



mgm
ENERGY

COLVILLE LAKE AREA CLOSURE AND RECLAMATION PLAN:

Permit Applications: S19L1-003 and S19A-004

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1.0 Program Summary

MGM Energy (MGM), is a wholly owned subsidiary of Paramount Resources Ltd. (Paramount). This MGM Closure and Reclamation Plan (CRP) is a component of the Paramount Operational Excellence Management System (POEMS), which is required to fulfill regulatory requirements.

The Colville Lake well abandonment and reclamation program consists of the abandonment of six wellbores, the reclamation of nine wellsites, and any other additional remediation as required. The wellbores will be abandoned in accordance with the Office of the Regulator of Oil and Gas Operations (OROGO) requirements. Permanent bridge plugs and cement will be used to isolate the downhole zones and the casing will be cut & capped below ground level.

Reclamation will be carried out to a Closure Goal, as outlined in the Mackenzie Valley Land and Water Board's *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* document:

"To return the [project] site and affected areas to viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities."

MGM intends to carry out its closure and reclamation activities (outlined in the sub-sections below), guided by the Board's four closure principles of Physical Stability, Chemical Stability, No Long Term Active Care, and Future Use. It is anticipated that the reclaimed sites will be inspected as required over subsequent years after the completion of the abandonment program to confirm reclamation success.

1.1 Well Abandonment

The following wells will be downhole abandoned, cut, and capped in accordance with *OROGO Well Suspension and Abandonment Guidelines*:

Table 1.0 Well Abandonment Locations

Location	Latitude	Longitude
E-35 Wellsite	67°14'36.540" N	125°15'58.260"W
C-34 Wellsite	67°13'02.399" N	125°07'06.179"W
M-17 Wellsite	66°36'45.216" N	125°48'30.708"W
C-49 Wellsite	66°38'05.400" N	125°53'44.300"W
K-14 Wellsite	66°33'38.999" N	126°3'2.002"W
B-23 Wellsite	66°32'5.701" N	125°49'33.200"W

1.2 Reclamation

The wellsites were constructed in the winter on an ice pad, therefore disturbance to the surrounding terrain, and vegetation is minimal. MGM has carried out progressive reclamation treatments and annual vegetation monitoring since drilling activities ceased. Reclamation will consist of minor vegetation treatments, and terrain stabilization where necessary. Previous environmental monitoring reports for each location can be found on the Sahtu Land and Water Board (SLWB) public registry.

Table 2.0 Reclamation Locations

Program Locations	Latitude	Longitude
E-35 Wellsite and Sump	67°14'36.540" N	125°15'58.260"W
C-34 Wellsite	67°13'02.399" N	125°07'06.179"W
A-67 Wellsite	67°16'3.799" N	125°11'28.298"W
M-17 Wellsite	66°36'45.216" N	125°48'30.708"W
C-49 Wellsite and C-49/M-17 Sump	Wellsite: 66°38'05.400" N Sump: 66°36'35.400" N	Wellsite: 125°53'44.300"W Sump: 125°49'53.600" N
K-14 Wellsite and Sump	66°33'38.999" N	126°3'2.002"W
B-23 Wellsite and Sump	66°32'5.701" N	125°49'33.200"W
G-47 Wellsite and Sump	65°56'24.9" N	126°38'17.1"W
L-80 Wellsite and Sump	67°19'42.488" N	124°59'48.980"W

2.0 INTRODUCTION

2.1 Purpose and Scope

This CRP is for the abandonment and reclamation of MGM's wellsites located in the Colville Lake area, located in the Sahtu Settlement Region of the Northwest Territories (NWT).

2.2 Goal

See section 1.0

2.3 Closure and Reclamation Planning Team

The current reclamation and closure team consists of the following MGM personnel:

Table 3.0 Closure Planning Team

Role	Name	Contact
Completions Superintendent	Don Jones	Telephone: 403-303-5967 Email: don.jones@paramountres.com
Construction Supervisor	James Bjorklund	Telephone: 403-206-3802 Email: james.bjorklund@paramountres.com
Director, Asset Management	John Hawkins	Telephone: 403-817-5074 Email: john.hawkins@paramountres.com
Environmental Coordinator	Larry Yoon	Telephone: 403-290-6242 Email: larry.yoon@paramountres.com
Regulatory and Community Affairs Advisor	Terence Hughes	Telephone: 403-206-3859 Email: terence.hughes@paramountres.com

2.4 Engagement

The level of engagement with stakeholders by MGM, has been and will continue to be, reflective of its activity level in the area. Prior to and during construction and development activities engagement activities were more frequent and intense and included studies, community meetings, open houses, meetings with community leaders and Councils, telephone calls and both written and electronically notifications.

