










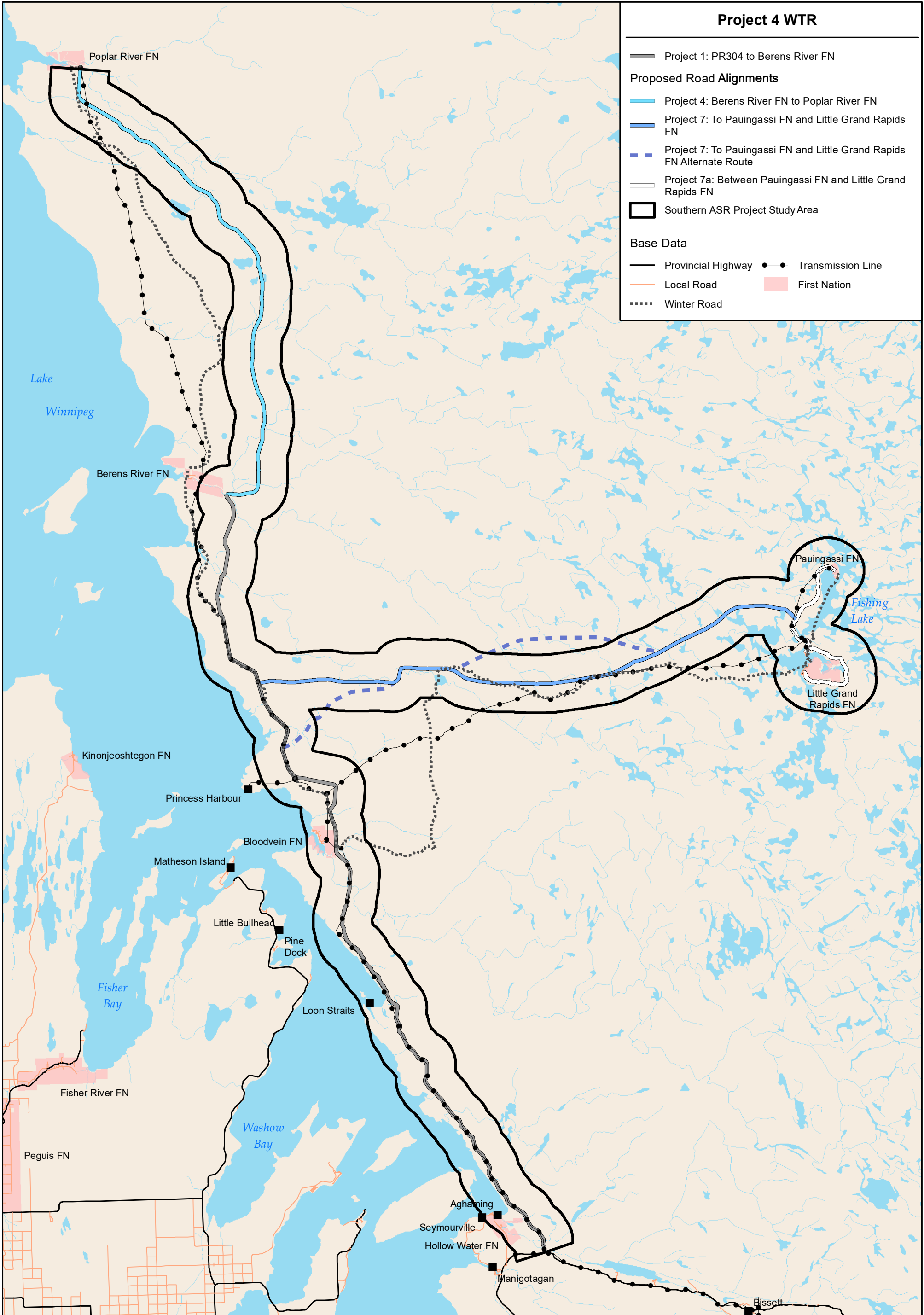
