

Follow-up to Ecological Representation Analysis Submitted to the Sahtu Land Use Planning Board

NWT Protected Areas Strategy Ecological Working Group July 18 2007

The NWT Protected Areas Strategy Ecological Working Group provided the Sahtu Land Use Planning Board (SLUPB) with the results of an ecological representation analysis of the Sahtu Settlement Area following the release of the first draft of the Sahtu Land Use Plan. This document will address three specific areas of interest that the SLUPB requested more information on, to help further the development of the Plan. Those three areas were included in a new analysis to assess their contribution to ecological representation (Map 1). Please refer to the original document¹ for a brief description of the theory and how the analysis was conducted.

1. Horton River area

In the original map of ecologically representative areas that was submitted to the SLUPB, an area north of the draft Horton Lake Conservation Zone was shown to be potentially high in representation value. Keeping in mind that this analysis was done using only three datasets that are meant to be surrogates for biodiversity, this area could be a good candidate for conservation for the following reasons:

- **Diversity of features:** This area contains a variety of vegetation and other land cover classes such as open mixedwood forests, water, low shrubs, treed, shrubby and herbaceous wetlands, and open and sparse coniferous and broadleaf forests. It also captures portions of three physiographic zones and three landscape units, representing arctic and subarctic uplands and plains, and soil characteristics defined by glacial deposits and bogs. An area with such diversity in biotic and abiotic features may be ecologically significant. Including this area in a conservation zone increases representation of both the Dease Arm Plain and Bluenose Lake Plain Ecoregions (Ecoregions 35 and 37). Capturing a high variety of features in as small of an area as possible is an efficient use of space.
- **Rare features:** The open mixedwood forest class is relatively rare within the Bluenose Lake Plain Ecoregion (Ecoregion 37), so the model was instructed to select all areas that contain that class. The idea behind selecting more of the rare features is that they may be more sensitive, and less resilient, to disturbance, therefore requiring a greater level of protection.
- **Size:** The area in question was built upon an existing draft conservation zone. The Draft Sahtu Land Use Plan states that the Horton Lake area is important for a variety of wildlife species, some of them wide-ranging. Increasing the size of a conservation zone increases the chance that it will possess ecological integrity for the long term – that is - retain its natural composition and abundance of native species². Sufficiently large conservation zones will also be better equipped to withstand natural disturbances. Large conservation zones may be particularly important in northern areas because of its large-scale ecological processes and relatively low productivity³.

¹ Analysis of ecoregion representation in the draft Sahtu land use plan. Submitted to the SLUPB by the PAS Ecological Working Group, May 31, 2007.

² Ecological Integrity as defined by Parks Canada: Canada National Parks Act. S.C 2000, c.32.

³ Wiersma, Y.F., T.J. Beechey, B.M. Oosenbrug, and J.C. Meikle. 2005. Protected Areas in Northern Canada: Designing for Ecological Integrity. Phase 1 Report. CCEA Occasional Paper No. 16. Canadian Council on Ecological Areas, CCEA Secretariat, Ottawa, Ontario, Canada. xiv + 128 pp. + folded map.

2. Fort Good Hope area

An area south of Fort Good Hope, approximately at the mouth of the Mountain River, has been highlighted for its potential ecological representation value. This area is similar to the one near the Horton River in that it represents a variety of physical and biological features.

- **Diversity of features:** This area represents a variety of land cover classes, including wetlands, bryoids, treed and low shrubs, water, and coniferous, broadleaf, and mixedwood forests. Five landscape units are partially represented, mostly along the Mackenzie River, representing a variety of soil types with both organic and lacustrine origins. Additionally, two physiographic units are partially represented. The majority of it falls within the Norman Range, with physiography and high-elevation terrain that is unique in the Taiga Plains Ecozone. Because of the high diversity of features here, this area could be an efficient place to meet ecological representation goals.
- **Rare features:** Approximately half of the area was selected because the modeling program was instructed to select all occurrences of broadleaf sparse forest, rock, and herbaceous classes, all of which are relatively rare within the Mackenzie River Plain Ecoregion (Ecoregion 56). These low-occurring land cover classes are dispersed throughout the area.

