

Available Areas for Expression of Interest within the Liard Basin 2021



The following introduction and methodology are taken directly from the NTGO: NWT Open File Report 2005-004, for the purposes of clarity and preservation of the contextual material. Hydrocarbon potential map citations are also directly taken from the original publication.

Introduction
This is a qualitative map of comparative hydrocarbon potential in the Northwest Territories. It is not meant to be, nor should it be interpreted as, a rigorous, detailed, or quantitative resource assessment of hydrocarbon potential. The main purpose of this map is to complement ecological-themed maps in broad scale planning for, and identification of, potential protected areas (Northwest Territories Protected Areas Strategy, 2003). Industry users and community groups may also find it generally informative.

Methodology
The basic methodology used in this study is similar to Gal and Jones (2003). It is entirely qualitative and, because it is knowledge-based, is somewhat subjective in nature. Established and conceptual hydrocarbon plays were identified primarily from existing literature. A hydrocarbon play is defined as a family of hydrocarbon pools and/or prospects that share common geological characteristics and history of hydrocarbon generation, migration, reservoir development, and trap configuration (Reinson et al., 1993). Established plays are demonstrated to exist by virtue of discovered pools with established reserves. Conceptual plays do not yet have any associated discoveries, but geological analyses indicate the possibility of their existence (Reinson et al., 1993).

In this study, the identified plays are represented by and mapped according to the subsurface extent of possible reservoir rock. The reservoir rock is thus a proxy for the entire petroleum system. It is recognized that this is an oversimplification. However, mapping possible reservoir strata allows for a quick regional reconnaissance, using a relatively reliable dataset in a region that is largely under-explored, and in which few petroleum systems are fully understood or defined. The play areas are bounded by (near) horizontal planes (generally coincident with stratigraphic boundaries) and vertical boundaries are defined at faults, facies changes, erosional, or depositional subcrop limits. In map space, the plays are two-dimensional polygons. Individual play polygons are likely to overlap, as several possible reservoir formations may be layered within the sedimentary rock succession at a particular location. The overlaps and intersections of play polygons are then used to define smaller polygons. Each of these will include a number of (overlapped) plays. The number of plays and the play type (established or conceptual) included in a given polygon area is at the core of this assessment methodology. Simply put, if all other factors are equal, an area with three conceptual plays has more potential than an area with only one conceptual play. Established plays are given a higher weighting than conceptual plays.

The assessment criteria partly follow those of the Mineral and Energy Resource Assessment (MERA) process used by the Geological Survey of Canada (Scotese et al., 1986; Jones et al., 1992). These criteria are based on the overall geological favourability for the presence of oil and/or natural gas; the occurrence of established and conceptual hydrocarbon plays; indications of hydrocarbons (shows), and known accumulations. The presence or probability of mapped structural closures or other trapping features is accounted for, but only in a general sense in this broad-based study. Equal weighting is given to both oil and gas. For a reconnaissance-scale study such as this, it is the number and type of plays present that dominantly contribute to the assignment of hydrocarbon potential. The criteria for rankings of very low to very high potential (Table 1) follow Gal and Jones (2003) and Gal and Larivière (2004).