In support of abandonment and reclamation activities, MGM undertook extensive engagement in 2019. The outcomes of the engagement activities have been submitted in support of the Land Use Permit and Water Licence that this Closure and Reclamation is being submitted in support of. Activities have included electronic correspondence, telephone calls and face to face meetings.

2.5 Regulatory Instruments for Closure and Reclamation

Regulatory documents pertinent to this Closure and Reclamation Plan:

- Government of the Northwest Territories (GNWT) OROGO Well Suspension and Abandonment Guidelines and the Oil and Gas Operations Act;
- MVLWB / AANDC Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories, November 2013;
- Canadian Council of Ministers of the Environment (CCME) standards and practices.

3.0 PROJECT ENVIRONMENT

The project environment has been previously described in Environmental Protection Plans (EPPs) as well as detailed current annual environmental monitoring reports submitted to the SLWB for the individual wellsite and sump locations. All environmental monitoring reports can be found on the public registry under the following licences in the table below.

3.1 Baseline Assessments

Initial baseline pre-disturbance assessments were conducted during the original water licence and land use permit applications, these conditions were submitted as part of the preliminary screening. All screening documents can be found on the public registry under the following licences.

Table 4.0 Land Use Permits and Water Licences

Program Locations	Land Use Permit	Water Licence
E-35 Wellsite and Sump	S04A-010	S04L1-011
C-34 Wellsite	S03A-007	S03L1-015
A-67 Wellsite	S04A-010	S04L1-011
M-17 Wellsite	S01A-007	S01L1-003
C-49 Wellsite and C-49/M-17 Sump	S01A-007	S01L1-003
K-14 Wellsite and Sump	S03A-008	S03L1-016
B-23 Wellsite and Sump	S03A-008	S03L1-016
G-47 Wellsite and Sump	S04A-011	S04L1-012
L-80 Wellsite and Sump	S03A-007	S03L1-015

4.0 PROJECT DESCRIPTION

4.1 Location and Access

The Colville Lake area is located approximately 230 kilometres to the Northeast of Norman Wells NWT. The wellsites are accessed via helicopter in the summer and fall months for monitoring, progressive reclamation, and inspection activities. For the purposes of the abandonment program a network of temporary winter ice roads will be constructed from the Colville Lake Settlement to each individual well abandonment location. Access to the Colville Lake settlement will be via the Government of the Northwest Territories “Mackenzie Valley Winter Road” from Norman Wells to Fort Good Hope, and then on the “Colville Lake Winter Road” to the Colville Lake settlement.

See attached: “Appendix A: Winter Road Map”

4.2 Site History

MGM is the operator of the Colville Lake area wells and associated surface and mineral holdings. The wells were drilled in the early 2000's, the original the oil and gas activity in the area was conducted by Paramount and Apache Canada Ltd (“ACL”). In 2007 the Colville Lake Assets owned by Paramount along with other North of 60 Oil and Gas assets were transferred to MGM. In 2014, Paramount reacquired MGM as a wholly owned subsidiary. Up until the fall of 2017 MGM held mineral rights with its partner ACL in the Colville Lake area under several Exploration Licences some of which were converted to Significant Discovery Licences and a freehold lease. In the fall of 2017 Paramount acquired ACL, this acquisition of ACL in 2017 has made MGM the holder of the Licences, surface access and other regulatory approvals related to the Colville Lake area. Colville Lake has three areas: Maunoir, Nogha and Turton Lake. Over the last 15 years MGM has been monitoring the wellbores along with reclamation and remediation activities at the surface locations, all of which have submitted to the SLWB.

4.3 Site Geology

Site geology information is available via pre-disturbance assessments, and original licence and permit applications outlined Table 4.0 above.

