

# Salmon Habitat Indicator Monitoring Project Summary of Data, Methodology, Results, and Thresholds For Pressure Indicator Road Density

Road densities have been widely correlated to salmon habitat degradation, and have been ranked as a high value indicator by the Wild Salmon Policy Habitat Working Group.

## 1. GIS Data

The following spatial information was utilized in the analysis:

- FTEN (forestry roads)
- Digital Road Atlas (DRA)
- Landsat 7 2011/2012 (15m panchromatic band)

No local road layer was available from the Houston District Office.

## 2. Methodology

The road data from FTEN and DRA was amalgamated to create a single road network layer. The resulting road network was visually verified with 2012 Landsat imagery. This process added 325 km of mostly in-block roads. Area, road length and road density were generated by the GIS System Manifold.

## 3. Thresholds

Interim thresholds used in this analysis follow the recommendations put forth by the Wild Salmon Policy.

Low risk: road density  $< 0.40 \text{ km/km}^2$

Moderate risk: road density  $\geq 0.40 \text{ km/km}^2$

High risk: density  $\geq 1.2 \text{ km/km}^2$

## 4. Results

The results of the road density indicator are reported out by analysis units including the Morice Watershed, eighteen sub-watersheds and face units within the Morice Watershed, the Morice Watershed Management Area (designated through the Morice LRMP), and the ten Wet'suwet'en house territories within or partly within the Morice Watershed.

### 4.1. Morice Watershed

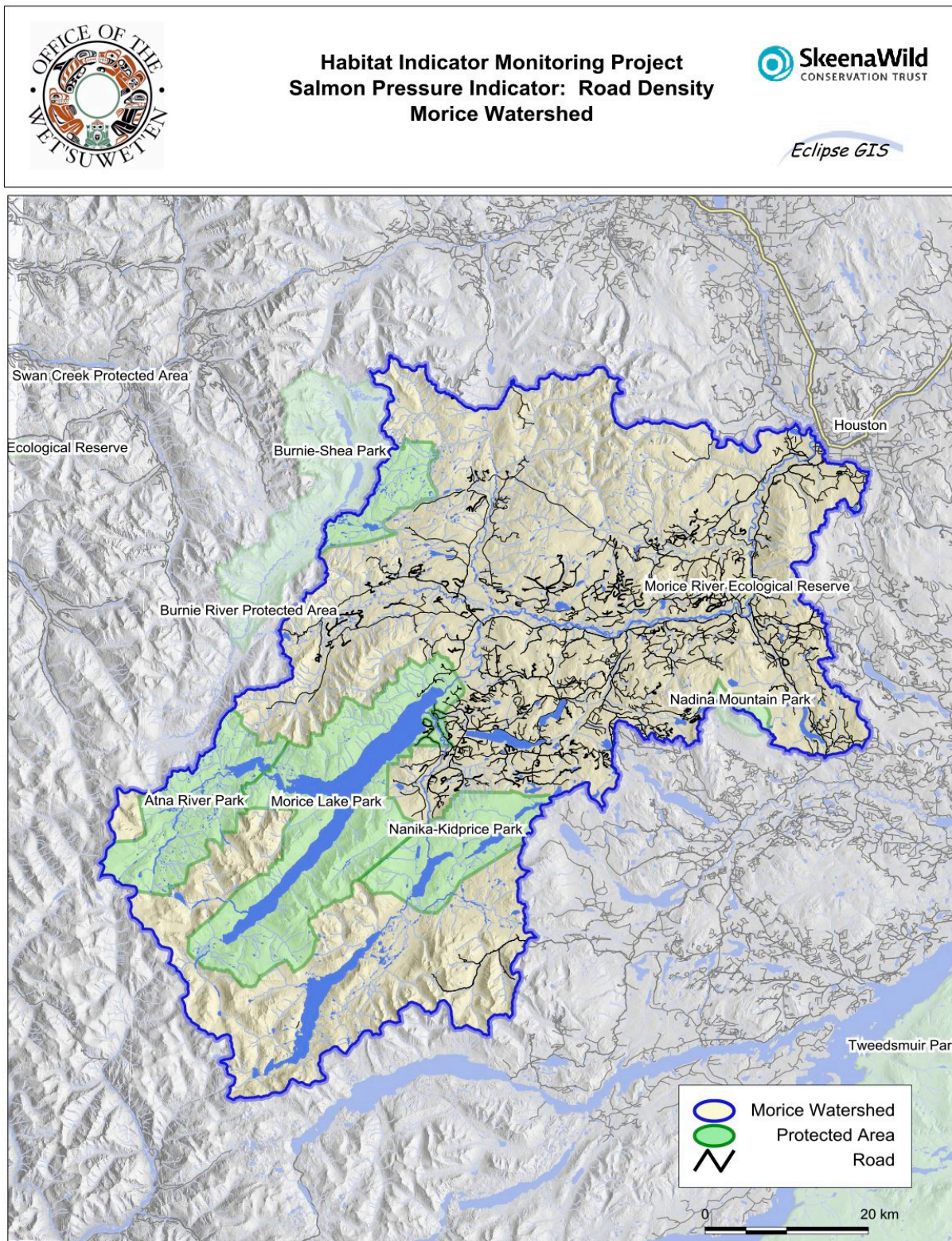
The Morice watershed has a total road length of 2,109.52 km, resulting in a road density of  $0.46 \text{ km/km}^2$ .

