Table 4.21 Univariate statistics of patch edge-to-area ratios in the FMA area

| Time | Edge-To-Area ($m/m^2$) | | | |
|---|---|---|---|---|
| | Mean | Min. | Max. | Standard Dev. |
| 0 | 0.0167 | 0.0022 | 0.0379 | 0.0067 |
| 20 | 0.0184 | 0.0040 | 0.0772 | 0.0086 |
| 50 | 0.0165 | 0.0013 | 0.0417 | 0.0074 |
| 100 | 0.0188 | 0.0042 | 0.0576 | 0.0077 |
| 180 | 0.0198 | 0.0052 | 0.0576 | 0.0083 |

Alberta Sustainable Resource Development established a targeted minimum amount of Caribou habitat (as defined above) within the Caribou zone of ANC's FMA area at 54,923 ha. This amount is based on the habitat needs of current Caribou populations.

The current amount of Caribou habitat is 94,405 ha. This amount drops to 82,648 ha after twenty years, increases to 104,829 after 50 years and drops again to 54,170 hectares after 100 years. It is not until year 180 that we see habitat values go below the targeted amount.

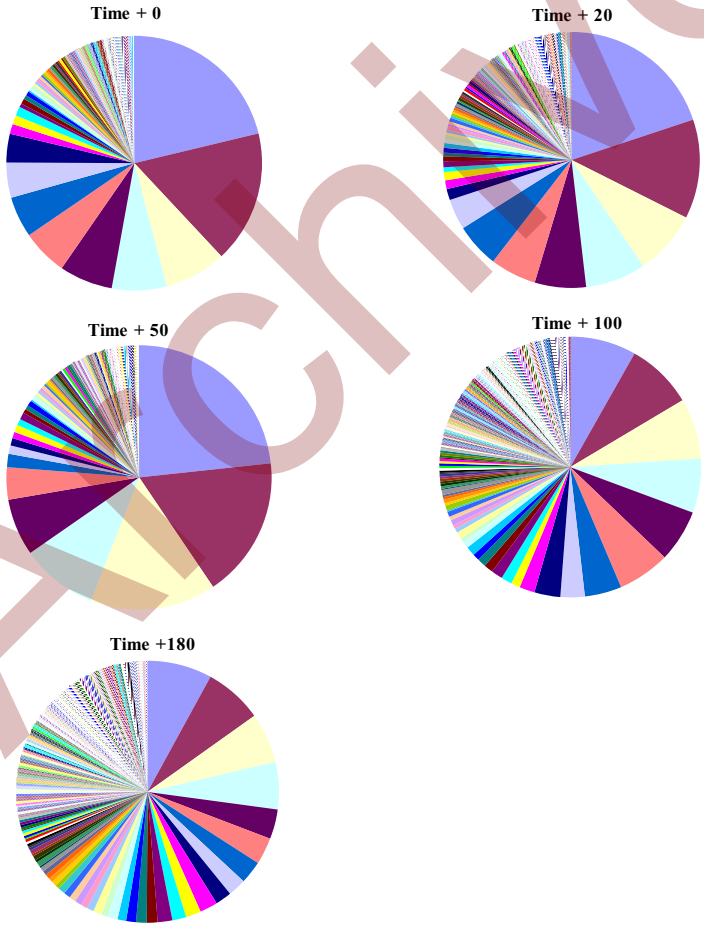


Figure 4.55b Caribou Habitat Patch Size Fragmentation Over the Planning Horizon; Each Slice Represents the Area of One Patch.

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Fragmentation of caribou habitat (Figure 4.55b) will be most favorable 50 years from now as there will be fewer and larger patches comprising more area. After 50 years the larger patches will become more fragmented and, consequently, there will exist a greater number of smaller patches comprising more of the total habitat area at 100 and 180 years from now. Mean edge to area will remain stable in the future, although the general trend is predicted to increase slightly. Figures 4.56-4.59 show the change in predicted caribou habitat in the Caribou Zone at four points in time.

### 4.3.8 Habitat Type 8 — Grizzly Bear Habitat

Using models developed in discussions with Foothills Model Forest researchers, the following Grizzly Bear habitat predictions were developed.

Grizzly bear habitat is modelled for fall feeding season using the Habitat Suitability Index (HSI) model. The HSI model predicts available habitat based on habitat structure, habitat type, and spatial arrangements between habitat features, which are described in detail by independent habitat components in Section 2.3.6.8. HSI ranges between 0 and 1, where 0 indicates unsuitable habitat and 1 indicates the most suitable habitat. HSI is evaluated at both a stand level and a 9-km$^2$ grid level. For grizzly bear habitat to be effective it must also have limited road densities with a critical threshold of less than or equal to 0.3 km/km$^2$.

Tables 4.22-4.27 and Figure 4.60-4.62 summarize the results for this habitat type.