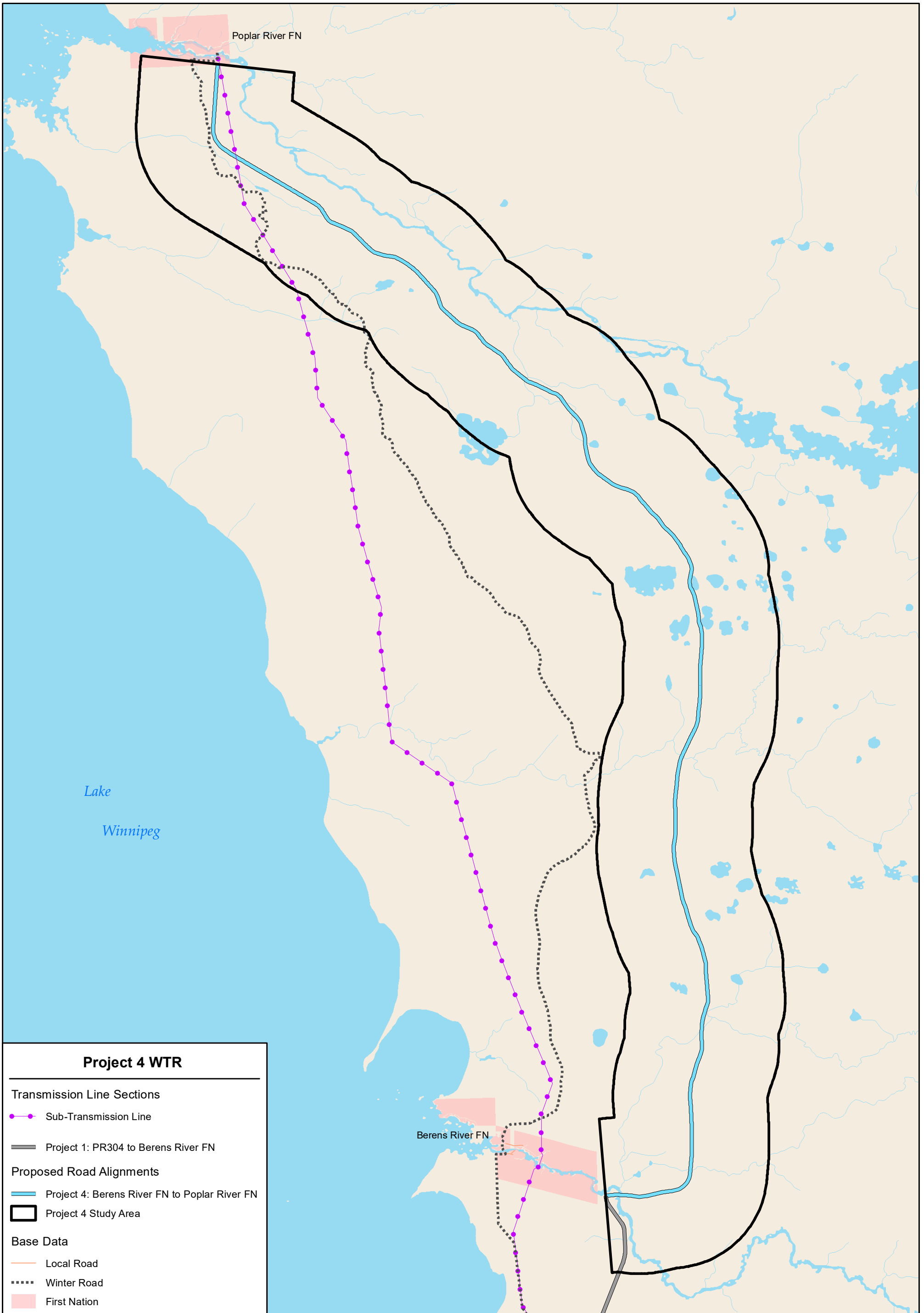
