundwater sampling once groundwater flow direction has been established. Note it is likely that more than one deep groundwater well would be required to assess groundwater flow direction.</p>	<p>AANDC recommends that to acquire groundwater baseline monitoring data, groundwater monitoring wells needs to be installed and sample collected prior to drilling the O-41 and G-70 wells.</p> <p>AANDC recommends that more groundwater monitoring locations be added to the adequately assess groundwater baseline conditions and flow direction.</p>

<p>Waste Management Plan Map illustrating waste management activities locations</p>	<p>AANDC notes that as per the MVLWB Guidelines for Developing a Waste Management Plan, the proposed locations for all waste management sites (tank farm, fracking trucks, etc.) should be represented on a map to scale, with respective GPS coordinates.</p> <p>Identifying these locations on a map will also aid with determining/illustrating appropriate surface sampling locations to monitor waste management activities. Details are to be included relating to physical, surface & subsurface characteristics, site water management (i.e. flow/drainage patterns), permafrost areas and geotechnical characteristics. These components should be represented on a map.</p>	<p>AANDC recommends that a Map be provided with the proponent WMP to illustrate each location where waste management activities (storage, handling, transfers, etc.) is planned to occur for operation at each O-41 and G-70.</p>
<p>Waste Management Plan Waste management Summary Table - Estimated Volumes</p>	<p>The Waste Management Summary Table provided in Appendix A of the WMP should be updated to include products by volume/mass that are provided within Table 6 - List of Chemicals stored at O-41 and G-70.</p>	<p>AANDC recommends that the Waste Management Summary Table be updated to contain all waste to be used or produced during Husky operations.</p>
<p>Waste Management Plan MSDS Sheets</p>	<p>AANDC acknowledges the Board for requesting MSDS sheets for all chemicals outlined in the Water Licence application and associated plans.</p>	<p>AANDC acknowledges Husky for providing MSDS sheets for all chemicals outlined in the water licence application and associated plans.</p>
<p>Waste Management Secondary containment</p>	<p>As a proposed environmental protection and mitigation measure, the EPP specifies in Table 7-19 that all fuel storage containers will have secondary containment to avoid potential impacts on surface water. However, it is unclear if secondary containment also planned for other hazardous wastes and chemicals stored onsite (including frac fluids, crosslinker, gel breaker, gelling agents - as listed in Appendix A of the WMP - Waste Management Summary Table).</p> <p>The Spill Contingency Plan should specify that secondary containment will be used for each hazardous waste including fracturing fluids and chemicals stored on site. Contingency storage may also be required for contaminated snow, ice, flow back fluids, etc.</p>	<p>AANDC recommends that fuel, chemicals and waste storage areas should be located 100 meters from any water body at all times, unless approved by an inspector.</p> <p>AANDC recommends secondary containment to be provided for all hazardous wastes and chemical stored on site. Contingency storage should be available for contaminated snow, ice, flow back fluids, etc.</p>