Table 4.22 Area summary in hectares aggregated, by grizzly bear HSI

| HSI | 1999 | 2019 | 2049 | 2099 | 2179 |
|---|---|---|---|---|---|
| 0 | 101,092 | 86,686 | 68,743 | 67,753 | 57,300 |
| 0-0.4 | 147,752 | 137,036 | 136,799 | 136,164 | 138,024 |
| 0.4-0.7 | 109,310 | 105,737 | 105,969 | 115,765 | 115,251 |
| 0.7-1 | 20,571 | 49,266 | 67,214 | 59,043 | 68,150 |
| Total (ha) | 378,725 | | | | |

Table 4.23 Percent area summary aggregated, by grizzly bear HSI

| HSI | 1999 | 2019 | 2049 | 2099 | 2179 |
|---|---|---|---|---|---|
| 0 | 26.7% | 22.9% | 18.2% | 17.9% | 15.1% |
| 0-0.4 | 39.0% | 36.2% | 36.1% | 36.0% | 36.4% |
| 0.4-0.7 | 28.9% | 27.9% | 28.0% | 30.6% | 30.4% |
| 0.7-1 | 5.4% | 13.0% | 17.7% | 15.6% | 18.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

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**Figure 4.56**

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*FOREST MANAGEMENT AGREEMENT AREA*

*Caribou Habitat Suitability Model: Time 20*

*(2019) HABITAT 7*

Rge 5 Rge 4 Rge 3 Rge 2 Rge 1 6th MER Rge 27 Rge 26 Rge 25 Rge 24 Rge 23 Rge 22 Rge 21 Rge 20 Rge 19 Rge 18 Rge 17

Twp 64 Twp 63 Twp 62 Twp 61 Twp 60 Twp 59 Twp 58 Twp 57 Twp 56 Twp 55

N W E S

Fox Creek

Two Creeks

Muskeg River

CARIBOU ZONE

Provincial Location of FMA

Caribou Habitat
Not in Harvest sequence

CARIBOU ZONE BOUNDARY

ATS grid
Recreation areas

Scale 1:425,000

10 0 10 km

Projection: Universal Transverse Mercator zone 11
NAD 83 GRS 80
By: mdaniels
GDC project ref: 2000096

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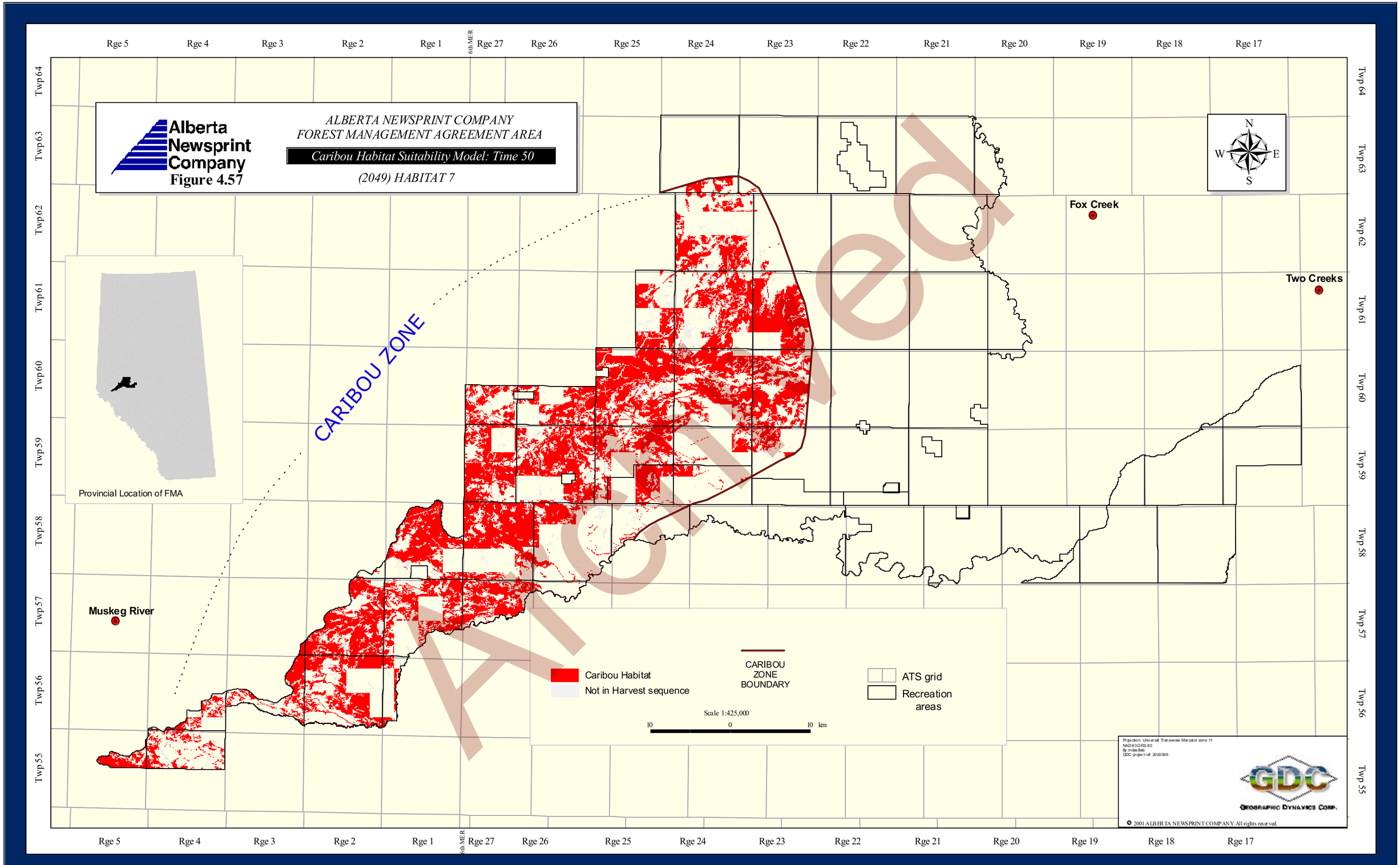