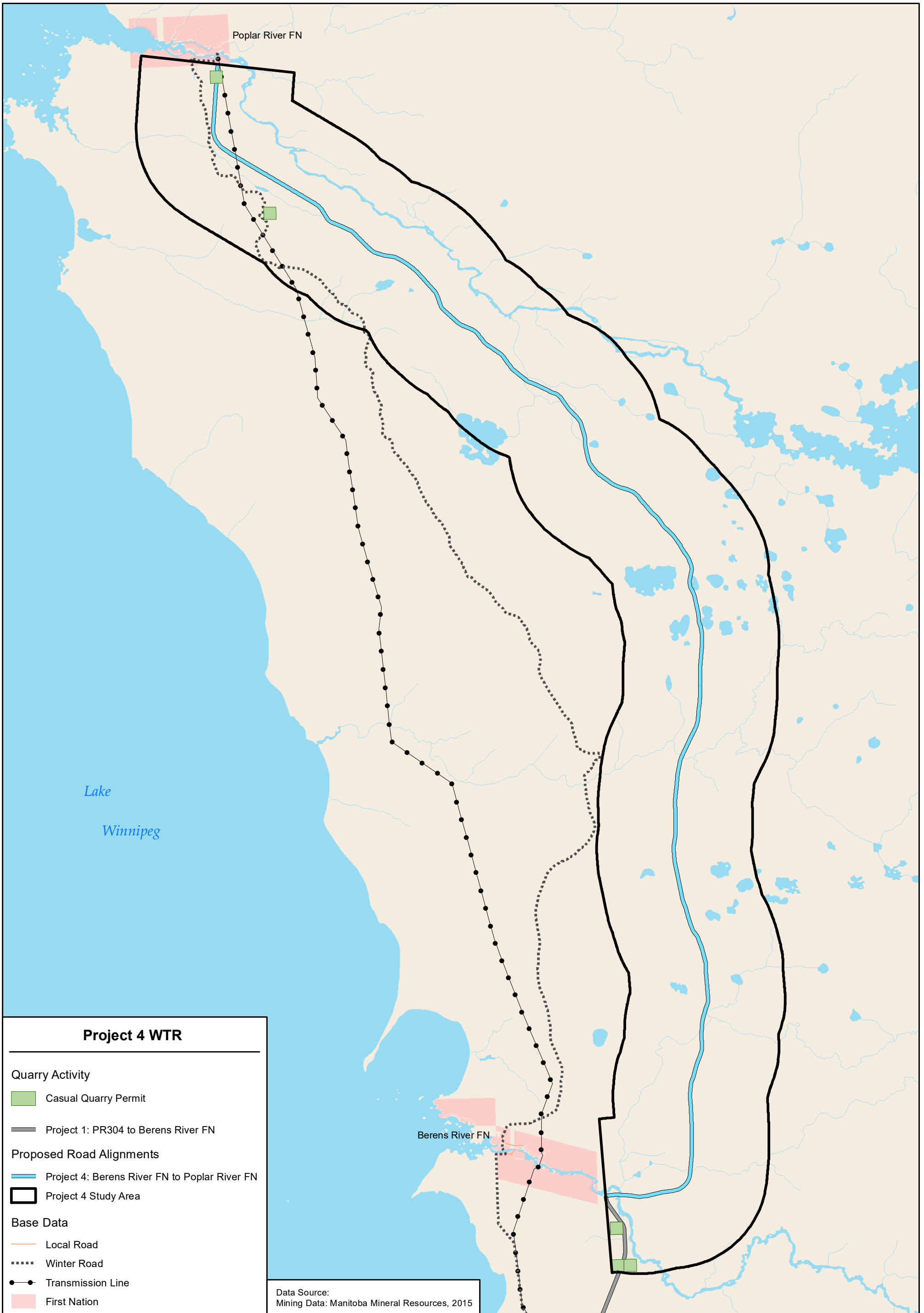