<p>Spill Contingency Plan Spill Response Team</p>	<p>To ensure an efficient and effective response in the event of a spill, Husky should establish a Spill Response Team for the Slater River O-41 and G-70 project. The necessary responsibilities/duties to be executed by staff should be identified and subsequently relayed in the plan.</p> <p>Once the Spill Response Team is known, a flowchart with names, assigned responsibilities and contact information should be drafted, provided to the Board, and included in the SCP. This is in line with AANDC's Spill Contingency Guidelines (2007).</p>	<p>AANDC recommends that the duties of the Spill Response Team be provided. Once personnel/team members are determined, their contact information, including a 24-hour telephone numbers, should be provided in a flowchart and submitted in the SCP. The team and their associated duties should be provided to the Board and the Inspector prior to the commencement of operations at the site. The SCP and flowchart should also be kept on-site in an accessible location.</p>
<p>Spill Contingency Plan Training frequency and log</p>	<p>AANDC believes that the Spill Contingency Plan's effectiveness will be enhanced through mock spill exercises and general familiarization with spill response equipment. Such training ensures that employees understand most probable spill emergencies, as well as standard spill response procedures. Details relating to spill emergencies training and frequency specific to the current O-41 and G-70 operations were not provided.</p> <p>It is also recommended that general spill response training and orientation occurs on a regular basis. Husky should keep a log of training to ensure, at a minimum, all employees have received training.</p>	<p>AANDC recommends that details relating to spill emergencies responses and the frequency of spill response training exercises be provided within the SCP. A spill training log should be kept and provided to the inspector upon request.</p>
<p>Spill Contingency Plan On-site and Off-site resources</p>	<p>There was information was provided on spill containment on land, water, ice, under ice and snow, spill kit locations and Bulk Plant Spill Kit contents, however the project specific information relating to the quantities/contents of other on-site resources (spill kits, sorbent materials, earth moving equipment) were missing. The location of earth moving and other equipment located in the project area as stated on page 16 of Appendix 8 Emergency Response Plan - Spill Contingency Plan (ERP-SCP) was missing as well.</p>	<p>AANDC recommends the ERP-SCP be updated to include this information. Husky is to be commended for the maps contained in the ERP-SCP that can be used to locate the closest spill equipment and supplies in case of emergency.</p>

<p>Hydraulic Fracturing Nearby faults and potential seismicity</p>	<p>Fracturing has been possibly linked to mini-earthquakes in the UK and earlier this year in BC. It is expected that seismic events may only occur when fracturing activities are conducted in proximity of existing fault lines.</p> <p>AANDC understands that regional faults were identified within the Canol/Bluefish system.</p>	<p>AANDC recommends that Husky confirm whether there are existing fault lines in proximity to well sites O-41 and G-70.</p> <p>AANDC recommends that best practices be adopted by Husky to ensure fracturing activities are conducted within safe distances of any existing fault lines.</p> <p>AANDC recommends that hydraulic fracturing operations cease if a seismic event occurs during active fracturing operations.</p>
<p>Hydraulic Fracturing Underground geology characterization</p>	<p>AANDC notes that it is challenging to predict the fracture networks generated by fracturing/fluid injection. These fractures can be complex and difficult to predict for numerous reasons such as the nature of the shale (anisotropic granular rocks) making them more or less resistant. As well, it is stated that two or three fracture events will occur in the Canol Shale formation (estimated to be 930 and 1360 m below the surface).</p> <p>Will the propagation height and width be monitored as they occur? Will the actual/estimated fracture trajectory be recorded and reported?</p>	<p>AANDC recommends adoption of best practices with respect to hydraulic fracturing operations including monitoring of well pressures, propagation heights and widths, etc. AANDC assumes that the NEB will be reviewing and assessing the proposed fracturing operations.</p> <p>AANDC recommends that the actual propagation dimensions be monitored and reported to the most appropriate authority (i.e. NEB and the SLWB upon request). This information may be reported within Husky's annual report.</p>
<p>Security Estimate</p>	<p>AANDC prepared an estimate of the reclamation security for the proposed project. AANDC notes that it was a challenging undertaking given that security is held for various portions of the project under numerous other land use permits and water licences.</p> <p>The total RECLAIM estimate for activities associated with water licence application S13L1-005 is i) \$374,195 land and ii) \$361,659 water.</p> <p>The total estimate for the land related liability for the project is \$477,141 (includes land portion estimated by the NMD for the land use permit). This should be held under the land use permit S13A-002.</p> <p>The total estimate for the water related liability is \$361,659 which is to be held under water licence S13L1-005.</p>	<p>AANDC recommends a total of \$361,659 be held under S13L1-005.</p> <p>AANDC recommends a total of \$477,141 be held under S13A-002.</p>

Husky S13L1-005 Reclaim Estimate (O-41 & G-70)