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Figure 4.57
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FOREST MANAGEMENT AGREEMENT AREA
Caribou Habitat Suitability Model: Time 50
(2049) HABITAT 7
Provincial Location of FMA
CARIBOU ZONE
Fox Creek
Two Creeks
Muskeg River
Caribou Habitat
Not in Harvest sequence
CARIBOU ZONE BOUNDARY
ATS grid
Recreation areas
Scale 1:425,000
10 0 10 km
Projection: Universal Transverse Mercator zone 11
NAD83 GRS 80
By: mdesilets
GDC project ref: 2000096
GDC
Geographic Dynamics Corp.
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Rge 5
Rge 4
Rge 3
Rge 2
Rge 1
6th MER
Rge 27
Rge 26
Rge 25
Rge 24
Rge 23
Rge 22
Rge 21
Rge 20
Rge 19
Rge 18
Rge 17
Twp 64
Twp 63
Twp 62
Twp 61
Twp 60
Twp 59
Twp 58
Twp 57
Twp 56
Twp 55

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**Figure 4.58**

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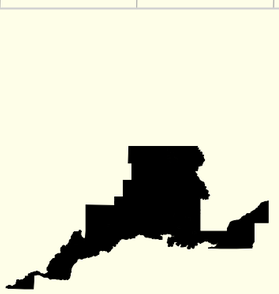
*FOREST MANAGEMENT AGREEMENT AREA*

*Caribou Habitat Suitability Model: Time 100*

*(2099) HABITAT 7*



Provincial Location of FMA

CARIBOU ZONE

Fox Creek

Two Creeks

Muskeg River

Caribou Habitat
Not in Harvest sequence

CARIBOU ZONE BOUNDARY

ATS grid
Recreation areas

Scale 1:425,000

10 0 10 km

Projection: Universal Transverse Mercator zone 11
NAD 83 GRS 80
By:mdesilets
GDC project ref: 2000096

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Rge 5 Rge 4 Rge 3 Rge 2 Rge 1 6th MER Rge 27 Rge 26 Rge 25 Rge 24 Rge 23 Rge 22 Rge 21 Rge 20 Rge 19 Rge 18 Rge 17

Twp 64 Twp 63 Twp 62 Twp 61 Twp 60 Twp 59 Twp 58 Twp 57 Twp 56 Twp 55

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**Figure 4.59**

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*FOREST MANAGEMENT AGREEMENT AREA*

*Caribou Habitat Suitability Model: Time 180*

*(2179) HABITAT 7*

Rge 5 Rge 4 Rge 3 Rge 2 Rge 1 6th MER Rge 27 Rge 26 Rge 25 Rge 24 Rge 23 Rge 22 Rge 21 Rge 20 Rge 19 Rge 18 Rge 17

Twp 64 Twp 63 Twp 62 Twp 61 Twp 60 Twp 59 Twp 58 Twp 57 Twp 56 Twp 55

N W E S

Fox Creek

Two Creeks

Muskeg River

CARIBOU ZONE

Provincial Location of FMA

Caribou Habitat
Not in Harvest sequence

CARIBOU ZONE BOUNDARY

ATS grid
Recreation areas

Scale 1:425,000

10 0 10 km

Projection: Universal Transverse Mercator zone 11
NAD83 GRS 80
By: mdesilets
GDC project ref: 2000096

