THE pebble PARTNERSHIP

Pre-Permitting Environmental / Socio-Economic Data Report Series

Report Series N-
Terrestrial Wildlife and Habitats

Report N-1
Terrestrial Mammal Figures
2004-2007

Submitted to the Alaska Department of Natural Resources January 2010

Preliminary data. Do not cite or quote.

The Pebble Partnership is providing environmental and socio-economic baseline data collected to inform the development of the Pebble Project to state and federal agencies, project stakeholders and the general public prior to project permitting as part of its commitment to full and open disclosure.

A comprehensive Environmental Baseline Document (EBD) will subsequently be prepared and appended to future project permit applications. The EBD will also be made publicly available when complete.

Collected for the Pebble Partnership by:

ABR inc. environmental research & services

ABR, Inc.
P.O. Box 24068
Anchorage, AK 99524

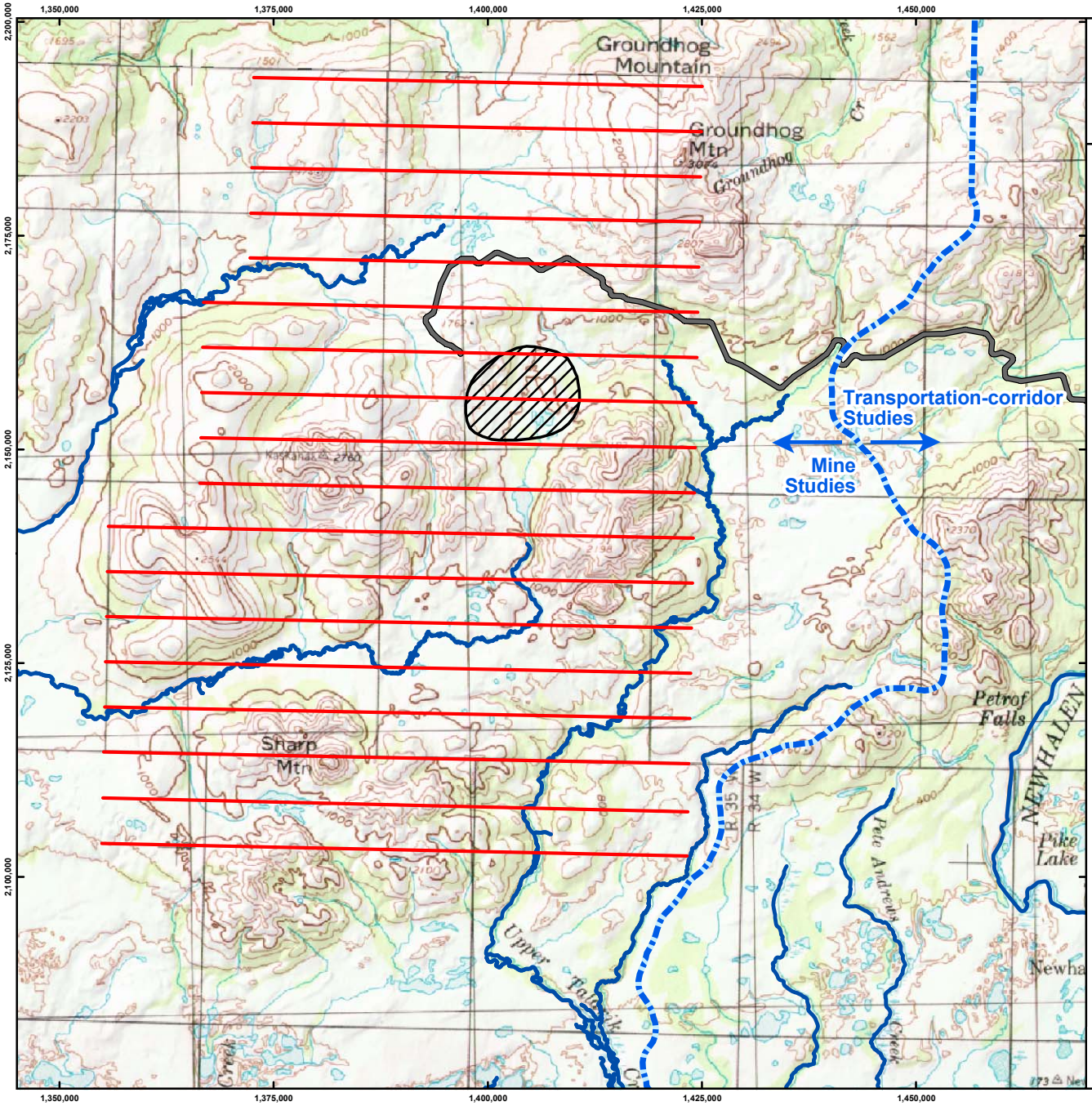

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Figure N-1.1

Survey Areas for Large Mammals, Mine Study Area, 2004–2007

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Legend

- 2004–2007 Aerial-survey Transect
- August 2004 Stream Survey
- General Deposit Location
- Possible Road Alignment