**Table 4.1.1 Road Density within Morice Watershed**

Area (km <sup>2</sup> )	Road Length (km)	Road Density (km/km <sup>2</sup> )
4,379.62 <sup>1</sup>	2,019.52	0.46

<sup>1</sup>The Morice watershed boundary is 76 ha larger than the total area of all the sub-watersheds to accommodate the Wet'suwet'en House Territory Boundaries.

Figure 4.1.1 Road Density within the Morice Watershed





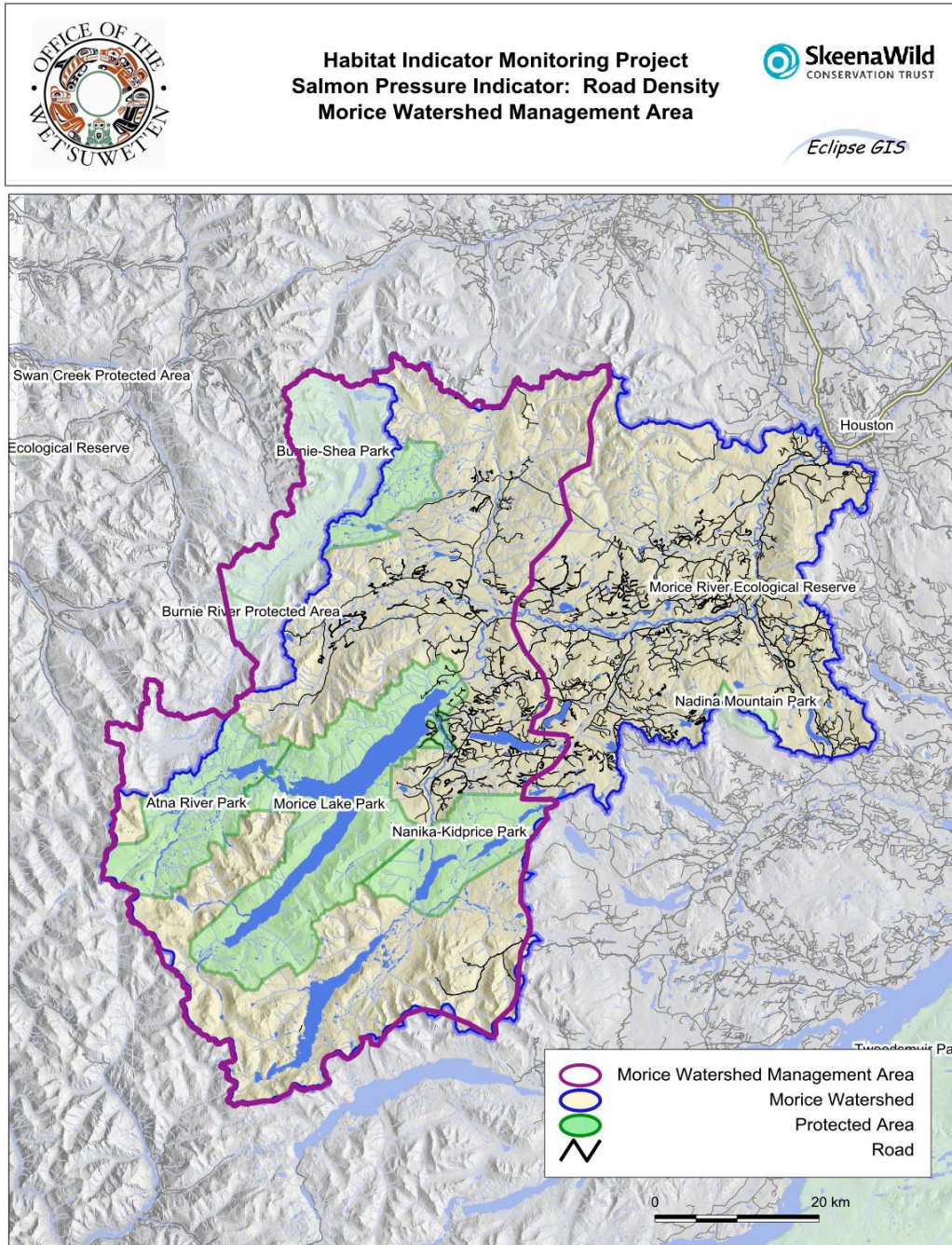
## 4.2. Morice Watershed Management Area