3. Willow Lake area

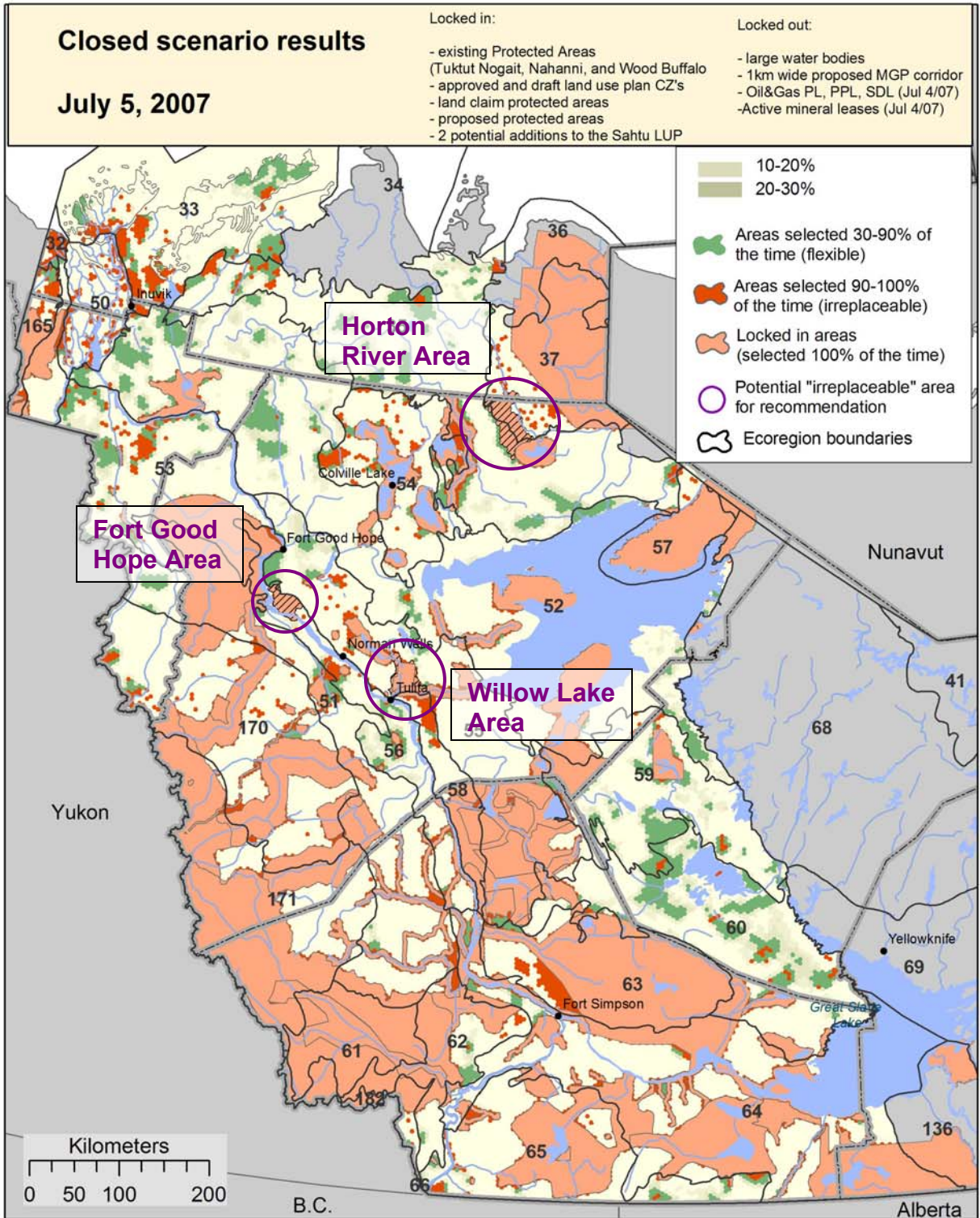
Willow Lake and surrounding area is identified in the draft Sahtu Land Use Plan as a Conservation Zone. The Conservation Zone is close to, but does not exactly match, the Brackett (Willow) Lake Key Migratory Bird Terrestrial Habitat Site (KMBTHS) identified by the Canadian Wildlife Service for its importance to continental waterfowl populations⁴.

While amending the current draft Conservation Zone would not significantly change its ecological representation value, any information that is complementary to the coarse scale results of an ecological representation analysis is of great value when designing a conservation plan.

- **Connectivity:** Amending the draft Willow Lake boundary to match the KMBTHS would connect that conservation zone to the draft Kelly Lake and Lennie Lake Conservation Zone. Connectivity between conservation zones is important for maintaining ecological linkages, for example related to hydrology, wildlife movements, and genetic diversity⁵.
- **Waterfowl Value:** The Canadian Wildlife Service reports that a portion of the Loche River is significant to waterbirds, supporting large numbers of Greater White-fronted Geese and several species of ducks. Because this habitat is important for waterfowl during spring and fall migrations, amending the current draft Conservation Zone boundary to match the KMBTHS boundary would increase its capability of supporting NWT's waterfowl populations.

⁴ Latour, P.B., J. Leger, J.E.Hines, M.L. Mallory, D.L. Mulders, H.G. Gilchrist, and D.L. Dickson. *In press*. Key migratory bird terrestrial habitat sites in the Northwest Territories and Nunavut (3rd edition). CWS Occasional Paper.

⁵ Noss, R.F. 1987. Corridors in Real Landscapes: A Reply to Simberloff and Cox. *Conservation Biology* 1(2):159–64.



Map 1. Ecological representation analysis of ecoregions in and adjacent to the Mackenzie Valley – including three additional “locked in” areas (displayed with hatching) in the Sahtu Settlement Area.