Miles: 0 1 2 3 4 5
Kilometers: 0 2 4 6 8

N

Scale 1:220,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

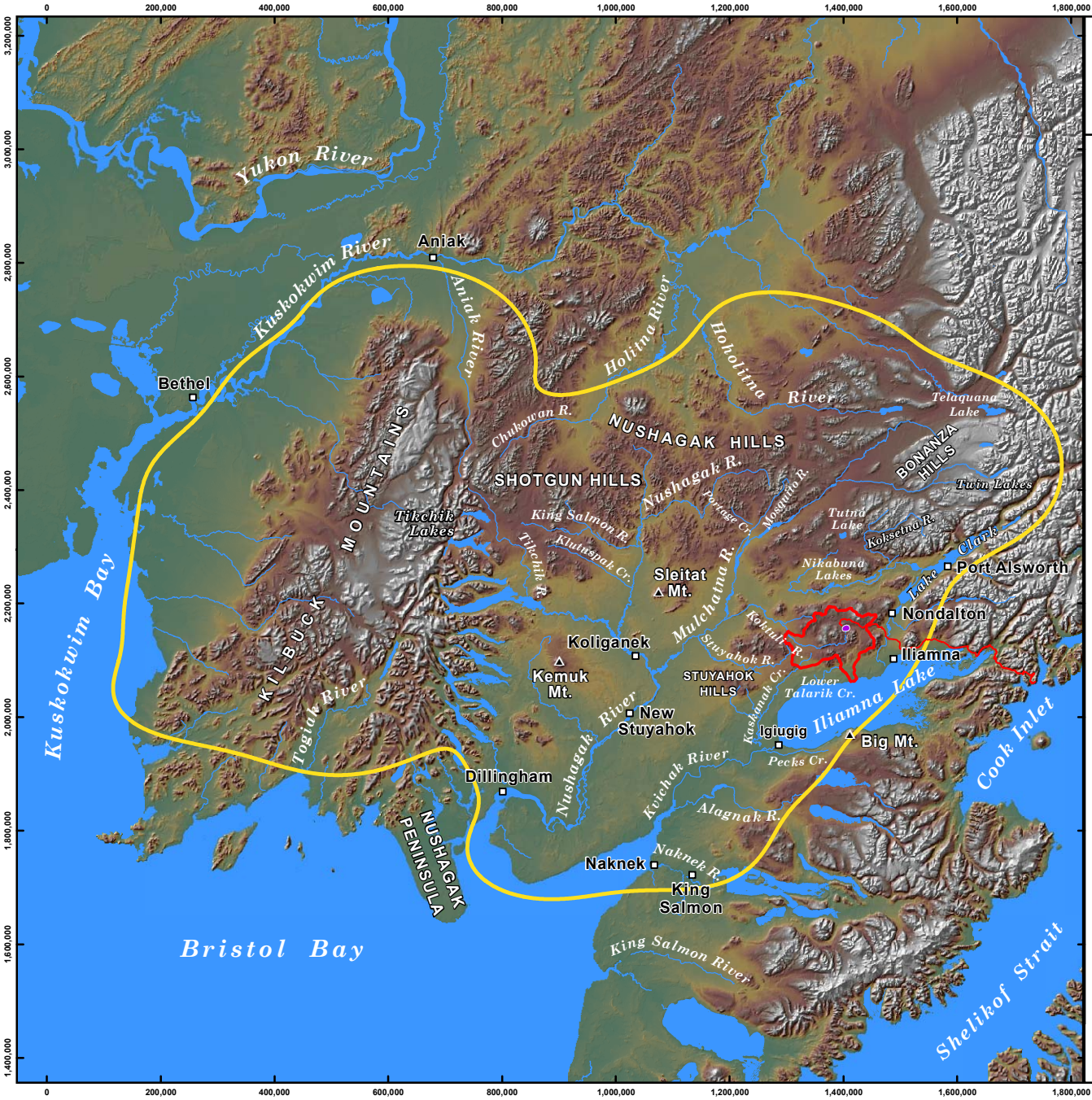

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Figure N-1.2
Mulchatna Caribou Herd Range, Southwestern Alaska, 1981–2008

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Legend

- Mulchatna Caribou Herd Range[1]
- Greater Mine Area
- General Deposit Location
- Possible Road Alignment
- Waterbody
- River or Stream
- Town or Village
- Summit

[1]Source: MCHTWG telemetry data set (from ADF&G and Togiak and Yukon Delta National Wildlife Refuges), March 1981–March 2008.

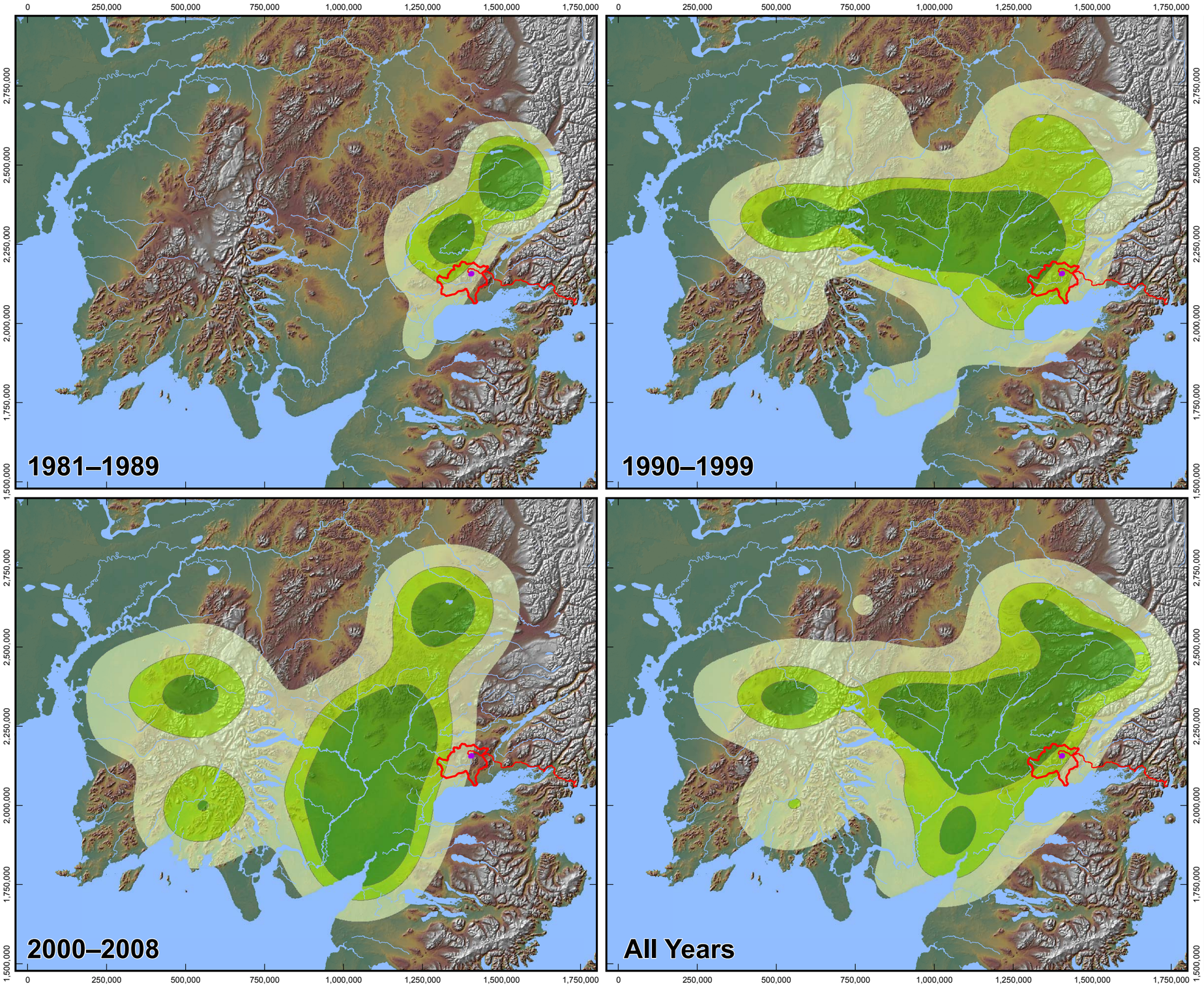

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Figure N-1.3
Mulchatna Caribou Herd, Seasonal Range Use, Southwestern Alaska, Spring 1981–2008

Preliminary Data Only
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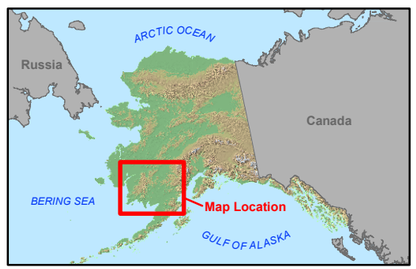
Spring (April 1–May 14) Areas of Concentrated Use

- High Density
- Medium Density
- Low Density

- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

Data source: Utilization distribution contours from fixed-kernel analysis of locations of radio-collared caribou (telemetry database from ADF&G, Togiak and Yukon Delta National Wildlife Refuges). Contours enclose stated percentages of all collar locations. High-, medium-, and low-density areas are the 50%, 75%, and 95% utilization distribution contours, respectively.