The Morice Watershed Management Area contains 730.46 km of roads, with a road density of 0.21 km/km<sup>2</sup>.

Table 4.2.1 Road Density within Morice Watershed Management Area

Area (km <sup>2</sup> )	Road Length (km)	Density (km/km <sup>2</sup> )
3,403.51	730.46	0.21

Figure 4.2.1 Road Density within Morice Watershed Management Area



### 4.3. Wet'suwet'en House Territories within the Morice Watershed

The ten Wet'suwet'en House Territories within the Morice Watershed contain 3,160.25 km of roads with a road density of 0.54 km/km<sup>2</sup>. The road density values across the House Territories ranges from 0.03 in Talhdzi Wiyez Bin to a value of 1.70 in the Nelgi Cek House Territory.

**Table 4.3.1 Road Density within Wet'suwet'en House Territories**

House Territory	Area (km <sup>2</sup> )	Road Length (km)	Density (km/km <sup>2</sup> )
Talhdzi Wiyez Bin (T01)	494.78	12.50	0.03
C'iniggit Nenikekh (G02)	1,293.94	36.50	0.03
Nelgi'l'at (L07)	387.11	55.02	0.14
Bikh C'idilyiz Ts'anli (W05)	142.48	40.42	0.28
Talbits Kwah (G06)	710.28	456.10	0.64
Lhudis Bin (W02)	989.37	755.17	0.76
C'idi To Stan (S03)	505.42	413.13	0.82
Bi Wini (W04)	883.29	767.93	0.87
Ts'in K'oz'ay (W06)	280.41	258.33	0.92
Nelgi Cek (L09)	214.98	365.13	1.70
<b>Total</b>	<b>5,902.06</b>	<b>3,160.25</b>	<b>0.54</b>