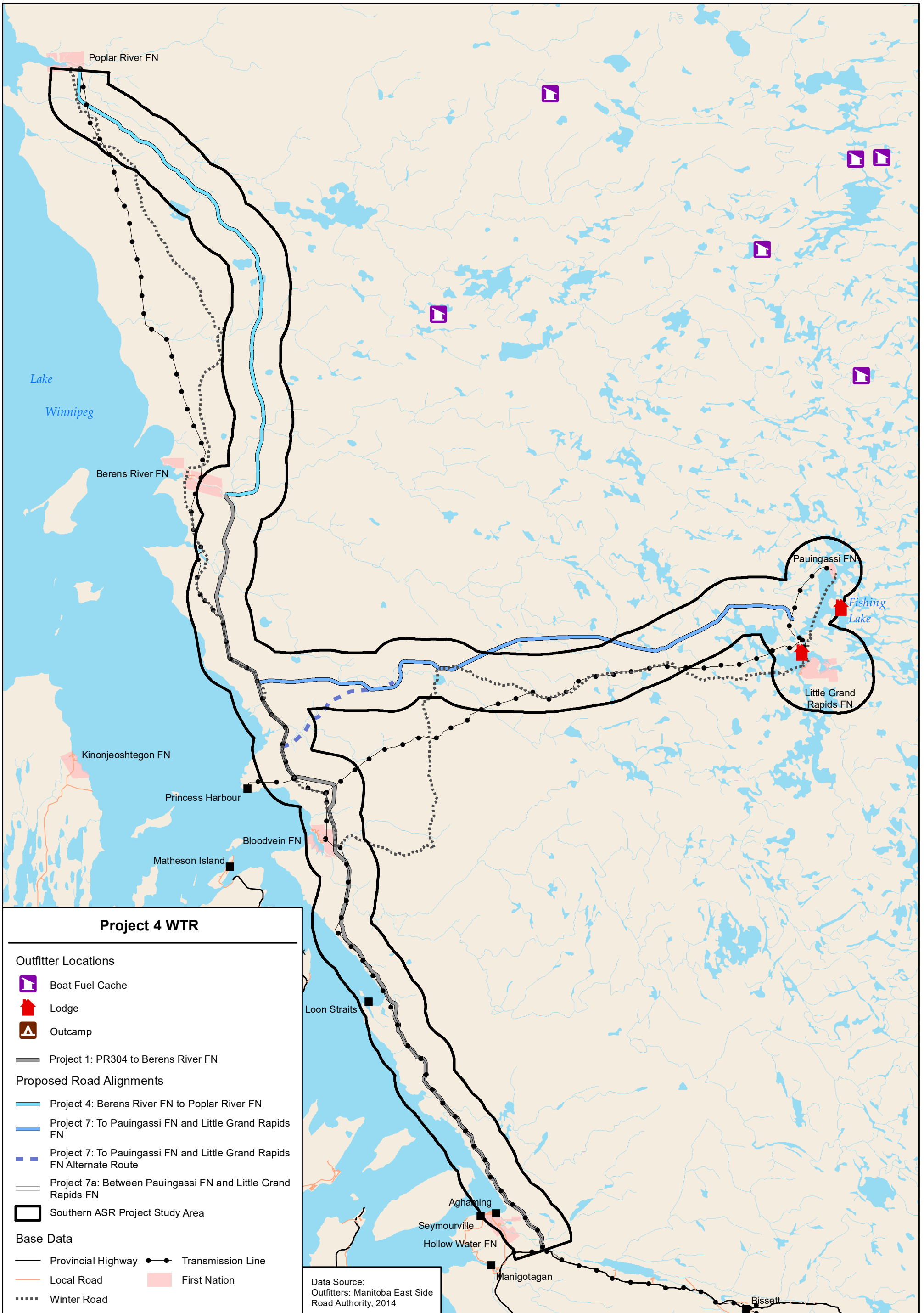
Project 4 WTR

-  Project 1: PR304 to Berens River FN
- Proposed Road Alignments**
-  Project 4: Berens River FN to Poplar River FN
-  Project 7: To Pauingassi FN and Little Grand Rapids FN
-  Project 7: To Pauingassi FN and Little Grand Rapids FN Alternate Route
-  Project 7a: Between Pauingassi FN and Little Grand Rapids FN
-  Southern ASR Project Study Area
- Base Data**
-  Provincial Highway
-  Local Road
-  Winter Road
-  Transmission Line
-  First Nation


















Project 4 WTR

Outfitter Locations






-  Boat Fuel Cache
-  Lodge
-  Outcamp

 Project 1: PR304 to Berens River FN

Proposed Road Alignments

-  Project 4: Berens River FN to Poplar River FN
-  Project 7: To Pauingassi FN and Little Grand Rapids FN
-  Project 7: To Pauingassi FN and Little Grand Rapids FN Alternate Route
-  Project 7a: Between Pauingassi FN and Little Grand Rapids FN
-  Southern ASR Project Study Area

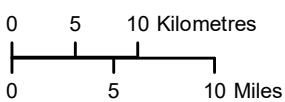
Base Data

-  Provincial Highway
-  Local Road
-  Winter Road
-  Transmission Line
-  First Nation