	Costs	% Land	Land Cost	Water Cost
DRILL AREA				
grout top 200 m of hole, cement	\$2,700.00	100%	\$2,700.00	\$0.00
grout top 200 m of hole, labour	\$3,840.00	100%	\$3,840.00	\$0.00
decant water from sump - N/A	\$0.00			
place geotextile over cuttings - N/A	\$0.00			
doze soil over cuttings - N/A	\$0.00			
other	\$0.00			
remove refuse & waste, bury in sump - N/A	\$0.00			
collect & ship hazardous waste	\$0.00			
collect & ship oil based - drill fluids and cuttings/frac fluids and returns	\$500,000.00	50%	\$250,000.00	\$250,000.00
excavate and treat contaminated soil	\$0.00			
contour drill pad and perimeter	\$0.00			
re-establish drainage patterns	\$0.00			
rip rap in drainage channels	\$0.00			
spread organic soil from stockpile	\$0.00			
vegetate drill pad area	\$0.00			
Water monitoring & reporting - allocation	\$0.00			
other	\$0.00			
other	\$0.00			
remove wooden buildings	\$0.00			
access road, scarify and remove culverts	\$0.00			
remove pipeline, transmission, etc.	\$0.00			
remove gas plant equipment	\$0.00			
remove steel buildings	\$0.00			
CAMP AREA				
remove refuse & waste, bury in landfill	\$0.00			
collect & ship hazardous waste - N/A	\$0.00			
remove tanks	\$0.00			
excavate and treat contaminated soil - N/A	\$0.00			
contour camp area and perimeter	\$0.00			
re-establish drainage patterns	\$0.00			
rip rap in drainage channels	\$0.00			
spread organic soil from stockpile	\$0.00			
vegetate camp area	\$0.00			
other	\$0.00			
barge landing/staging	\$0.00			
other	\$0.00			
MOB/DEMOB/ACCESS				
access by air	\$12,800.00	50%	\$6,400.00	\$4,040.00
access by road	\$0.00			
demobilize tanks	\$3,636.00	100%	\$3,636.00	\$0.00
mobilize/demobilize equipment	\$0.00			
mobilize/demobilize equipment	\$0.00			
mobilize misc. supplies	\$0.00			
demob rig, well testing unit and comm				
mobilize workers	\$10,692.00	50%	\$5,346.00	\$5,346.00
accommodation	\$21,380.00	50%	\$10,690.00	\$10,690.00

	\$555,048.00		\$282,612.00	\$270,076.00
8% Engineering/Project Management	\$44,404	50%	\$22,201.92	\$22,201.92
25% Contingency	\$138,762	50%	\$69,381.00	\$69,381.00
TOTAL (RECLAIM) S13L1-005	\$738,213.84		\$374,194.92	\$361,658.92

New LUP (LUP Estimate Tool) S13A-002	LUP	\$196,793.00
	credit	\$93,847.00

New Permit Totals Only	\$477,140.92	\$361,658.92
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Previous Authorizations	S11T-002	LUP	\$163,000	\$182,830	WL S12L8-007
	S11A-003	LUP	\$142,000		
	S11B-005	LUP	\$300,000		
	S12X-006	LUP	\$35,825.72		
	S12F-007	LUP	\$610,072		

SUM TOTAL - All Authorizations **\$1,728,038.64** **\$544,488.92**

GRAND TOTAL Land and Water for 2 vertical wells **\$2,272,527.56**

AANDC requested conditions to SLWB S13A-002

26 (1) (A) - LOCATION AND AREA

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| 1.1 | The Permittee shall not conduct this land use operation on any lands not designated in the accepted application, unless otherwise authorized in writing by a Land Use Inspector or the S.L.W.B. | PLANS |
| 1.2 | The Permittee shall not conduct any part of the land use operation within three hundred (300) metres of any privately held land or structure, unless otherwise authorized in writing by the S.L.W.B. | PRIVATE PROPERTY |
| 1.3 | The Permittee shall not construct an adit or drill site within 100 metres of the normal high water mark of a stream unless approval in writing is obtained from the S.L.W.B. | LOCATION OF ADITS AND DRILLSITE |
| 1.4 | The Permittee shall locate all camps on gravel, sand or other durable land. | CAMP LOCATION |
| 1.7 | The Permittee shall remove from project area; all scrap metal, discarded machinery and parts, barrels and kegs, buildings and building material. | REMOVAL WASTE MATERIAL |
| NEW | All campsites shall be located a minimum of 100 metres from the high water mark of any water body. | CAMP LOCATION |
| 1.11 | The Permittee shall locate all lines, trails and rights of way to be constructed parallel to streams a minimum of thirty (30) metres from any stream except at crossings, unless otherwise authorized in writing by a Land Use Inspector. | PARALLELING STREAMS |