Miles: 0 25 50 75 100 125
Kilometers: 0 50 100 150 200
N

Scale 1:3,750,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

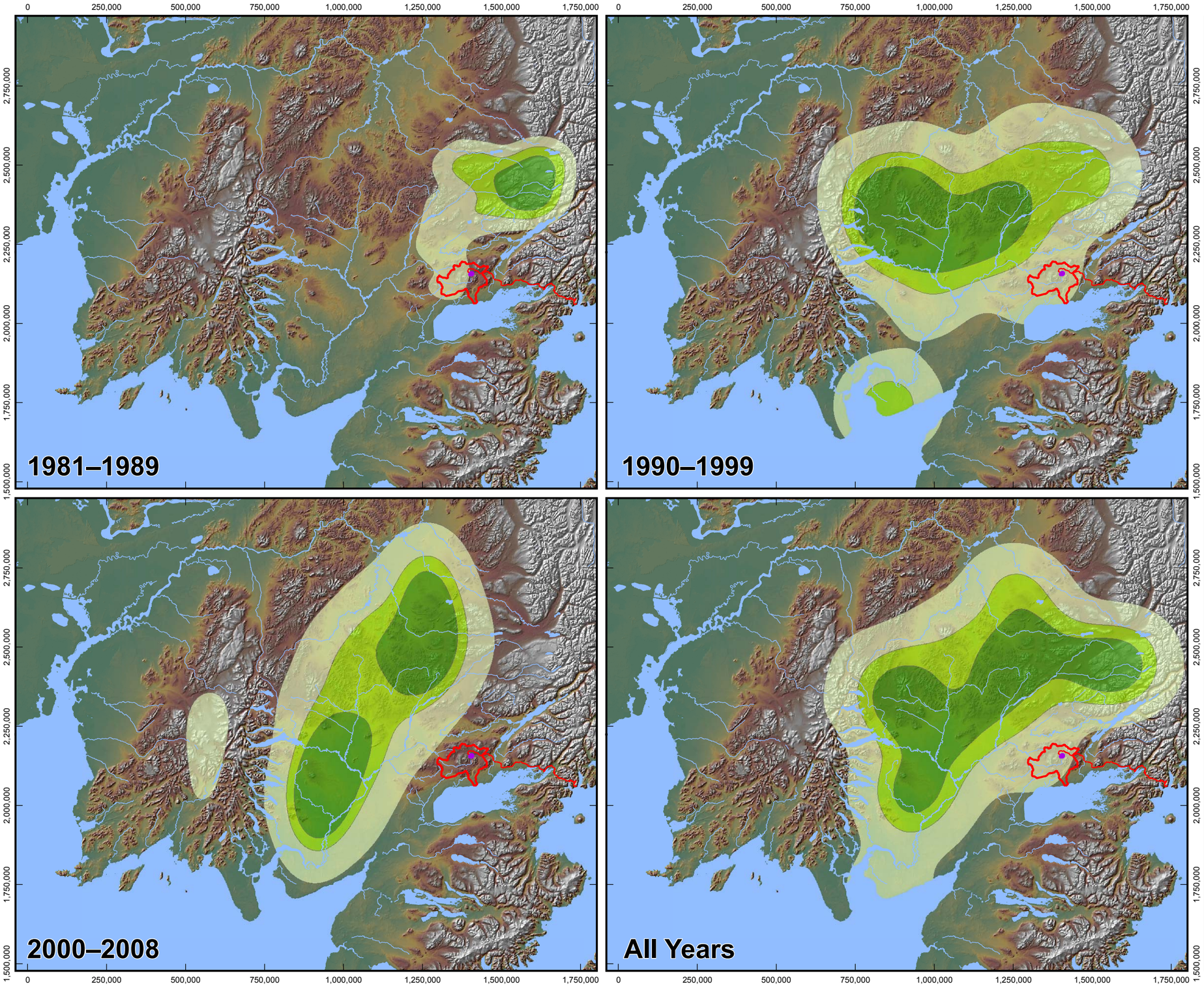


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Figure N-1.4

Mulchatna Caribou Herd, Seasonal Range Use, Southwestern Alaska, Calving 1981–2008

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Calving (May 15–June 10) Areas of Concentrated Use

- High Density
- Medium Density
- Low Density

- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

Data source: Utilization distribution contours from fixed-kernel analysis of locations of radio-collared caribou (telemetry database from ADF&G, Togiak and Yukon Delta National Wildlife Refuges). Contours enclose stated percentages of all collar locations. High-, medium-, and low-density areas are the 50%, 75%, and 95% utilization distribution contours, respectively.

Miles: 0 25 50 75 100 125
Kilometers: 0 50 100 150 200
N

Scale 1:3,750,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

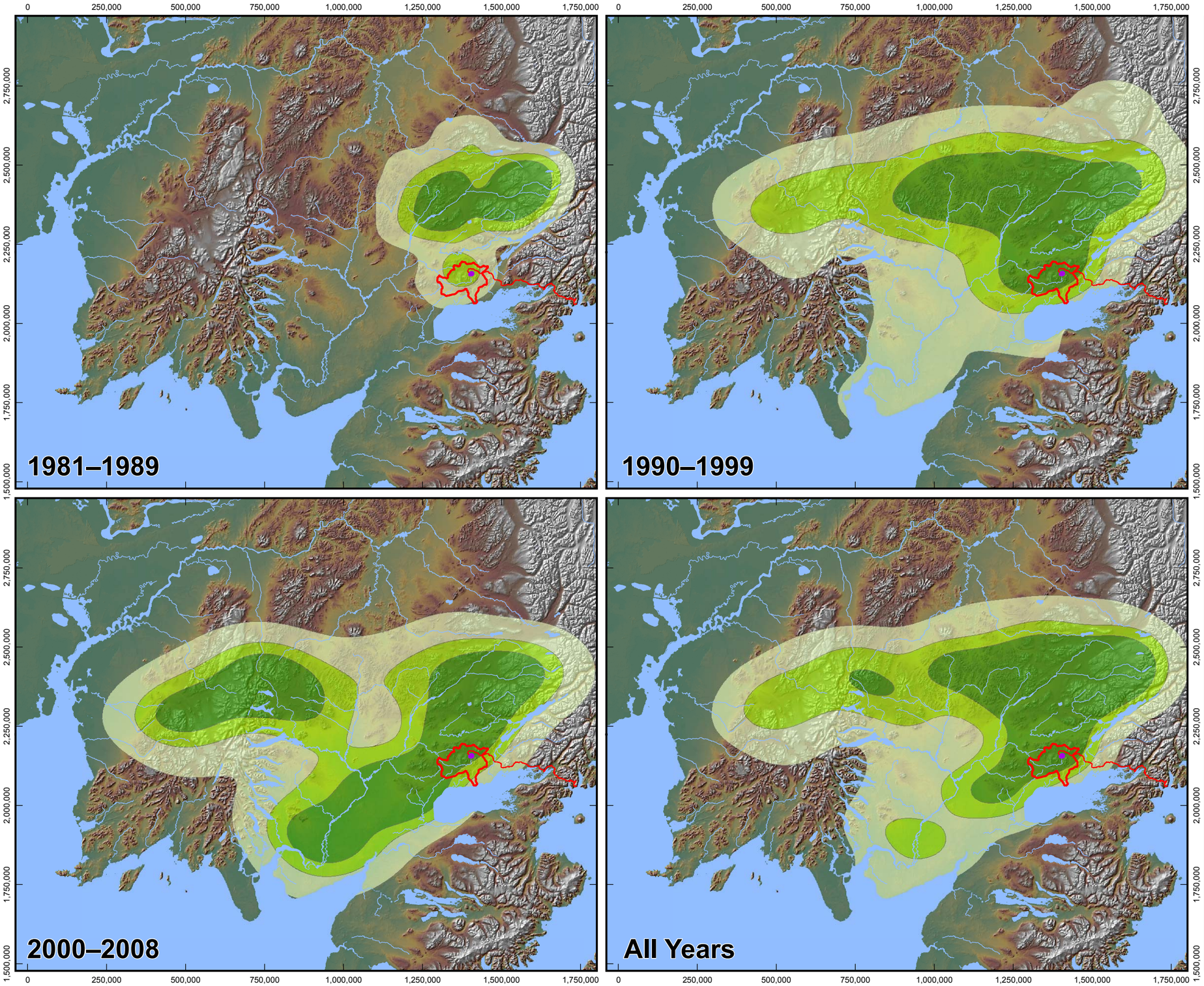

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Figure N-1.5

Mulchatna Caribou Herd, Seasonal Range Use, Southwestern Alaska, Summer 1981–2008