Data Source:
Outfitters: Manitoba East Side
Road Authority, 2014



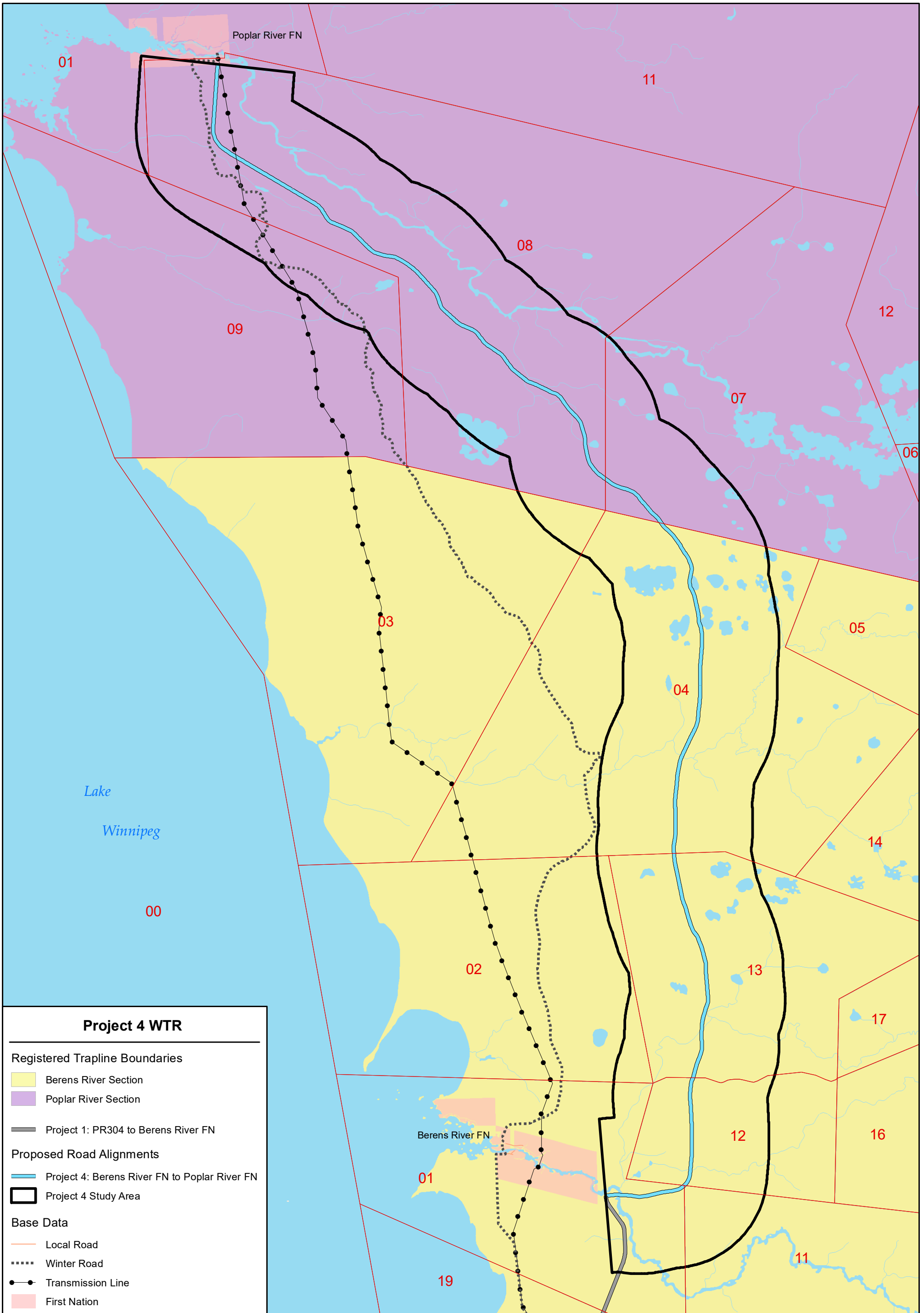
Coordinate System: UTM Zone 14N NAD83
Data Source: MESRA, Joro, MCWS
Date Created: April 15, 2016