26 (1) (B) - TIME

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| 2.1 | The Permittee's Field Supervisor shall contact or meet with the Land Use Inspector at the Norman Wells office of the Department of Aboriginal Affairs and Northern Development, telephone number (867) 587-2911, at least 48 hours prior to the commencement of this land use operation. | CONTACT INSPECTOR |
| 2.2 | The Permittee shall advise the Land Use Inspector at least ten (10) days prior to the completion of the land use operation of

(a) his plan for removal or storage of equipment and materials, and

(b) when final clean-up and restoration of the lands used will be completed. | REPORTS BEFORE REMOVAL |

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| 2.3 | The Permittee shall submit a progress report to the Land Use Inspector every <u>7</u> days during this land use operation. | PROGRESS REPORT |
| 2.11 | The Permittee shall remove all snow fills from stream crossings prior to spring break-up or completion of the land use operation, unless otherwise approved in writing by a Land Use Inspector | REMOVE SNOW FILLS |
| 2.13 | The Inspector reserves the right to impose closure of any area to the Permittee in periods when dangers to natural resources are severe. | CLOSURE |
| 2.14 | The Permittee shall complete all clean-up and restoration of the lands used prior to the expiry date of this permit. | CLEAN-UP |

26 (1) (C) EQUIPMENT

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|------|---|-----------------------------------|
| 3.1 | The Permittee shall not use any equipment except of the type, size, and number that is listed in the accepted application, unless otherwise authorized in writing by the Land Use Inspector. | ONLY APPROVED EQUIPMENT |
| 3.2 | The Permittee shall equip bulldozer blades used in this operation with "mushroom" type shoes or a similar type of device which shall be extended 15 centimetres below the cutting edge of the blade | BULLDOZER BLADES AND SHOES |
| 3.3 | The Permittee shall use a forced-air, fuel-fired incinerator to incinerate all combustible garbage and debris. | INCINERATORS |
| 3.4 | The Permittee shall burn all combustible garbage and debris in a container acceptable to a Land Use Inspector. | INCINERATORS |
| 3.10 | The Permittee shall ensure a garbage container is on site. | GARBAGE CONTAINER |

26 (1) (D) - METHODS AND TECHNIQUES

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| 4.1 | The Permittee shall scout proposed lines and routes to select the best location for crossing streams and avoiding terrain obstacles prior to the movement of any vehicle that exerts pressure on the ground in excess of 35 K pa. | DETOURS & CROSSINGS |
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4.2 The Permittee shall construct and maintain winter roads with a minimum of 15 centimetres packed snow at all times during this land use operation. If this cannot be done, then the Permittee shall construct Ice Roads in a manner approved by a Land Use Inspector. **SNOW ROADS/ ICE ROADS**

NEW The Permittee shall not clear areas larger than specified in their application. **MINIMIZE AREA CLEARED**

4.13 The Permittee shall not erect camps or store material on the surface ice of streams. **STORAGE ON ICE**

NEW The Permittee shall use only clean snow in the construction of crossings. **CLEAN SNOW**

26 (1) (E) - TYPE, LOCATION, CAPACITY AND OPERATION OF FACILITIES

5.7 The Permittee shall ensure that the land use area is kept clean and tidy at all times. **CLEAN WORK AREA**

26 (1) (F) - CONTROL OR PREVENTION FLOODING, EROSION AND SUBSIDENCE OF LAND

6.2 The Permittee shall remove any obstruction to natural drainage caused by any part of this land use operation. **NATURAL DRAINAGE**