4.4 Project Summary

- 4.4.1 **Well Abandonment** - The Colville Lake well abandonment program consists of the abandonment of six wells in accordance with the Office of the Regulator of Oil and Gas Operations – NWT (OROGO) requirements. Permanent bridge plugs and cement will be used to isolate the downhole zones and the casing will be cut & capped one meter below ground level.
- 4.4.2 **Reclamation and Remediation**-As previously described in Section 1.2; the wellsites were constructed in the winter on an ice pad, therefore disturbance to the surrounding terrain, and vegetation is minimal. MGM has carried out progressive reclamation treatments and annual vegetation monitoring since drilling activities

ceased. Intrusive sampling has been conducted and impacted soils have been identified in the previous reports. At the time of the well abandonment areas of potential environmental concern identified in previous reports will be remediated, backfilled with available quarry material and capped with organics. Remediated areas will be revegetated, as required, using an appropriate seed mix. Natural encroachment is preferred to seeding the sites. All garbage and remaining debris will be removed and hauled to an approved landfill.

Areas of terrain instability at sump locations identified in previous inspection reports will be stabilized, re-contoured, and revegetated, using onsite materials and local quarry material.

- 4.4.3 **Temporary Winter Ice Road** – The temporary winter ice road network from the Colville Lake settlement will be constructed on previous routes already screened during drilling activities. MGM does not anticipate any potential physical disturbances to the ground surface along the temporary ice road. MGM will follow the recommendations and requirements of the Land Use Permit, along with good environmental and industry practices.

5.0 PERMANENT CLOSURE AND RECLAMATION

Permanent closure is the final closure of a site with no foreseeable intent by the existing proponent to return to either active exploration or development. Permanent closure indicates that the proponent intends to have no activity on the site aside from post-closure monitoring and potential contingency actions. Permanent closure does not, however, preclude the proponent or another party from pursuing opportunities at the existing site or in the area at a time beyond the foreseeable future.

MGM will be seeking permanent closure of all locations listed in Table 2.0. It is anticipated that with the progressive reclamation treatments conducted since the completion of drilling, combined with the planned remediation during well abandonment, MGM will have reclaimed the well locations to the standards as per the closure conditions set forth in the original land use permits in Table 4.0. MGM does not anticipate any negative residual effects to remain after reclamation is complete. Post reclamation activities will consist of reconnaissance level vegetation and terrain monitoring to confirm reclamation success. If necessary, minor reclamation treatments will be conducted via helicopter (ie: revegetation).

Due to the current environmental state of the well locations, and the nature of abandonment activities, MGM anticipates all selected closure activities will proceed and therefore will not require contingencies.

5.1 Definition of Progressive Reclamation

Progressive reclamation takes place prior to permanent closure to reclaim components and/or to decommission facilities that no longer serve the project.

5.2 Completed Progressive Reclamation

MGM has conducted progressive reclamation treatments on all locations since the completion of drilling activities. Due to the minimal disturbance practices during drilling activities and the winter ice pad construction, minimal disruption to the ground surface was undertaken. The various reclamation treatments and results have been observed and documented in the annual monitoring reports submitted to the SLWB.

6.0 TEMPORARY CLOSURE

MGM has no intention of resuming activities on sites slated for closure. Therefore, temporary closure is not applicable to this closure and reclamation plan.

7.0 INTEGRATED SCHEDULE OF ACTIVITIES

Project activities will begin in mid December and will likely be complete in late March. Winter activities will be contingent on weather conditions and availability of the GNWT winter roads. MGM anticipates starting abandonment and reclamation activities once an Operations Approval is received from OROGO to alter the condition of the wells listed in Table 1.0.

Environmental monitoring and minor reclamation treatments will be conducted in July or August.

8.0 POST CLOSURE SITE ASSESSMENT

MGM acknowledges its obligation to address any residual environmental impacts of the abandonment and reclamation activities. These locations will be assessed after the activities have completed until the conditions set out in the land use permit have been met. In the event that any residual impacts are identified, MGM will carry out activities to mitigate them to the satisfaction of the regulator.

9.0 FINANCIAL SECURITY

See attached: "Appendix B: Security Estimate"

Costs do not include downhole abandonment associated costs, OROGO will be the holder of this security.