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Summer (June 11–September 7) Areas of Concentrated Use

- High Density
- Medium Density
- Low Density

- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

Data source: Utilization distribution contours from fixed-kernel analysis of locations of radio-collared caribou (telemetry database from ADF&G, Togiak and Yukon Delta National Wildlife Refuges). Contours enclose stated percentages of all collar locations. High-, medium-, and low-density areas are the 50%, 75%, and 95% utilization distribution contours, respectively.

Miles: 0 25 50 75 100 125
Kilometers: 0 50 100 150 200

N

Scale 1:3,750,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

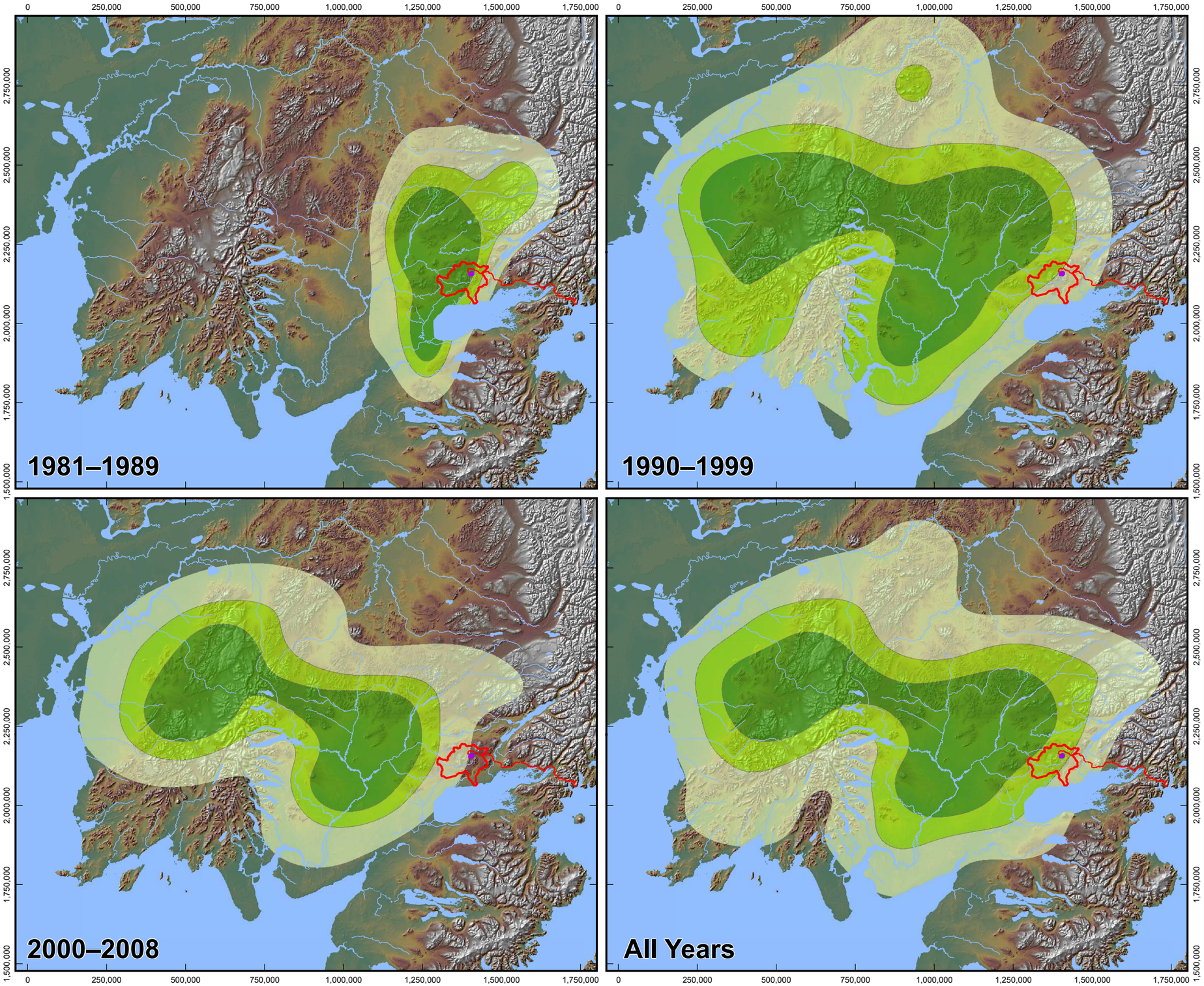

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Figure N-1.6
Mulchatna Caribou Herd, Seasonal Range Use, Southwestern Alaska, Autumn 1981–2008

Preliminary Data Only
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Autumn (September 8–October 31) Areas of Concentrated Use

- High Density
- Medium Density
- Low Density

- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

Data source: Utilization distribution contours from fixed-kernel analysis of locations of radio-collared caribou (telemetry database from ADF&G, Togiak and Yukon Delta National Wildlife Refuges). Contours enclose stated percentages of all collar locations. High-, medium-, and low-density areas are the 50%, 75%, and 95% utilization distribution contours, respectively.

