



**Colville Lake Land Use Permit and Water Licence Attachment "A"**

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## Introduction

MGM Energy (“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 and MGM is moving forward with plans to abandon the wells. The original the oil and gas activity in the area was conducted by Paramount Resources Ltd. (“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 spun off into MGM Energy (“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 Resources Ltd. “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 has been helicopter based work.

This Land Use Permit (“LUP”) application is for the Maunoir and Nogha areas. The scope includes activities winter road construction, well site construction, abandonment operations, reclamation, remediation, camps, helicopter access and monitoring. The LUP and accompanying Water Licence (“WL”) are being sought so that MGM can comply with the Office of the Regulator of Oil and Gas Operations (“OROGO”) *Well Suspension and Abandonment Guidelines and Interpretation Notes*. MGM envisions the winter road/lease construction and abandonment operations to occur no later than the winter 2022-2023 season.

## Project Locations

A map of the Project can be found in Appendix 1. Locations and distances from Colville Lake are summarized in the table below.

Areas	Locations	Well Statuses	Distance and Direction from Colville Lake
Maunoir	L-80, C-34, E-35 and A-67	L-80: Abandoned C-34: Suspended E-35: Suspended A-67: Abandoned	Approximately 75 km to the northeast
Nogha	M-17, B-23, C-49, E-44 and K-14	M-17: Suspended B-23: Suspended C-49: Suspended E-44: not drilled K-14: Suspended	Approximately 90 km to the south

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## Biophysical Environment

This ecoregion lies north of the Smith Arm of Great Bear Lake and encompasses Aubry and Colville lakes, and lacs des Bois and Maunoir. It is marked by short, cool summers and long, very cold winters. The mean annual temperature is approximately -10°C. The mean summer temperature is 6.5°C and the mean winter temperature is -25.5°C. Mean annual precipitation ranges 200-300 mm. The ecoregion is classified as having a high subarctic ecoclimate. The predominant vegetation consists of open, very stunted stands of black spruce and tamarack with secondary quantities of white spruce, and a ground cover of dwarf birch, willow, ericaceous shrubs, cottongrass, lichen, and moss. Poorly drained sites usually support tussocks of sedge, cottongrass, and sphagnum moss. Low shrub tundra, consisting of dwarf birch and willow, is also common. This ecoregion embraces several ridges of Palaeozoic carbonate strata that stand above the surrounding plains. The hills and ridges enclose basins which contain several large lakes in a netlike pattern with meshes of 15 km or more across. The lowlands lie at about 245-300 m asl, whereas sinuous ridges reach elevations of 670 m asl. This hummocky to undulating plain is also characterized by extensive polygonal peat plateaus. Organic and Turbic Cryosols and Dystric Brunisols are the dominant soils in the ecoregion. Permafrost is continuous with low to medium ice content. It is characterized by sparse ice wedges in the southern half of the ecoregion, and by abundant ice wedges, massive ground ice and pingo ice in the north. Characteristic wildlife includes caribou, moose, grizzly and black bear, wolf, red fox, snowshoe hare, beaver, muskrat, spruce grouse, raven, osprey, and waterfowl. Land uses include trapping, hunting, fishing, recreation, and tourism. The principal community is Colville Lake, and the population of the ecoregion is approximately 70.<sup>1</sup>

Protection and mitigation of risk to the biophysical environment is discussed extensively in MGM's Environmental Protection Plan which has been submitted in support of the LUP and WL applications.

## Engagement

MGM Energy followed the steps outlined in the *Mackenzie Valley Land and Water Board Engagement and Consultation Policy (2013)*. Engagement and Consultation activities included distributing and receiving feedback on the Engagement Plan for the area, email distributions, telephone calls and face to face meetings. The up to date engagement plan, engagement materials and an engagement log are included in Appendix 2 of this document.

In addition to the current engagement, MGM along with its predecessors ACL and Paramount undertook substantial engagement activities relates to the original programs. Summaries of those activities can be found on the public registry under the previous LUPs and WLs for the project area. As part of that previous engagement a number of Traditional Use Studies and Workshops were completed, a summary is contained in the table below.

### Traditional Use Studies and Workshops

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<sup>1</sup> <http://ecozones.ca/english/region/54.html>

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<b>Environmental Protection Plan</b>	<b>Proponent</b>
Lac Maunoir AOIP-Col Proposed 2D Seismic Program	Paramount
Nogha Settlement Lands Proposed 2004/2005 Drilling Program Nogha A_25 and Nogha A-37	Paramount
Nogha/Tunago Settlement Lands Proposed 2003/2004 Drilling Program- Noga B-23, West Nogha K-14 and North Tunago E-44	ACL
EL 399 Lac Maunoir Proposed 2004 Drilling Program C-34 and L-80	ACL
EL 399 Lac Maunoir Proposed 2004 Drilling Program E-35 and A-67	ACL
Turton Lake 2004/2005 Proposed Drilling Program L-23 and G-47	ACL

## Project Activities

The Project will need to be executed in multiple stages with each main activity requiring different equipment and personnel requirements. The table below provides a summary of the main activities for the proposed project.