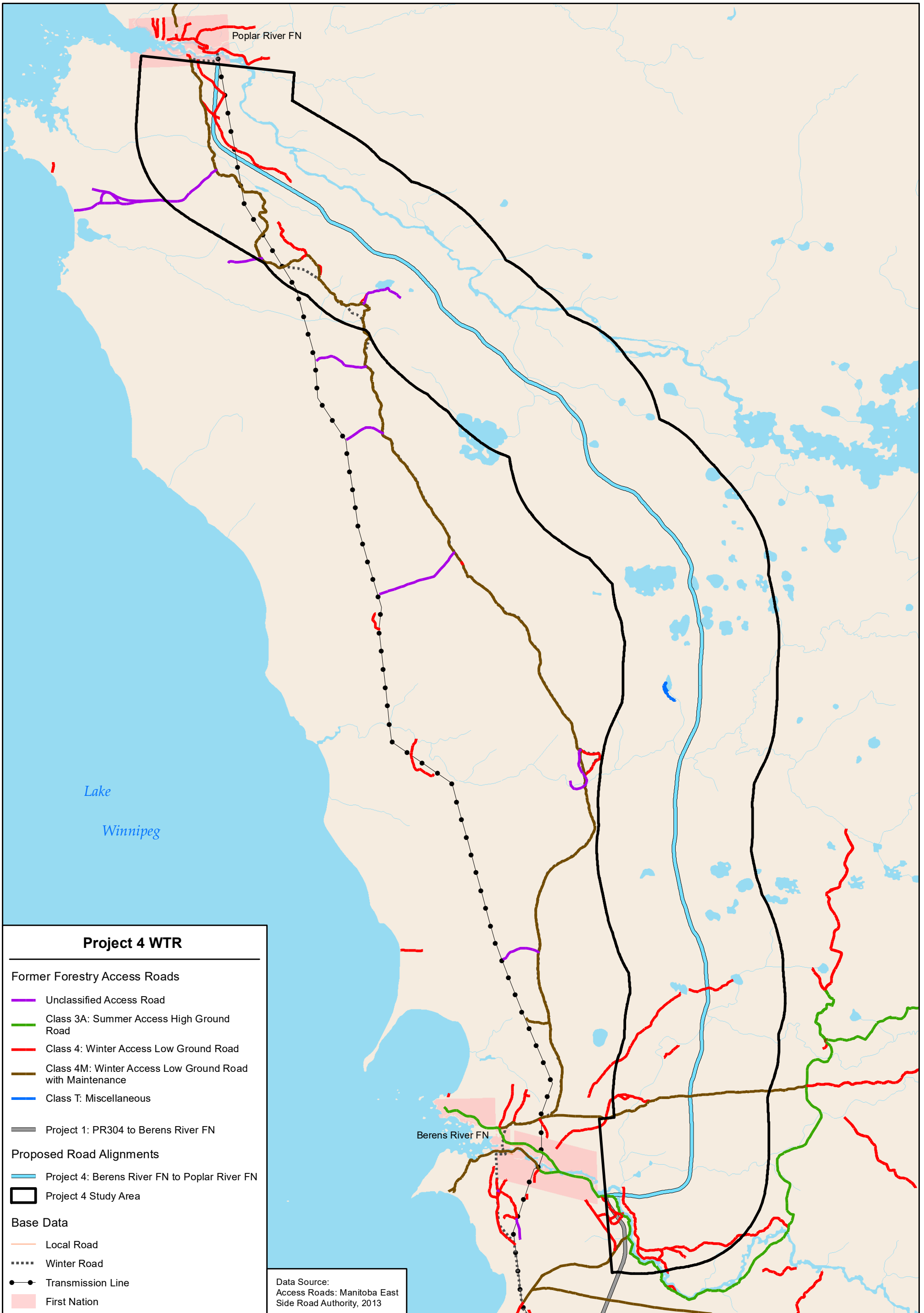


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Project 4 Wildlife Technical Report

Manitoba Lodges and Outfitter Association Lodges and Outfitters in the Southern Regional Project Study Area