Miles: 0 25 50 75 100 125
Kilometers: 0 50 100 150 200

N

Scale 1:3,750,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

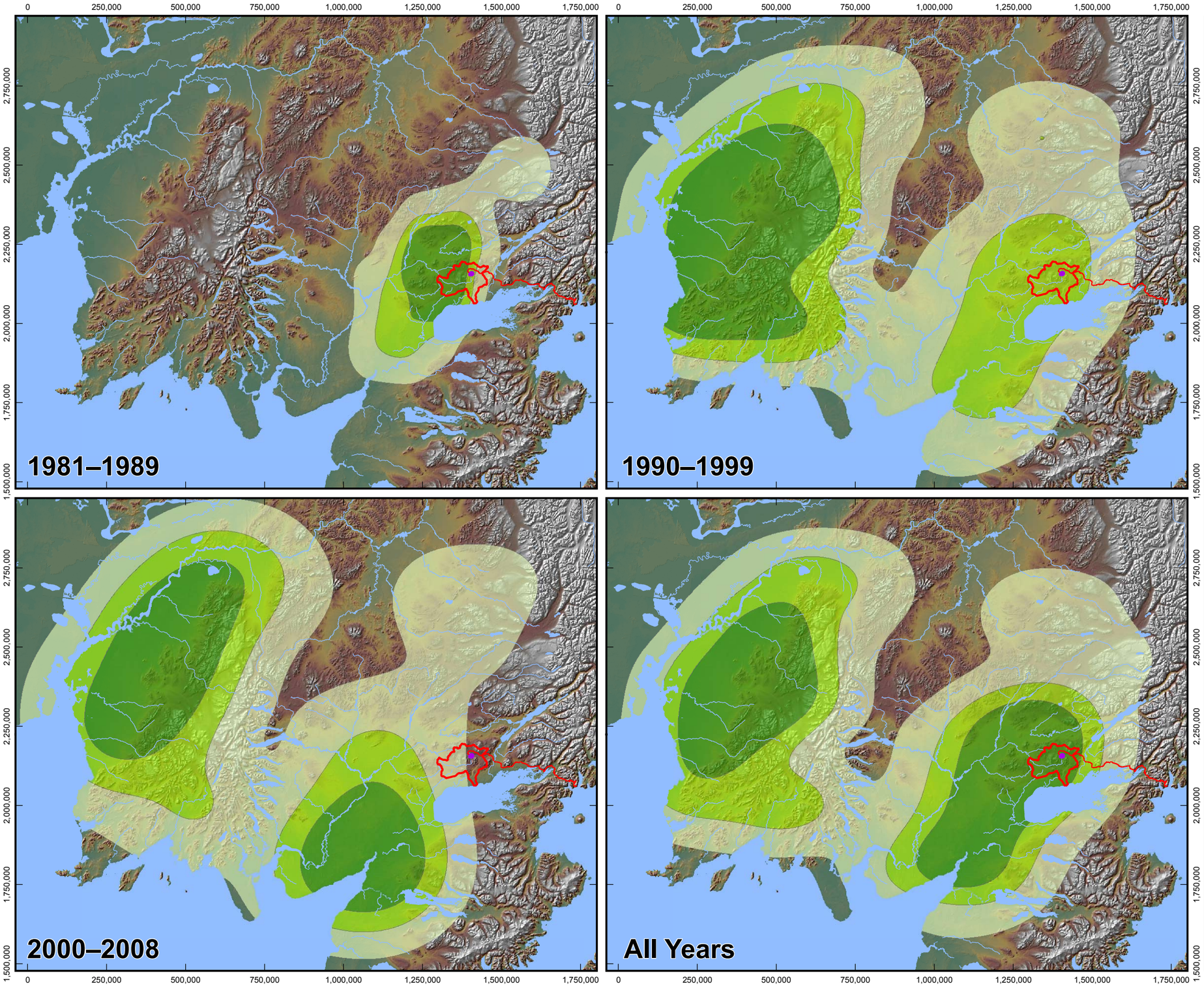

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Figure N-1.7
Mulchatna Caribou Herd, Seasonal Range Use, Southwestern Alaska, Winter 1981–2008

Preliminary Data Only
Do Not Cite or Quote

Winter (November 1–March 31) Areas of Concentrated Use

- High Density
- Medium Density
- Low Density
- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

Data source: Utilization distribution contours from fixed-kernel analysis of locations of radio-collared caribou (telemetry database from ADF&G, Togiak and Yukon Delta National Wildlife Refuges). Contours enclose stated percentages of all collar locations. High-, medium-, and low-density areas are the 50%, 75%, and 95% utilization distribution contours, respectively.

Miles: 0 25 50 75 100 125
Kilometers: 0 50 100 150 200

N

Scale 1:3,750,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

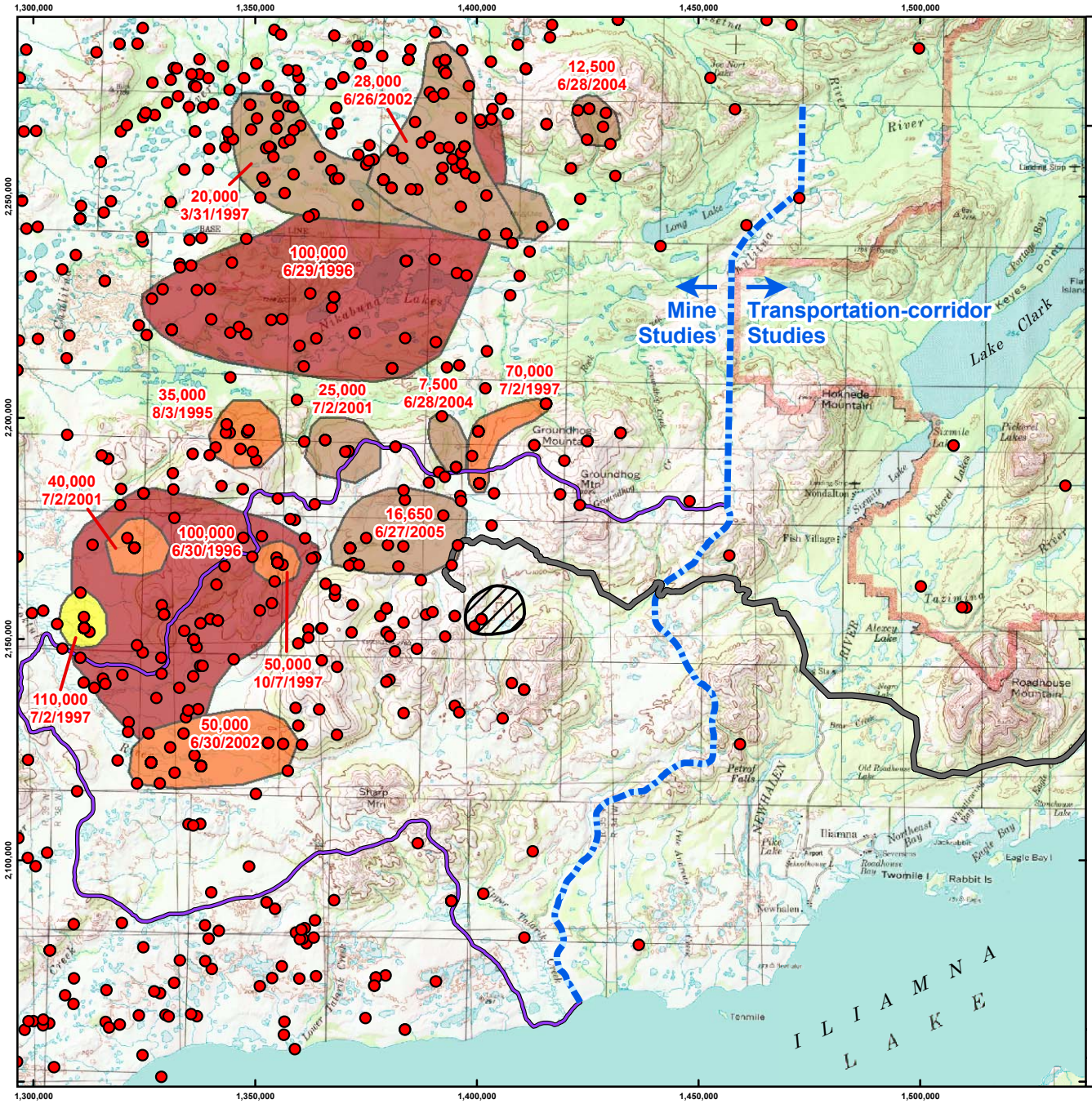

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Figure N-1.8

Caribou Group Locations from Radio-telemetry Surveys, Mine Study Area, 1981–2008

Preliminary Data Only

Do Not Cite or Quote

Legend

Group Size[1]

- 7,500 – 30,000
- 30,001 – 70,000
- 70,001 – 100,000
- > 100,000
- Caribou Location

- Greater Mine Area
- General Deposit Location
- Possible Road Alignment

[1]Source:
MCHTWG telemetry data set (from ADF&G and Togiak and Yukon Delta National Wildlife Refuges), March 1981–March 2008. Group sizes were not recorded in this area until 1993.