**Figure 4.3.1 Road Density with Thresholds within Wet'suwet'en House Territories**

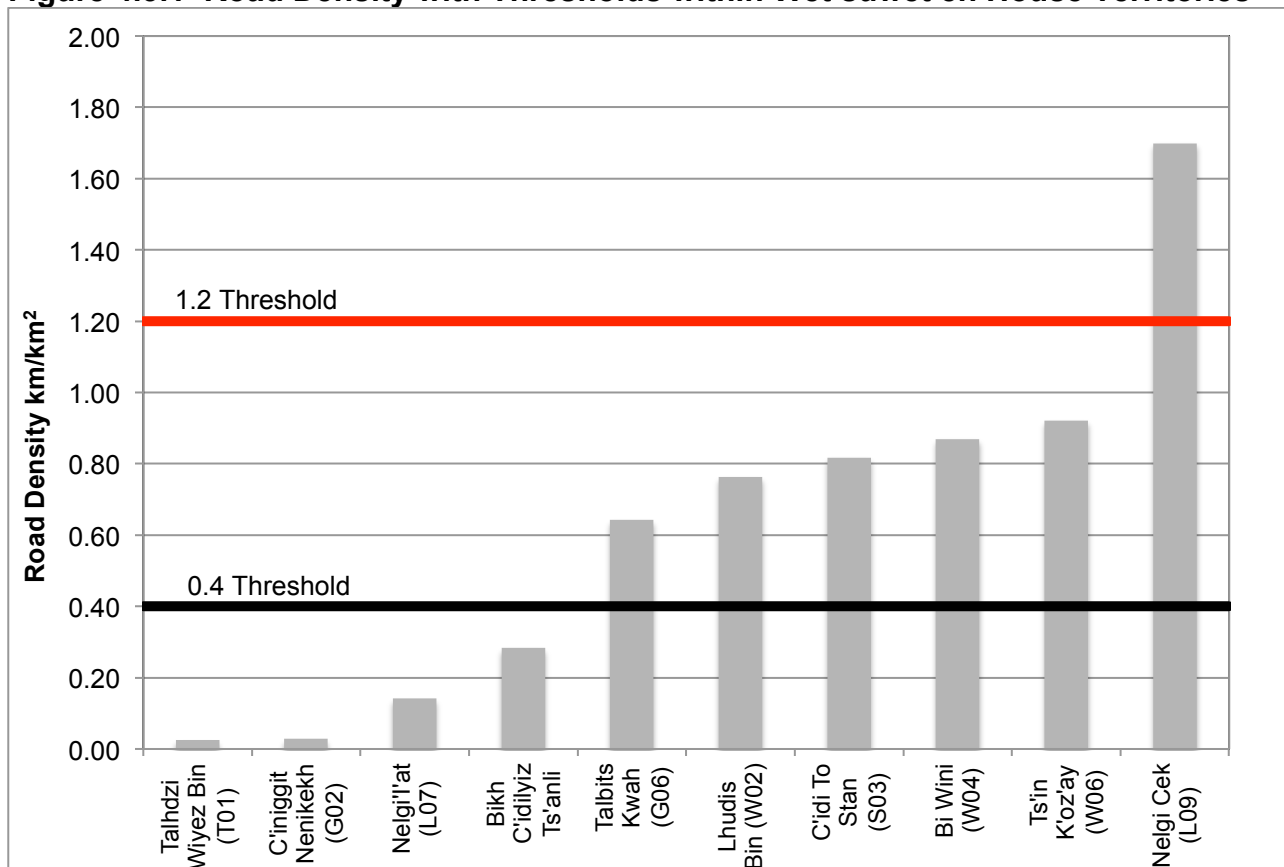
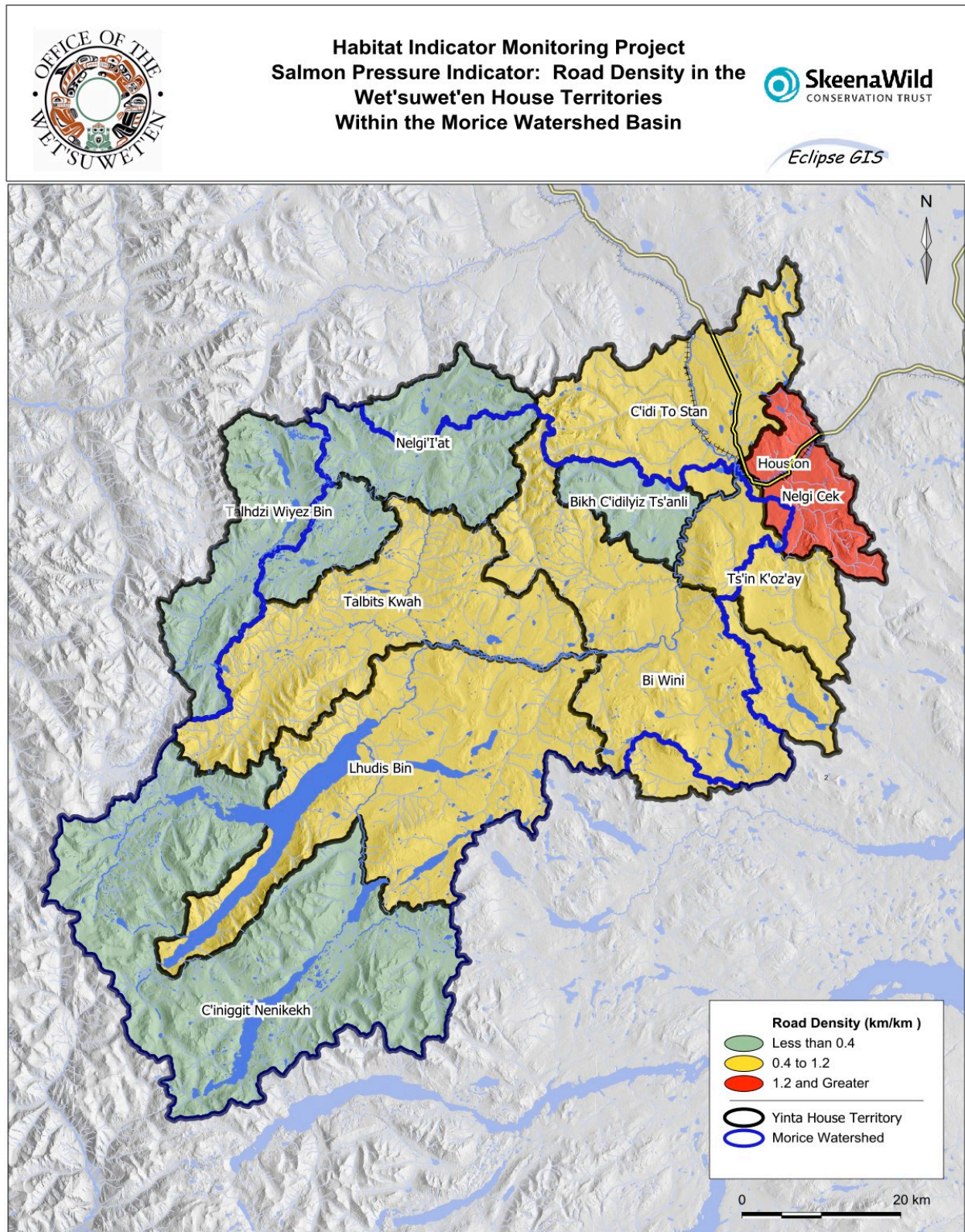