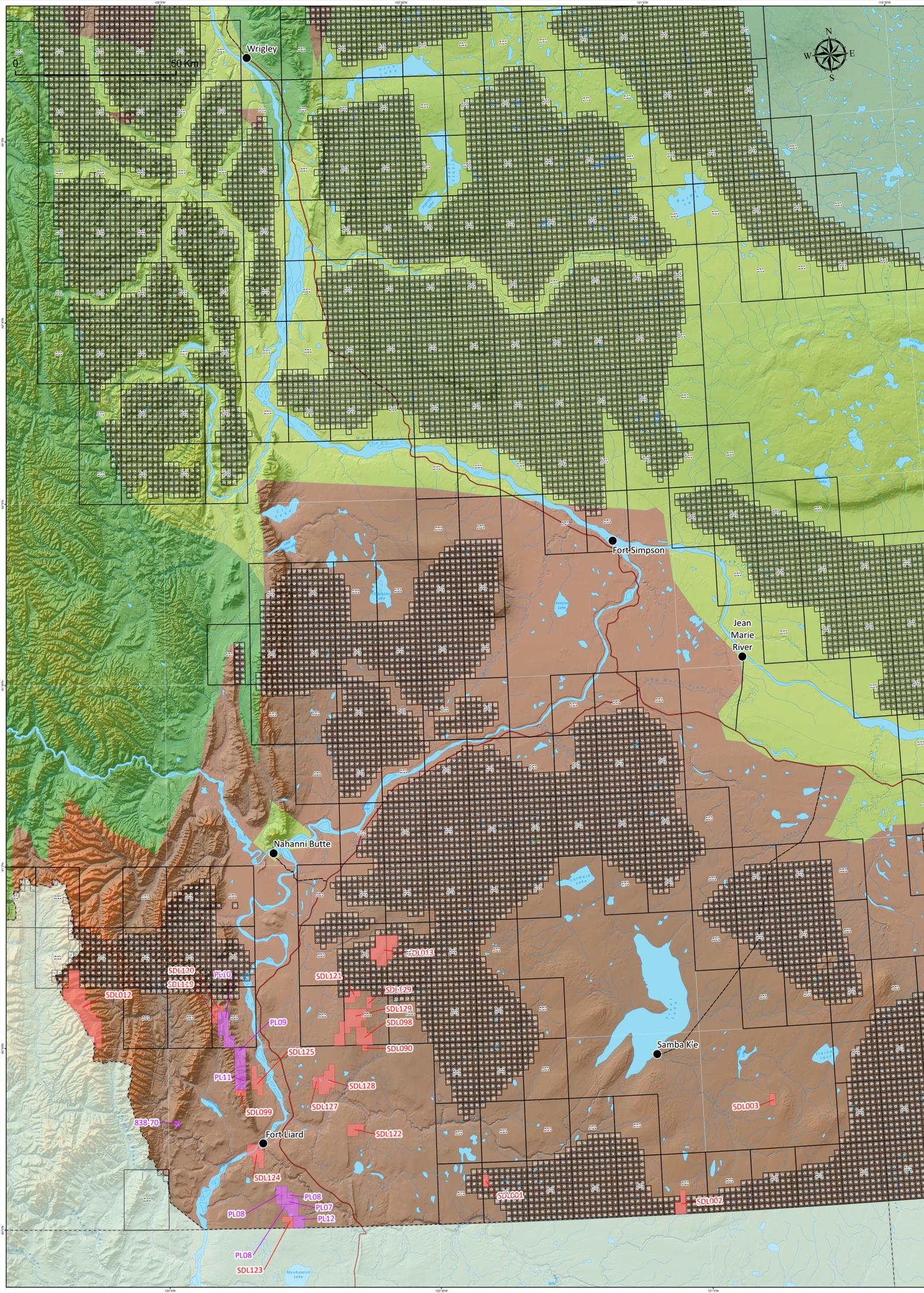
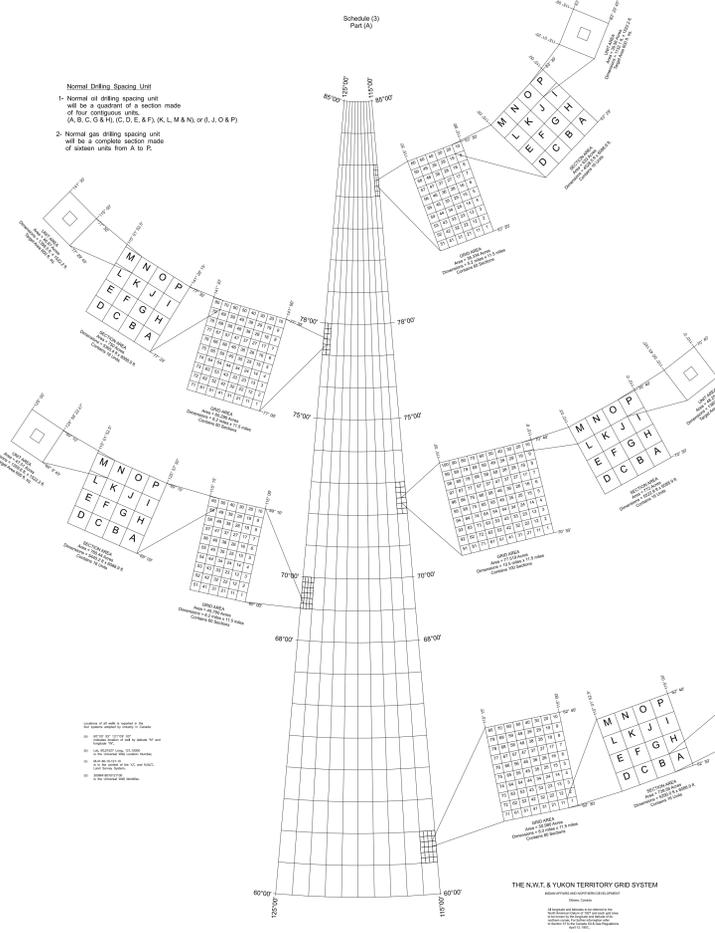
Table 1. Potential Ranking Criteria