Miles 0 2 4 6 8 10
Kilometers 0 5 10 15
N

Scale 1:425,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

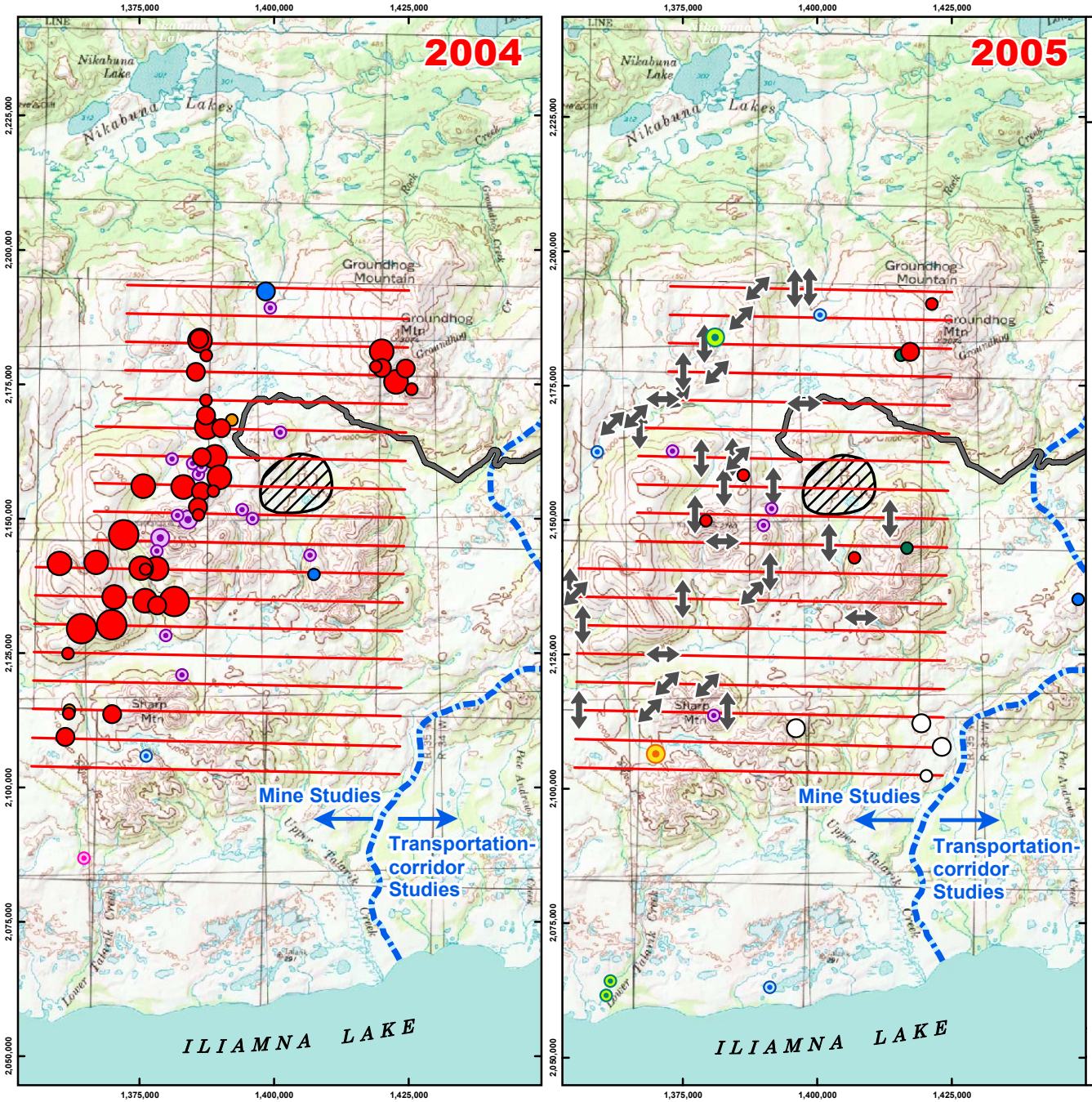

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Figure N-1.9
Caribou Observations, Mine Study Area, 2004–2005

Preliminary Data Only
Do Not Cite or Quote

Legend

Group Size

1–10 | 11–100 | 101–1000 | >1000

	Large Mammal Surveys	Other Surveys
April		
May		
June		
July		
August		
October		
December		

Aerial-survey Transect
Caribou Trail
General Deposit Location
Possible Road Alignment