Figure 4.3.2



#### 4.4. Morice Sub-watersheds

The road density within the eighteen sub-watersheds that make up the Morice Watershed is 0.46 km/km<sup>2</sup>. The road densities for the sub-watersheds range from 0.0 km/km<sup>2</sup> in the Atna River sub-watershed to 1.59 km/km<sup>2</sup> in the McBride sub-watershed.

**Table 4.4.1 Road Density with Morice Sub-watersheds**

<b>Sub-watershed Unit</b>	<b>Area (km<sup>2</sup>)</b>	<b>Road Length (km)</b>	<b>Road Density (km/km<sup>2</sup>)</b>
Gosnell Watershed			
Crystal Creek	62.45	15.4	0.25
Shea Creek	194.98	43.8	0.22
Gosnell Creek	279.45	115.3	0.41
<b>Subtotal</b>	<b>536.88</b>	<b>174.6</b>	<b>0.33</b>
Atna River	283.95	0.0	0.00
Houston Tommy Creek	248.24	127.4	0.51
Lamprey Creek	240.26	304.4	1.27
McBride Creek	115.04	182.6	1.59
Nanika River	889.67	125.2	0.14
Owen Creek	212.37	196.9	0.93
Thautil River	422.97	127.6	0.30
Morice Lake	599.57	13.8	0.02
<b>Morice River Face Units</b>			
MR R1 East	71.72	80.5	1.12
MR R1 West	41.04	25.9	0.63
MR R2 North	206.19	262.4	1.27
MR R2 SE	101.57	117.3	1.15
MR R2 SW	61.64	60.8	0.99
MR R3 East	165.85	136.0	0.82
MR R3 West	182.00	80.2	0.44
<b>Subtotal</b>	<b>829.94</b>	<b>763.05</b>	<b>0.92</b>
<b>Total</b>	<b>4,378.93</b>	<b>2,015.64</b>	<b>0.46</b>