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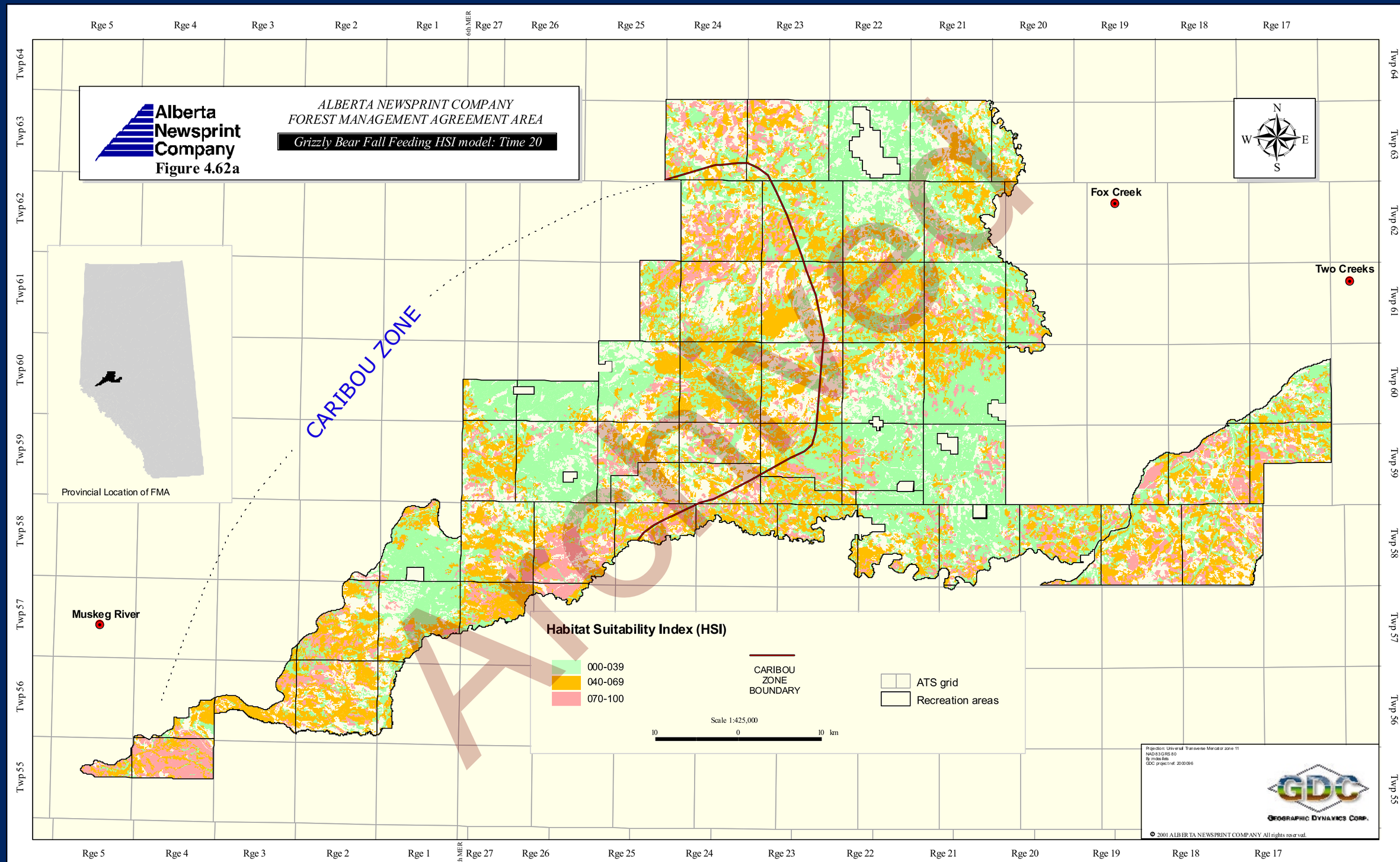

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Figure 4.62a
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FOREST MANAGEMENT AGREEMENT AREA
Grizzly Bear Fall Feeding HSI model: Time 20
Provincial Location of FMA
CARIBOU ZONE
Fox Creek
Two Creeks
Muskeg River
Habitat Suitability Index (HSI)
000-039
040-069
070-100
CARIBOU ZONE BOUNDARY
ATS grid
Recreation areas
Scale 1:425,000
10 0 10 km
Projection: Universal Transverse Mercator zone 11
NAD83 GRS 80
By: mdesilets
GDC project ref: 2000096
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Rge 5
Rge 4
Rge 3
Rge 2
Rge 1
6th MER
Rge 27
Rge 26
Rge 25
Rge 24
Rge 23
Rge 22
Rge 21
Rge 20
Rge 19
Rge 18
Rge 17
Twp 64
Twp 63
Twp 62
Twp 61
Twp 60
Twp 59
Twp 58
Twp 57
Twp 56
Twp 55