Miles: 0 1 2 3 4 5 6 7
Kilometers: 0 2 4 6 8 10 12
N

Scale 1:350,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

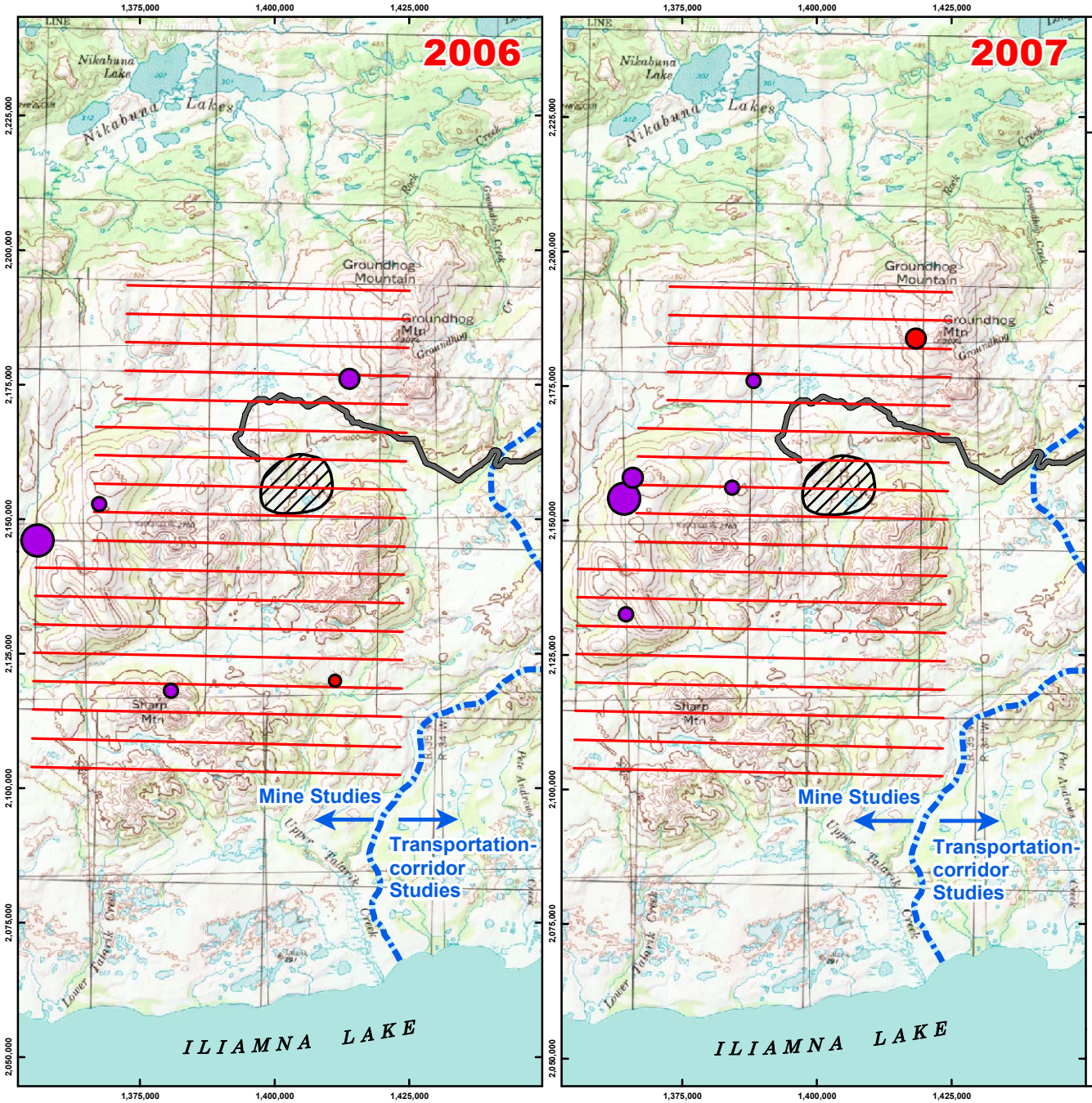

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Figure N-1.10
Caribou Observations, Mine Study Area, 2006–2007

Preliminary Data Only
Do Not Cite or Quote

Legend

Group Size	Month
1–10	June
11–100	July
≥2000	

Aerial-survey Transect
General Deposit Location
Possible Road Alignment

Miles 0 1 2 3 4 5 6 7
Kilometers 0 2 4 6 8 10 12
Scale 1:350,000
N

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

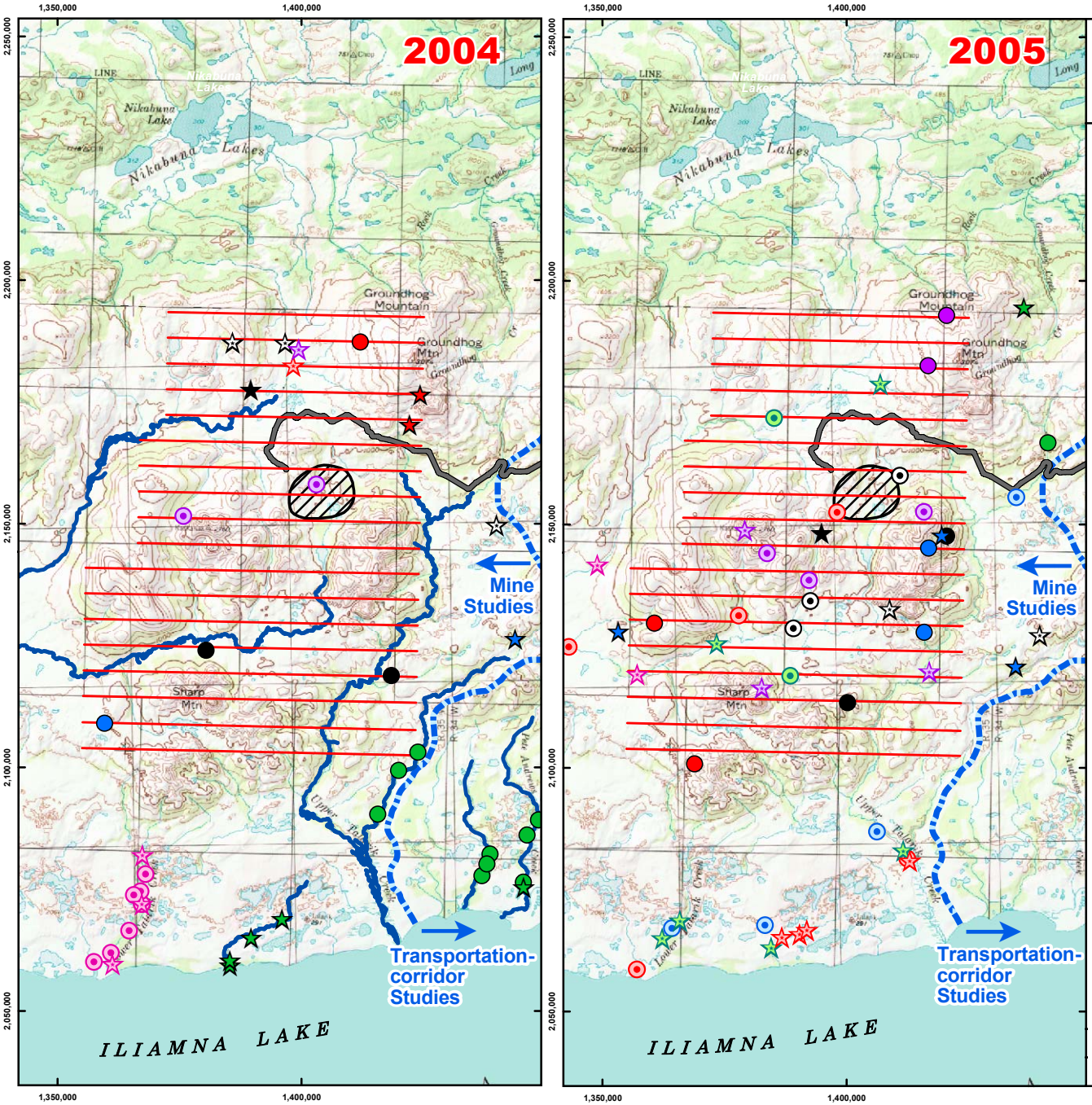

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Figure N-1.11
Brown Bear Observations, Mine Study Area, 2004–2005

Preliminary Data Only

Do Not Cite or Quote

Legend

	Large Mammal Surveys		Other Surveys	
	w/ cubs		w/o cubs	
May	★		●	⊙
June		☆	●	⊙
July	★	☆	●	⊙
August	★	☆	●	⊙
September		☆		⊙
October	★	☆	●	⊙