10.0 REFERENCES

Husky Oil Operations Limited. (2018). *Slater River Closure and Reclamation Plan November 2018*. URL: http://registry.mvlwb.ca/Documents/S13L1-006/S13L1-006%20%20Slater%20River%20Closure%20and%20Reclamation%20Plan%20-%20Dec%206_18.pdf

Mackenzie Valley Land and Water Board & Aboriginal Affairs and Northern Development Canada. (2013). *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. November 2013.
URL: https://mvlwb.com/sites/default/files/documents/wg/WLWB_5363_Guidelines_Closure_Reclamation_WR.pdf

NWT Office of the Regulator of Oil and Gas operations. (2017). *Well Suspension and Abandonment Guidelines and interpretation notes*.
URL: https://www.orogo.gov.nt.ca/sites/orogo/files/resources/orogo_well_suspension_and_abandonment_guidelines_and_interpretation_notes.pdf

Sahtu Land and Water Board, *Land Use Permit S01A-007*. URL: <https://mvlwb.com/registry/S01A-007>

Sahtu Land and Water Board, *Land Use Permit S03A-007*. URL: <https://mvlwb.com/registry/S03A-007>

Sahtu Land and Water Board, *Land Use Permit S03A-008*. URL: <https://mvlwb.com/registry/S03A-008>

Sahtu Land and Water Board, *Land Use Permit S04A-010*. URL: <https://mvlwb.com/registry/S04A-010>

Sahtu Land and Water Board, *Land Use Permit S04A-011*. URL: <https://mvlwb.com/registry/S04A-011>

Sahtu Land and Water Board, *Water Licence S01L1-003*. URL: <https://mvlwb.com/registry/S01L1-003>

Sahtu Land and Water Board, *Water Licence S03L1-015*. URL: <https://mvlwb.com/registry/S03L1-015>

Sahtu Land and Water Board, *Water Licence S03L1-016*. URL: <https://mvlwb.com/registry/S03L1-016>

Sahtu Land and Water Board, *Water Licence S04L1-011*. URL: <https://mvlwb.com/registry/S04L1-011>

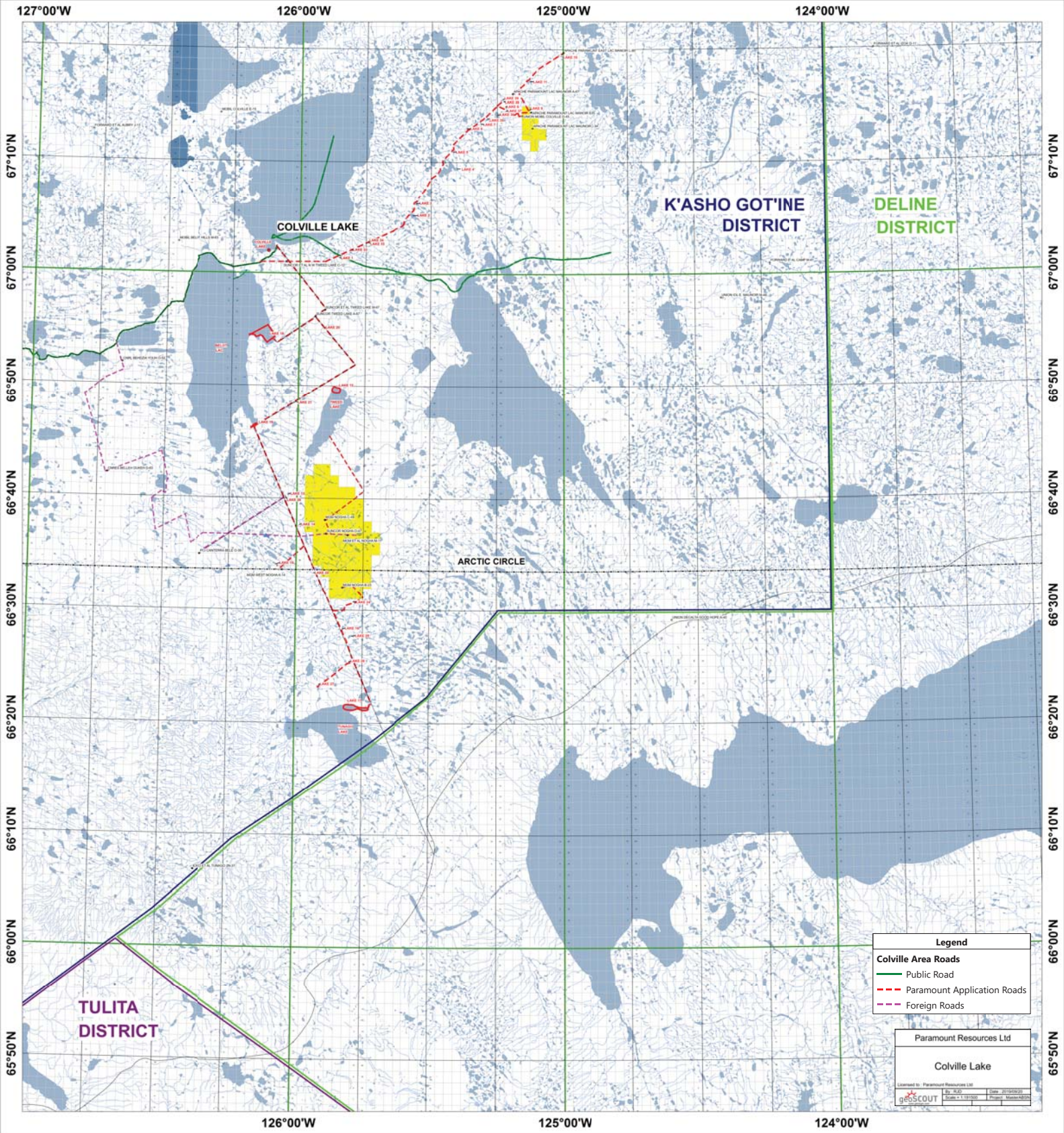
Sahtu Land and Water Board, *Water Licence S04L1-012*. URL: <https://mvlwb.com/registry/S04L1-012>