6.3 The Permittee shall not cut any stream bank unless authorized in writing by the Land Use Inspector. **STREAM BANKS**

6.4 The Permittee shall not use any material other than water in the construction of ice bridges. **ICE BRIDGE MATERIAL**

6.6 The Permittee shall install culverts or bridges as construction of the road progresses unless otherwise authorized by a Land Use Inspector. **INSTALLATION OF CULVERTS AND BRIDGES**

6.7 The Permittee shall not use the bed of streams for access routes except for the purpose of crossing the streams, unless otherwise authorized by the Land Use Inspector. **STREAM BEDS - ACCESS**

6.8 The Permittee shall locate all lines, trails and rights-of-way to be constructed parallel to streams a minimum of thirty (30) metres from any stream except at crossings, unless otherwise authorized in writing by the Land Use Inspector. **PARALLELLING STREAMS**

6.9 The Land Use Inspector may curtail or stop repeated fording of a stream with vehicles. **FORDING OF STREAMS**

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| 6.14 | The Permittee shall not construct interceptor or offshoot drainage ditches, unless approved in writing by the Land Use Inspector | DITCHES |
| 6.15 | The Permittee shall install erosion control structures as the land use operation progresses, unless otherwise authorized by the Land Use Inspector. | EROSION CONTROL |
| 6.16 | The Permittee shall insulate the ground surface beneath all structures and facilities associated with this land use operation to:
(a) prevent any vegetation present from being removed and,

(b) the ground settling and or eroding. | INSULATE GROUND SURFACE |
| 6.17 | The Permittee shall prepare the site in such a manner as to prevent rutting of the ground surface. | PREVENTION OF RUTTING |
| 6.19 | The Permittee shall not construct parallel lines or roads, unless authorized by the Land Use Inspector or S.L.W.B. | PARALLEL ROADS |
| 6.20 | The Permittee shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. | VEHICLE MOVEMENT FREEZE-UP |
| 6.24 | The Permittee shall detour around all sand hills, unless otherwise authorized in writing by the Land Use Inspector | AVOID SAND HILLS |
| NEW | The Permittee shall not use any material other than clean snow in the construction of stream crossings. | |
| NEW | The Permittee shall maintain a snow cover of no less than 15 cm on all access roads. If this cannot be done roads will have to be watered. | PROTECTION OF VEGETATIVE MAT |

26 (1) (G) - USE, STORAGE, HANDLING AND DISPOSAL OF CHEMICAL OR TOXIC MATERIAL

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| 7.1 | The Permittee shall not use chemicals in connection with the land use operation without the prior approval of the S.L.W.B. | APPROVAL OF CHEMICALS |
| 7.2 | The Permittee shall not use the following materials during the drilling operation without the prior written approval of the S.L.W.B.:

Chlorinated phenols (Dowicide B, etc.)
Compounds composed primarily of heavy metals
Asbestos | PROHIBITED CHEMICALS |

7.3	The Permittee shall submit to the S.L.W.B. a contingency plan, for chemical spills, for use during the construction and operation of the winter road and associated facilities.	CONTINGENCY PLAN
7.6	The Permittee shall not allow any drilling waste to spread to the surrounding lands.	DRILL WASTE CONTAINMENT
7.7	The Permittee shall dispose of all toxic or persistent substances in a manner as approved, in writing, by the S.L.W.B.	WASTE CHEMICAL DISPOSAL
7.9	The Permittee shall report all spills immediately in accordance with instructions contained in "Spill Report" form N.W.T. 1086(10/79). 24 hour spill report line (867) 920-8130.	REPORT CHEMICAL AND PETROLEUM SPILLS