**Figure 4.4.1 Road Density with Thresholds within the Morice Sub-watersheds**

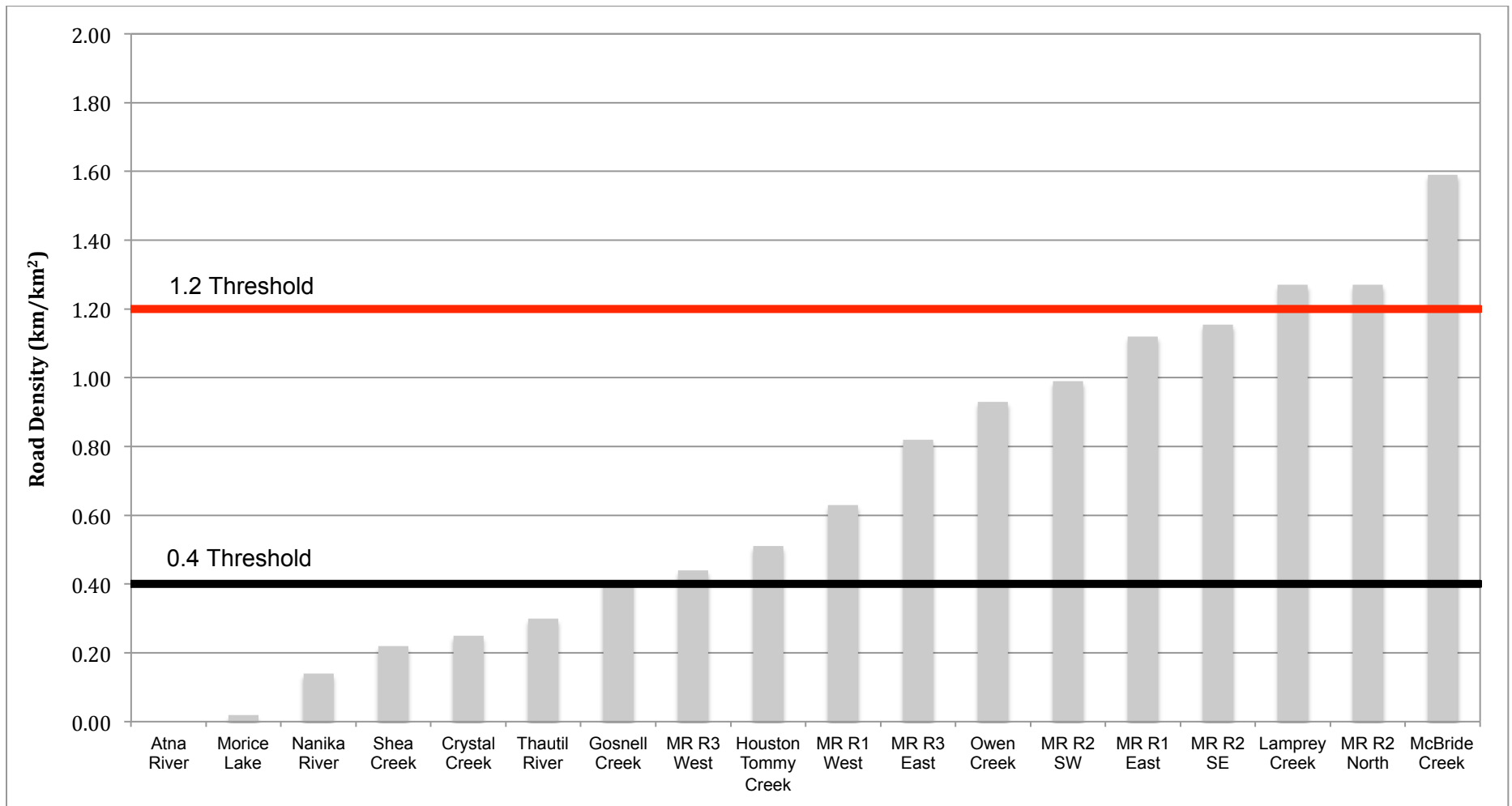




Figure 4.4.2



Habitat Indicator Monitoring Project  
Salmon Pressure Indicator: Road Density  
Morice Sub-watersheds