<b>Program Activity</b>	<b>Associated Tasks</b>	<b>Timing</b>
Staging and Mobilization	Movement of equipment to the project area or the region to enable construction and abandonment activities to start as early as possible	Prior winter and summer months
Construction and Operation of Ice Roads and Ice Pads	Includes the construction and maintenance of ice roads and ice pads for well sites, staging sites, camps, abandonment activities, and other associated infrastructure.	December through March
Abandonment	Abandonment operations.	January through March
Reclamation and Remediation	Scarification, seeding and recontouring. In-situ remediation and soil removal if necessary.	January through March, summer and fall months
Demobilization	Includes demobilization of equipment and material from staging sites, wellsites, camps and any other associated infrastructure by either ice road or storage	February through April

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	in Colville Lake or Norman Wells at the end of the season.	
Site Closure and Monitoring	Site will be returned to equivalent land use capability after the completion of reclamation and remediation activities.	Summer and Fall Months

## Project Equipment

Construction Equipment	Number	Weight per unit
Trucks (e.g. vacuum and water)	4	40,000 lb
Front end loaders with optional attachments	4	29,000 lb
Graders	4	45,000 lb
Plough/auger truck	4	35,000 lb
Pick-up trucks (personnel vehicles)	10	7000 lb
Bulldozers	8	36,000 lb
Trackhoe	2	79,700 lb
Backhoe (rubber-tired)	2	15,000 lb
Snow cats	6	18,000 lb
Dump trucks	4	56,000 lb
Snowmobiles (gasoline)	4	500 lb
Snow making machines(s) and/or spray ice pump & monitor(s)	4	40,000 lb
Sleigh Camps	2	46,000 lb
Accessory and support equipment (e.g., power generators, light towers, tanks)	6	6,000 lb (generator) 2,000lb (Light Tower)
Communication systems (e.g., radios)	20	2 lb

Abandonment Equipment	Number	Weight per unit
40 Man Camp	1	352,000 lb
Service rig	2	110,000 lb
Service Rig Pump and tank	2	62,000 lb

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Spare Rig Pump	1	41,000 lb
Catwalk & Pipe Racks	2	40,000 lb
100 to 150 HP Boilers	3	44,000 lb
Wellsite Shacks	3	51,000 lb
Eline/Slick line unit combo unit	2	66,000 lb
P-Tank unit with flare stack	2	53,000 lb
Jet Cut equipment for cut and cap operations	1	66,000 lb
Back Hoe for cut cap operation	1	15,000 lb
Bed Truck for hauling equipment	2	95,000 lb
Picker Truck for hauling equipment	2	95,000 lb
Water tank truck for produced Fluid	2	40,000 lb
Potable Water Trucks	2	40,000 lb
Hydrovac truck	2	40,000 lb
Vacuum Truck	2	70,000 lb
Cement Pumpers	2	75,000 lb
Cement Bulker	1	32,000 lb
Heated insulated 63.56m3 tanks for fresh water	4	11,000 lb
Heated insulated 63.56m3 tanks for produced water	2	11,000 lb
Snow mobiles	2-4	500 lb
Methanol Storage 10m3	1	25,000 lb
Secondary containment for tanks	8	4400 lb

## Personnel Requirements

Approximately 60 personnel will be required for the construction phase of the project, MGM is anticipating using two crews for the completion of the ice roads and ice pads if it accesses both the Maunoir and Nogha areas in the same year. Approximately 40 personnel are expected to be required for the abandonment phase of the project.

## Fuel Requirements

Fuel requirements for abandonment operations not including construction:

- Service Rig and Boiler = 2000Liters/day x 2 rigs x 90 days. = 360,000 Liters.
- Camp = 3000Liters/day x 2 camps x 90 days = 540,000 Liters.
- Trucks /Generators/Light Towers and Miscellaneous = 1000 Liters/day x 90 = 90,000 Liters.
- Propane 100 Liters/Day (Testers/camp).

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- 2000 Liters jet fuel if required;
- 1000 Liters of gasoline.

Fuel Type	Volume Liters	Purpose/Requirement	Storage Location
Diesel	990,000	Abandonment Operations/ Road and pad construction	On lease, camp and staging area.
Propane	9000	Abandonment Operations.	On lease/camp and trucked in as required.
Jet Fuel	2000	For air Service	Air strip if built.
Gasoline	1000	Snowmobiles	On lease and camp.