26 (1) (H) - WILDLIFE AND FISHERIES HABITAT

8.1	The Permittee shall not unnecessarily damage wildlife habitat in conducting this land use operation.	HABITAT DAMAGE
8.2	The Permittee shall construct and maintain all structures placed in streams frequented by fish, in such a manner that will not obstruct passage of fish.	FREE FISH MOVEMENT
8.6	The Permittee shall not destroy or damage beaver dams.	BEAVER DAMS
8.7	The Permittee shall not destroy or damage muskrat lodges	MUSKRAT LODGES
8.9	Your operation is in an area where bears may be encountered. Proper food handling and garbage disposal procedures will lessen the likelihood of bears being attracted to your operation. Information about the latest bear detection and deterrent techniques can be obtained from the Department of Environment and Natural Resources at (867) 587-3500.	BEAR/MAN CONFLICT
9.4	The Permittee shall keep all garbage and debris in a covered container until disposed of. This container shall be marked with the Permittee's name.	GARBAGE CONTAINERS
9.5	The Permittee shall burn all garbage and debris at least daily.	GARBAGE DISPOSAL
9.7	The Permittee shall remove all non-combustible garbage and debris from the land use area to a disposal site approved in writing by the Land Use Inspector.	REMOVE GARBAGE

9.11	The Permittee shall remove from the "Mackenzie Valley" all scrap metal, discarded machinery and parts, barrels and kegs, buildings and building material.	REMOVE WASTE MATERIAL
9.12	The Permittee shall dispose of all combustible waste petroleum products by incineration or removal.	WASTE PETROLEUM DISPOSAL
NEW	(a) The Permittee shall treat all sewage in a treatment plant capable of extracting eighty-five to ninety (85-90%) per cent of the biodegradable solids.	SEWAGE DISPOSAL
	(b) Solid waste(s) removed from the camp sewage effluent by the portable waste treatment plant shall be deposited at an approved waste disposal facility.	
	(c) All liquid Waste(s) and sewage generated by a camp, specifically grey water and black waters, will be processed on-site by a portable waste treatment plant prior to being spread on the surface of the land.	
	(d) The Permittee shall endeavour to spread treated camp effluent to known or identified wetlands.	

26 (I) (J) - HISTORICAL AND ARCHAEOLOGICAL SITES AND BURIAL GROUNDS

10.1	The permittee shall not operate any machinery or equipment within 150 metres of any known Historical or Archaeological Site or Burial Ground.	NO ACTIVITY
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26 (1) (L) - SECURITY DEPOSIT

12.1	The operator shall deposit with the S.L.W.B. a security deposit in the amount of \$ pursuant to Section 26 (1) (L) of the Mackenzie Valley Land Use Regulations.	SECURITY DEPOSIT
12.2	The Permittee shall be liable for any cost of damages over and above the amount of the security deposit.	LIABILITY FOR DAMAGES

26 (1) (M) - PETROLEUM FUEL STORAGE

13.1	The Permittee shall report in writing to the Land Use Inspector the location and quantity of all petroleum fuel caches within ten (10) days after their establishment.	REPORT FUEL LOCATION
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13.2	The Permittee shall not place any petroleum fuel storage containers within one hundred (100) metres of the normal high water mark of any stream.	FUEL BY STREAM
13.3	The Permittee shall locate mobile fuel facilities on land when stationary for any period of time exceeding twelve (12) hours.	FUEL ON LAND
13.4	The Permittee shall not allow petroleum products to spread to surrounding lands or into water bodies.	FUEL CONTAINMENT
13.5	The Permittee shall have one extra fuel storage container on site equal to, or greater than, the size of the largest fuel container.	FUEL/EXTRA CONTAINER
13.6	The Permittee shall construct a dyke around each stationary fuel container or group of stationary fuel containers where any one container has a capacity exceeding 4 000 litres.	DYKE/FUEL CONTAINERS
13.7	The Permittee shall line the dyke and area enclosed by the dyke with a type of plastic film liner approved by the S.L.W.B.	LINE DYKE
13.8	The volume of the dyked area shall be 10% greater than the capacity of the largest fuel container placed therein.	CAPACITY
13.9	The Permittee shall ensure that the dyke and the area enclosed by the dyke shall be impermeable to petroleum products at all times.	IMPERMEABLE DYKE
13.10	The Permittee shall: (a) examine all fuel storage containers for leaks a minimum of once every <u> 1 </u> days. (b) repair all leaks immediately.	CHECK FOR LEAKS
13.11	The Permittee shall maintain a watchman at the site at all times when fuel is stored on site.	WATCHMAN
13.14	The Permittee shall not use bladders for transporting petroleum.	BLADDERS PROHIBITED
13.15	The Permittee shall mark all stationary petroleum products storage facilities with flags, posts or similar devices so that they are at all time plainly visible to local vehicle travel.	MARK FUEL LOCATION
13.16	The Permittee shall seal all container outlets except the outlet currently in use.	SEAL OUTLET