Stantec. (2015-2019). *Environmental Site Monitoring Report: Various Locations*.
URL: <https://mvlwb.com/registry>

APPENDICES

- A. Winter Road Map
- B. Security Estimate

APPENDIX A
Winter Road Map



Legend	
Colville Area Roads	
—	Public Road
- - -	Paramount Application Roads
- - -	Foreign Roads

Paramount Resources Ltd	
Colville Lake	
Licensed to: Paramount Resources Ltd	By: RUC
Date: 20/09/2020	Scale: 1:10000
Project: NWT-00000000	Project: NWT-00000000

APPENDIX B

Security Estimate

Land Use Permit Security Worksheet

Application Number:	Input Amount	Multiplier	
Camp (C1)			
Temporary Structures			
Input number of tent frames or weatherhaven (3.5m x 4.2m)	0	\$200.00	\$0.00
Input number of trailers (3.5m x 15.2m)	0	\$300.00	\$0.00
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	0	\$1.00	\$0.00
For burnable material, input # of person days per season	0	\$0.50	\$0.00
Total C1			\$0.00
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	10000	\$0.50	\$5,000.00
Enter total volume of gasoline&fuel > 25,000 L	0	\$0.25	\$0.00
Total Gasoline and Diesel			\$5,000.00
When fuel is within bermed site or has other safety feature, enter 1, otherwise enter 0	1	25%	-\$1,250.00
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			\$3,750.00
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	9	\$1,000.00	\$9,000.00
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	0	\$500.00	\$0.00
Sump Factor; enter total area occupied by sumps in m ²	14600	\$10.00	\$146,000.00
Well Factor; enter number of wells.	9	\$25,000.00	\$225,000.00
Total L1			\$380,000.00

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)	4	\$1,000.00	\$4,000.00
Enter number of drills	0	\$1,000.00	\$0.00
Enter number of light vehicles (trucks, atvs, snowmobiles, boats)	4	\$250.00	\$1,000.00
Enter number of small generators or pumps	2	\$100.00	\$200.00
Enter number of empty fuel storage tanks	0	\$500.00	\$0.00
Total E1			\$5,200.00

Security Calculation			
Preliminary Calculation			
Enter amount from C1			\$0.00
Enter amount from R1			\$0.00
Enter amount from H1			\$3,750.00
Enter amount from L1			\$380,000.00
Enter amount from E1			\$5,200.00
Preliminary Calculation, total of above	A		\$388,950.00
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 succssfully 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	0.75	
Calculated Security			
Multiply preliminary calculation (A) by performance multipliers (B, C and D)	E		\$371,933.44
Existing Securities			
List existing associated permits and amount of overlapping security			
Permit: _____			
Permit: _____			
Permit: _____			
Permit: _____			
Overlapping Securities, total of above	F		\$0.00
Final Security Determination			
Subtract overlapping securities (F) from calculated security (E)			\$371,933.44

Comments