Potential Ranking	Geological environment is favourable for oil and/or gas. Multiple plays, at least one is established. Closures identified and mapped. Significant accumulations are known.
Very High	Geological environment is favourable for oil and/or gas. Multiple plays, at least one is established. Closures identified and mapped. Significant accumulations are known.
High	Geological environment is favourable for oil and/or gas. Multiple plays. Closures identified and mapped. Known hydrocarbon occurrences.
Moderate to High	Geological environment is favourable for oil and/or gas. At least three plays. Closures identified and mapped for at least one play.
Moderate	Geological environment is favourable for oil and/or gas. One or two plays. High probability of blind structural / stratigraphic closures.
Low to Moderate	Geological environment is mainly favourable for oil and/or gas. At least one conceptual play. High probability of blind structural / stratigraphic closures.
Low	Some aspects of geological environment are favourable for oil and/or gas. Significant probability of blind structural / stratigraphic closures.
Very Low	Unfavourable geological environment.

The Map

The map illustrates the locations within a portion of the Liard Basin where expressions of interest will be accepted for the purposes of oil and gas exploration. Current oil and gas rights; significant discovery licenses and exploration licenses are shown in the context of hydrocarbon potential. The specific areas where expressions of interest will be accepted are illustrated by the oil and gas grid (grid, sections and unit areas). The unit areas which are the smallest squares on the map show the smallest divisible area of land where a piece of land can be licensed for oil and gas exploration leading to significant discovery and/or production. If an expression of interest for any particular section does not fully contain all the units within the section, or sections within a grid, the grid, section and units must be referencing must still be used to provide a full legal land description of the parcel to the government of the Northwest Territories.

Digital Elevation Model Citations:
Danielson, J.J., and Gesch, D.B., 2011. Global multi-resolution terrain elevation data 2010 (GMTED2010). U.S. Geological Survey Open File Report 2011-1073, 26 p. <http://pubs.usgs.gov/of/2011/1073/>
Amante, C. and B.W. Eakins, 2009. ETOPO1 1-Arc-Minute Global Relief Model: Procedures, Data Sources and Analysis. NOAA Technical Memorandum NESDIS NGDC-24. National Geophysical Data Center, NOAA. doi:10.7289/V5C8276M [access date]. <http://www.ngdc.noaa.gov/mgg/global/global.html>



Document Title: Open_Exploration_Areas_Liard_Basin_v27_Jul_7_2021.mxd
Source: Mineral and Petroleum Resources Division Industry Tourism and Investment
Document Status: FINAL
Document Security Level: PUBLIC
Date: July 7, 2021
Projection: Modified Lambert Conformal Conic
Central Meridian: 124.5° W
Standard Parallels: 62° N, 70° N
Datum: WGS84

If you have questions, comments, or feedback, please contact:
Petroleum Resources Division
1st Floor Semler Building, Inuvik, NT
Email: petroleum@gov.nt.ca
Phone: (867) 777-7477

Natural Resources Canada, 1:1,000,000 Atlas Basemap

- Communities
- Line Delimiting the Arctic Circle
- Limit of Exclusive Economic Zone 200 Nautical Miles Offshore from Baselines Defined in Territorial Sea Geographical Coordinates Order
- Limit of Exclusive Economic Zone Pursuant to Bilateral Boundary Agreement
- Limit of Exclusive Economic Zone Pursuant to International Agreement with Denmark
- International Boundary
- Line Extending from the 200 Mile Limit to the North Pole
- Provincial or Territorial Boundary
- State Boundary

Rivers

- River

Lakes

- Lake

Oil and Gas Rights

- Significant Discovery License
- Production License
- Pioneer Production Lease

Hydrocarbon Potential

- Very High
- High / Moderate - Moderate
- Moderate / Low
- Low - Very Low

Aboriginal Owned Lands

- Inuvialuit Settlement Lands
- Gwich'in Settlement Area
- Sahtu, Dene and Metis Settlement Area
- Tłı̨chǫ Settlement Lands

Property Rights

- Surface/Subsurface
- Surface

Roads

- Expressway / Highway
- Freeway
- Other Roads
- Winter Roads

Depth in Metres

- < -50 - 25
- < -200 - 50
- < -500 - 200
- < -750 - 500
- < -1,000 - 750
- < -1,500 - 1,000
- < -2,000 - 1,500
- < -2,500 - 2,000
- < -3,500 - 2,500
- < -5,000 - 3,500

Elevation in Metres

- 6000
- 5500
- 5000
- 4500
- 4000
- 3500
- 3000
- 2500
- 2000
- 1500
- 1000
- 500
- 0