26 (1) (N) - DEBRIS AND BRUSH DISPOSAL

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| 14.10 | The Permittee shall progressively complete disposal of all debris and brush. | PROGRESSIVE DISPOSAL |
| 14.14 | The Permittee shall salvage all portions of trees cleared that are larger than thirteen (13) centimetres in diameter. | SALVAGE TIMBER |
| 14.15 | The Permittee shall neatly pile all salvaged wood at locations specified in writing by a Land Use Inspector. | PILE WOOD |
| 14.24 | The Permittee shall clear by hand all trees a minimum distance of 15 metres from the top edge of all water crossings and slopes exceeding 8%. | CLEAR UNSTABLE AREA |
| NEW | The Permittee shall ensure all leaning or damaged trees are cut and lie flat on the ground. | LEANING AND DAMAGED TREES |

26 (1) (O) - RESTORATION OF THE LANDS

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| NEW | The Permittee shall commence and foster revegetation on all parts of the land used, as may be directed by a Land Use Inspector. | RE-ESTABLISH VEGETATION |
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26 (1) (P) - DISPLAY OF PERMITS AND PERMIT NUMBERS

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| 16.1 | The Permittee shall display a copy of this Permit in a conspicuous place in each campsite established to carry out this land use operation. | DISPLAY PERMIT |
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26 (1) (Q) - MATTERS NOT INCONSISTENT WITH THE REGULATIONS

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| 17.5 | <p>The Permittee shall provide in writing to the Land Use Inspector at least forty-eight (48) hours prior to commencement of this land use operation, the following information:</p> <ul style="list-style-type: none"> (a) person, or persons, in charge of the field operation to whom notices, orders, and reports may be served; (b) alternates; (c) all the indirect methods for contacting the above person(s). | IDENTIFY AGENT |
| 17.6 | The Permittee shall, while conducting the operation, make every effort to avoid covering or destroying traps or snares that may be found in the area. | TRAPS PROTECTION |

17.7 The Permittee shall restore any trails used by trappers or hunters by slashing any and all trees that may fall across these paths or trails and by removing any other obstructions such as snow piles or debris that may be pushed across the trails. **TRAILS RESTORATION**

17.12 The Permittee shall adhere to all comments and procedures stated in the Land Use Permit application unless otherwise stated in the Terms and Conditions of this Land Use Permit or authorized by the Land Use Inspector. **OTHER COMMITMENTS**

NEW The Permittee shall submit a Final Plan in Digital Format compatible with ARC GIS software for the footprint used and a map at a scale of 1:250,000 for the operations. **FINAL PLANS**

Land Use Permit Security Worksheet

Application Number: S13A-005 Husky Oil Operations Limited

Input
Amount Multiplier

Camp (C1)			
Temporary Structures			
Input number of tent frames or weatherhaven (3.5m x 4.2m)	1	\$200.00	\$200.00
Input number of trailers (3.5m x 15.2m)	31	\$300.00	\$9,300.00
Input total square metres of other temporary structures (i.e. core shacks)	0	\$2.50	\$0.00
Fixed Structures			
Input total square metres of fixed structures	0	\$25.00	\$0.00
Solid Waste			
For non-burnable material, input # of person days per season	240	\$1.00	\$240.00
For burnable material, input # of person days per season	240	\$0.50	\$120.00
Total C1			\$9,860.00