Diesel will be trucked to storage via fuel trucks and stored in double walled fuel storage tanks complete with secondary containment. Fuel trucks will transport to abandonment operations as required. Fuel trucks will be equipped with emergency spill kits. Propane to be trucked in as required to fill bottles at camp and lease.

## Water Requirements and Water Sources

MGM is applying for 105,000 m3 of water annually for the abandonment program. MGM anticipates using that volume only in the year of the abandonment program, other years the anticipated volume is anticipated to be 0 m3. MGM is basing the volume request on the usage from the drilling programs, the volume required for the abandonment program will likely be less, but MGM is erring on the side of caution for the estimate. It is anticipated that 5000 m3 will be required for the abandonments and camps, the remainder would be used for ice road and pad construction. The sources are identified in the table below and the water source map provided along with the WL application.

Water Source	Previous Water Licence	Water Available in m3 5% of total available	Location
Lake 1	S03L1-015	0	67°01.446' 125°50.674'
Lake 2	S03L1-015	3173	67°05.402' 125°35.037'
Lake 3	S03L1-015		67°06.479' 125°33.120'
Lake 4	S03L1-015	4073	67°10.260' 125°27.126'
Lake 5	S03L1-015	1520	67°11.177' 125°25.176'
Lake 6	S03L1-015	18082	67°12.901' 125°21.701'
Lake 7	S03L1-015	232	67°13.614' 125°18.878'

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Lake 8	S03L1-015	32415	67°14.709' 125°12.937'
Lake 9	S03L1-015	8248	67°14.928' 125°07.627'
Lake 10	S03L1-015		67°19.504' 125°00.450'
Lake 11	S03L1-015	15028	67°17.331' 125°07.681'
<b>Total S03L1-015</b>		<b>82771</b>	
Colville Lake	S03L1-016	Not assessed	67°2'22.50' 126°6'9.87
Lake 12 (Tweed Lake)	S03L1-016	1500	66°47'29.38' 125°52'42.99'
Lake 14	S03L1-016	7208	66.62713 N 125.99146 W
Lake 15	S03L1-016	0	65.57042 N 126.079828 W
Lake 16	S03L1-016	86764	66.47314 N 125.82333 W
Lake 17 (Tunago)	S03L1-016	1750	66°18'55.81' 125°48'3.67
Lake 18 (Lac Belot)	S03L1-016	3750	66°53'56.82' 126°17'9.91
Lake 20	S03L1-016	1404	66°55.190' 125°54.227'
Lake 21	S03L1-016	1264	66°48.567' 126°00.335'
Lake 24	S03L1-016	2098	66°30.708' 125°47.243'
Lake 25	S03L1-016	564	66°33.860' 125°55.888'
Lake 26	S03L1-016	76	66°40.111' 126°02.675'
Lake 27	S03L1-016	0	66°23.413' 125°54.502'
Lake 28	S03L1-016	14	66°25.496' 125°47.855'
Lake 29	S03L1-016	0	66°27.651' 125°48.113'
<b>Total S03L1-016</b>		<b>106393</b>	
Colville Lake	S04L1-011	Not applicaple	67°2.22.5' 126°6'9.87
Lake 31	S04L1-011	0	67°01.868' 126°07.919'
Lake 32	S04L1-011	310	67°02.081' 125°48.346'
Lake 33	S04L1-011		67°02.782' 125°44.439'
Lake 34	S04L1-011	133	67°02.789' 125°44.438'
Lake 35	S04L1-011	13945	67°14.180' 125°17.410'
Lake 36	S04L1-011	34285	67°14.340' 125°14.729'
Lake 37	S04L1-011	7649	67°14.658' 125°12.905'
Lake 38	S04L1-011	4689	67°15.372' 125°13.401'
Lake 39	S04L1-011	7729	67°15.531' 125°13.563'
<b>Total S04L1-011</b>		<b>68740</b>	
<b>Total all Licences</b>		<b>257904</b>	

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## **Socio-Economic Impact**

Given the suspended and abandoned state of the Colville Project, socio-economic benefits are expected to be limited in most years. Annual monitoring is the only sustained activity associated with the Colville Project in the current state, most of which is handled by Northern Companies. One year of abandonment activities in the life of the LUP and WL will see a dramatic increase in socio-economic opportunities associated with the project. A wide variety of contracting and employment opportunities, as outlined in this document, will be available. Through its engagement activities, MGM has been making stakeholders aware of those opportunities and to make itself aware of local capacity that can be utilized in its activities. MGM will prepare a Benefits Plan related to the abandonment and subsequent monitoring activities to the Department of Industry, Tourism and Investment. MGM will report annually on the socio-economic outcomes of the project.

# Appendix 1: Project Maps and Surveys

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# Appendix 2: Engagement

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# Appendix 3: Equipment Photos

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