APPENDIX F: CALVING HABITAT MODEL

CALVING MODEL

To develop a model capable of predicting potential calving locations from those that are known, we used linear discriminant analysis (LDA, also referred to as Canonical Variates Analysis; see Legendre and Legendre, 1998 for a complete description of the method). In brief, LDA is a multivariate extension of ANOVA that allows for the simultaneous analysis of multiple descriptor variables ($p > 1$) in determining the significance between groups (rather than a single variable as in ANOVA, $p = 1$). This method constructs an axis in p -dimensional space that best separates the groups while simultaneously identifying the variables assisting in the separation and the influence that they contribute to that discrimination. Once constructed, this axis can also be used to derive a canonical discriminant function classifier that can take an observation of unknown group affinity and place (classify) it into a group. In a classification model assignment, the observations are classified into discrete classes based on a likelihood probability for group membership (Legendre and Legendre, 1998). In the calf model the groups were defined as Use and Disuse (or use and available) and the hexagons were the sample units (observations) measured on 27 variables. This dataset is considered a 'training set', a set of observations that is used to develop a model that once completed can predict the calving potential of any hexagon in the Project 4 Study Area. For this modelling exercise LDA was performed in CRAN R (R Core Team, 2014) using the function LDA and the classifier was developed in LDA predict. The analysis was significant (manova $P \ll .0001$), and the model has a user accuracy of 83% and a global accuracy of 77% in discrete group classification. However, there is no need to provide discrete classification as the likelihood (on which classification is based) as it can be directly examined and mapped. For this project, once the linear discriminant classifier was developed, the hexagons for the entire Project 4 Study Area were processed to determine likelihood of belonging to the calving class. Doing so, creates a mappable surface that can be directly interpreted as a calving likelihood or calving high quality habitat for the entire region. This map is presented in the report.

APPENDIX G: BREEDING BIRD ATLAS

Table 1G Results of the Manitoba Breeding Bird Atlas Survey, 2014

Block	Species Observation	Total Count	Conservation Listing
14PD24	Alder Flycatcher	25	
14PD24 -	American Bittern	1	
14PD52 -	American Kestrel	1	
14PD24 -	American Redstart	1	
14PD53	Bay-breasted Warbler	1	
14PD52 -	Black-and-white Warbler	7	
14PD52 -	Black-capped Chickadee	1	
14PD24	Blue-headed Vireo	10	
14PD24	Boreal Chickadee	2	
14PD52 -	Broad-winged Hawk	1	
14PD53	Canada Goose	432	
14PD52 -	Cape May Warbler	1	
14PD52 -	Cedar Waxwing	1	
14PD24	Chipping Sparrow	25	
14PD52 -	Common Goldeneye	2	
14PD52 -	Common Nighthawk	8	Threatened - Schedule 1 – S1
14PD52 -	Common Raven	1	
14PD34 -	Common Yellowthroat	16	
14PD24	Connecticut Warbler	15	
14PD52 -	Golden-crowned Kinglet	2	
14PD24	Gray Jay	4	
14PD24	Greater Yellowlegs	3	
14PD53	Hairy Woodpecker	1	
14PD24	Hermit Thrush	22	
14PD24	Le Conte's Sparrow	14	
14PD52 -	Least Flycatcher	2	
14PD24	Lincoln's Sparrow	16	
14PD24	Magnolia Warbler	17	
14PD53	Mallard	1	
14PD24	Nashville Warbler	34	

Block	Species Observation	Total Count	Conservation Listing
14PD24	Northern Flicker	2	
14PD52 -	Northern Parula	1	
14PD53	Northern Waterthrush	3	
14PD34 -	Olive-sided Flycatcher	8	Threatened - Schedule 1 - S1
14PD52 -	Orange-crowned Warbler	1	
14PD53	Ovenbird	7	
14PD24	Palm Warbler	8	
14PD52 -	Pileated Woodpecker	1	
14PD52 -	Pine Siskin	3	
14PD53	Red-breasted Nuthatch	2	
14PD52 -	Red-winged Blackbird	1	
14PD24	Ruby-crowned Kinglet	23	
14PD34 -	Ruffed Grouse	1	
14PD24	Sandhill Crane	6	
14PD24	Savannah Sparrow	1	
14PD24 -	Sedge Wren	12	
14PD52 -	Sharp-shinned Hawk	1	
14PD24 -	Short-billed Dowitcher	1	
14PD52 -	Solitary Sandpiper	2	
14PD52 -	Spotted Sandpiper	2	
14PD34 -	Spruce Grouse	2	
14PD24	Swainson's Thrush	16	
14PD34 -	Swamp Sparrow	8	
14PD53	Tennessee Warbler	15	
14PD52 -	Tree Swallow	2	
14PD52 -	Turkey Vulture	1	
14PD24	White-throated Sparrow	30	
14PD52 -	White-winged Crossbill	4	
14PD24	Wilson's Snipe	3	
14PD52 -	Wilson's Warbler	1	
14PD52 -	Yellow Warbler	1	

Block	Species Observation	Total Count	Conservation Listing
14PD52 -	Yellow-bellied Flycatcher	1	
14PD53	Yellow-rumped Warbler	7	