Regulated / Hazardous Materials (R1)			
Based upon on site volume			
Explosives; up to 500 kg (~pallet) dry explosives input 1, if none, input 0	0	\$500.00	\$0.00
Additional Explosives; input total kg >500	0	\$0.50	\$0.00
Drilling Muds (oil based); enter number of 63 m ³ (or equivalent) containers	0	\$1,000.00	\$0.00
Used Oil, Lubes and Antifreeze: enter number of pieces of heavy equipment	0	\$500.00	\$0.00
Other;			

Total R1			\$0.00

Hydrocarbon Storage and Transfer (H1)			
Based upon on site volume			
Gasoline and Diesel			
Enter total volume of gasoline&diesel <25,000 L	0	\$0.50	\$0.00
Enter total volume of gasoline&fuel > 25,000 L	78,600	\$0.25	\$19,650.00
Total Gasoline and Diesel			\$19,650.00
When fuel is within bermed site or has other safety feature, enter 1, otherwise enter 0	1	25%	-\$4,912.50
Aviation Fuel			
Enter total volume of aviation fuel < 25,000 L	0	\$0.50	\$0.00
Enter total volume of aviation fuel > 25,000 L	0	\$0.25	\$0.00
Total Aviation Fuel			\$0.00
When fuel is within bermed site or has other safety feature, enter 1, otherwise enter 0	0	25%	\$0.00
Total H1			\$14,737.50

Land Disturbance (L1)			
Disturbed Surface Area			
<i>(Developed surface area that may require restoration through the use of scarification, reseeding, fertilizing or other similar techniques)</i>			
Enter number of hectares disturbed	10	\$1,000.00	\$10,000.00
Other Land Disturbances			
Creek Crossings; enter number of creek crossings	0	\$500.00	\$0.00
Off-Road Activities; if any activities are likely, enter 1	1	\$500.00	\$500.00
Sump Factor; enter total area occupied by sumps in m ²	0	\$10.00	\$0.00
Well Factor; enter number of wells.	2	\$25,000.00	\$50,000.00
Total L1			\$60,500.00

Land Use Permit Security Worksheet (continued)

Application Number:	Input Amount	Multiplier	
Equipment (E1)			
Based upon type of equipment			
Enter number of pieces of heavy equipment (i.e. dozer, forklift, large gensets)	58	\$1,000.00	\$58,000.00
Enter number of drills	1	\$1,000.00	\$1,000.00
Enter number of light vehicles (trucks, atvs, snowmobiles, boats)	35	\$250.00	\$8,750.00
Enter number of small generators or pumps	15	\$100.00	\$1,500.00
Enter number of empty fuel storage tanks	0	\$500.00	\$0.00
Total E1			\$69,250.00

Security Calculation			
Preliminary Calculation			
Enter amount from C1			\$9,860.00
Enter amount from R1			\$0.00
Enter amount from H1			\$14,737.50
Enter amount from L1			\$60,500.00
Enter amount from E1			\$69,250.00
Preliminary Calculation, total of above		A	\$154,347.50
Multipliers			
Site Access Multiplier. If the project has all weather road access enter 1, if ice road access enter 1.5, if air access enter 2		B	1.5
Performance Multiplier. If applicant has successfully completed the terms of a LUP enter 0.85, otherwise enter 1		C	0.85
Environmental Risk Factor. If location has high environmental value or unusual environmental risk enter 2. If location is previously disturbed enter 0.75. Otherwise enter 1.		D	1
Calculated Security			
Multiply preliminary calculation (A) by performance multipliers (B, C and D)		E	\$196,793.06
Existing Securities			
List existing associated permits and amount of overlapping security			
Permit: _____			\$0.00
Overlapping Securities, total of above		F	\$0.00
Final Security Determination			
Subtract overlapping securities (F) from calculated security (E)			\$196,793.06

Comments	
As this permit is being amalgamated with S11A-003 the security from the previous permit in the amount of \$142,000.00 has been incorporated into this calculation. Certain activities pertaining to the previous permit have been removed as it is being covered under this application ie: trucks, fuel etc...	
Amount of Security calculated using this application:	\$ 196,793.06
Amount of Security calculated for S11A-003:	\$142,000.00
Less redundant equipment etc...	(\$93,847.00)
Total amount requested for Security:	244,946.00