Aerial-survey Transect

August 2004 Stream Survey

General Deposit Location

Possible Road Alignment

Miles 0 1 2 3 4 5 6 7 8

Kilometers 0 2 4 6 8 10 12 14

N

Scale 1:385,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

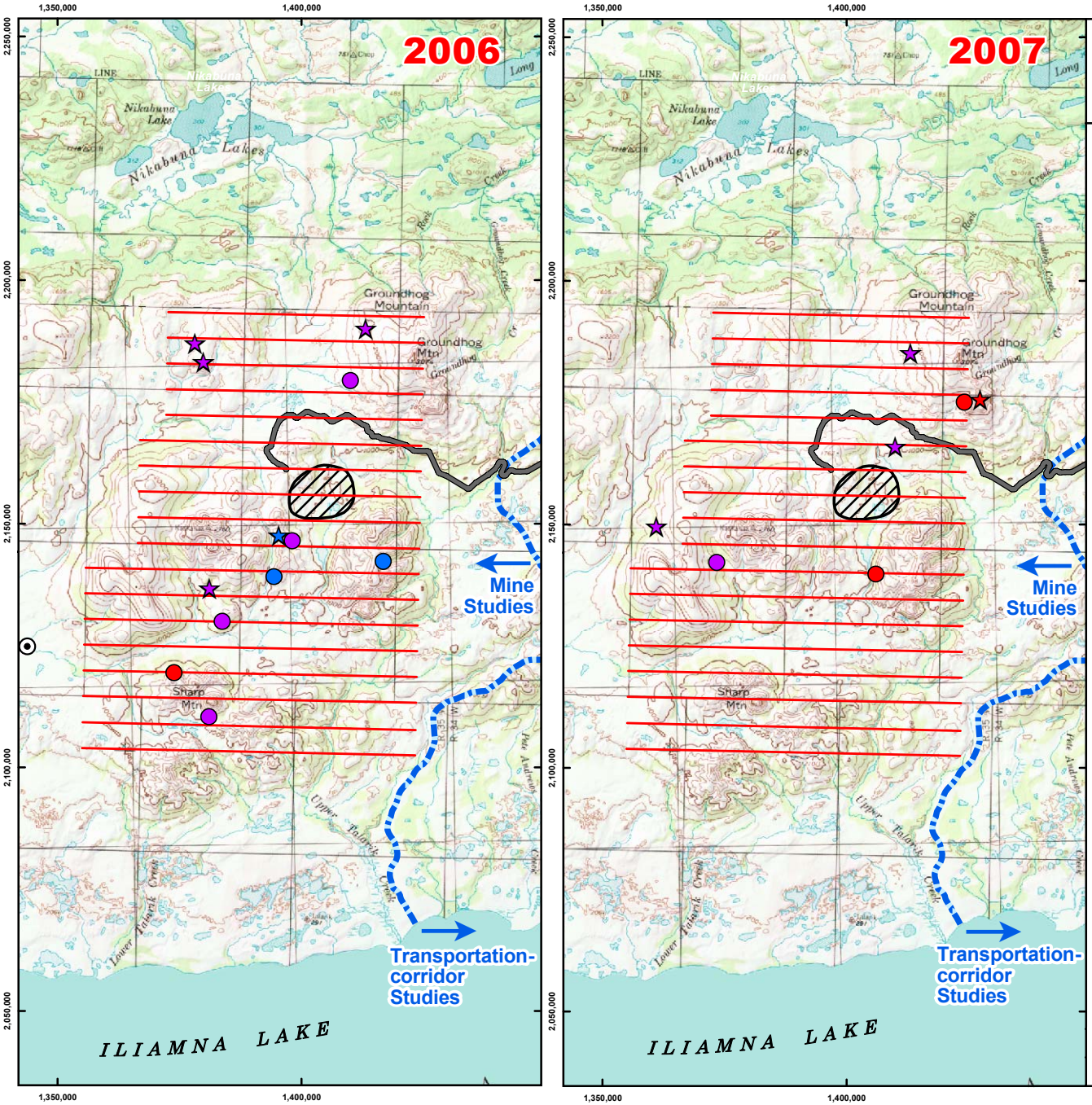

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Figure N-1.12
Brown Bear Observations, Mine Study Area, 2006–2007

Preliminary Data Only
Do Not Cite or Quote

Legend

Large Mammal Surveys		Other Surveys
	w/ cubs	w/o cubs
May	★	●
June	★	●
July	★	●
October		⊙

Aerial-survey Transect
General Deposit Location
Possible Road Alignment

Miles 0 1 2 3 4 5 6 7 8
Kilometers 0 2 4 6 8 10 12 14
Scale 1:385,000
N

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

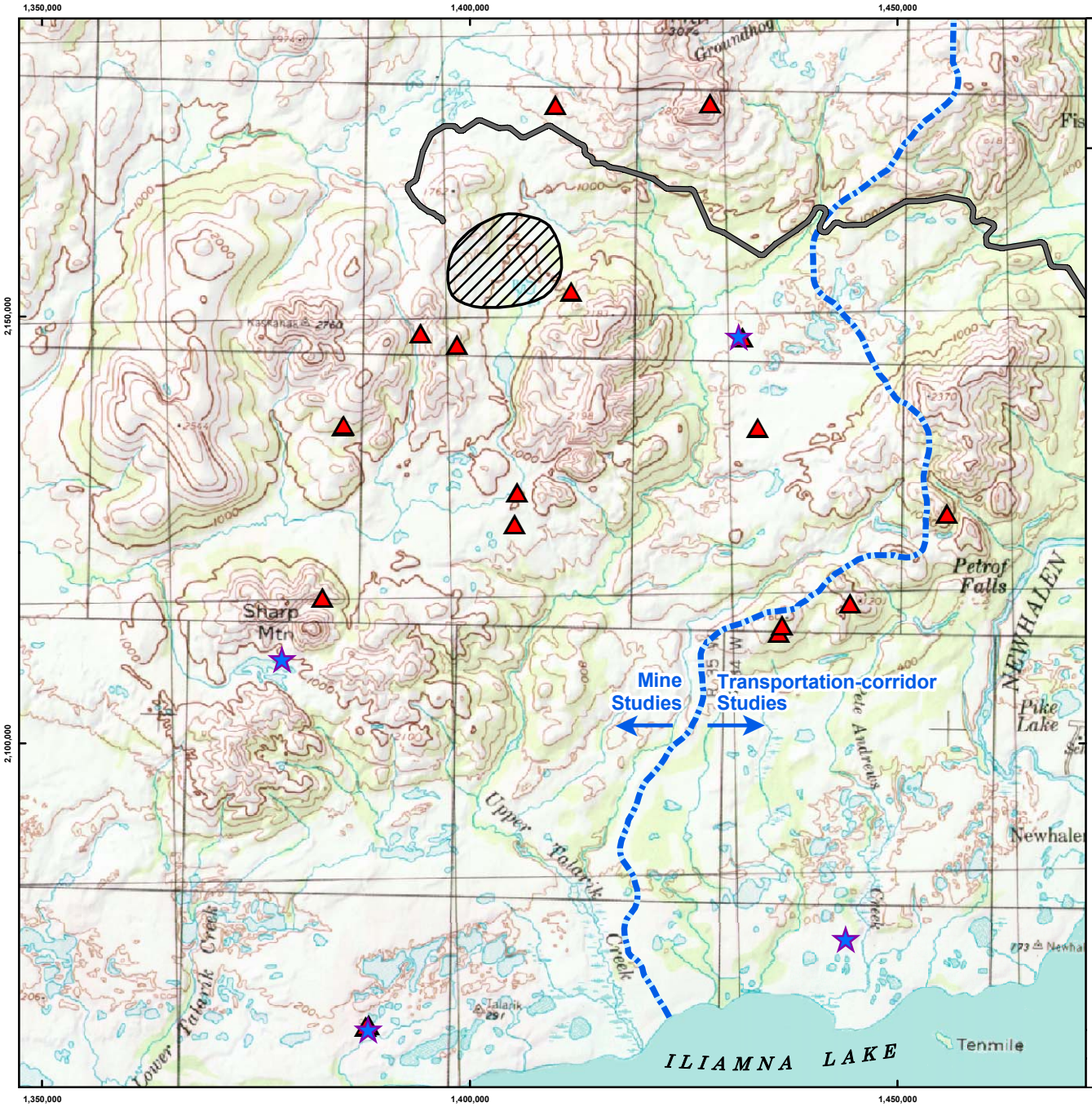

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Figure N-1.13
Brown Bear and Wolf Dens, Mine Study Area, 2004–2006

Preliminary Data Only
Do Not Cite or Quote

Legend

- Brown Bear Den
- Wolf Den
- General Deposit Location
- Possible Road Alignment

Miles 0 1 2 3 4 5
Kilometers 0 2 4 6 8
N

Scale 1:220,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

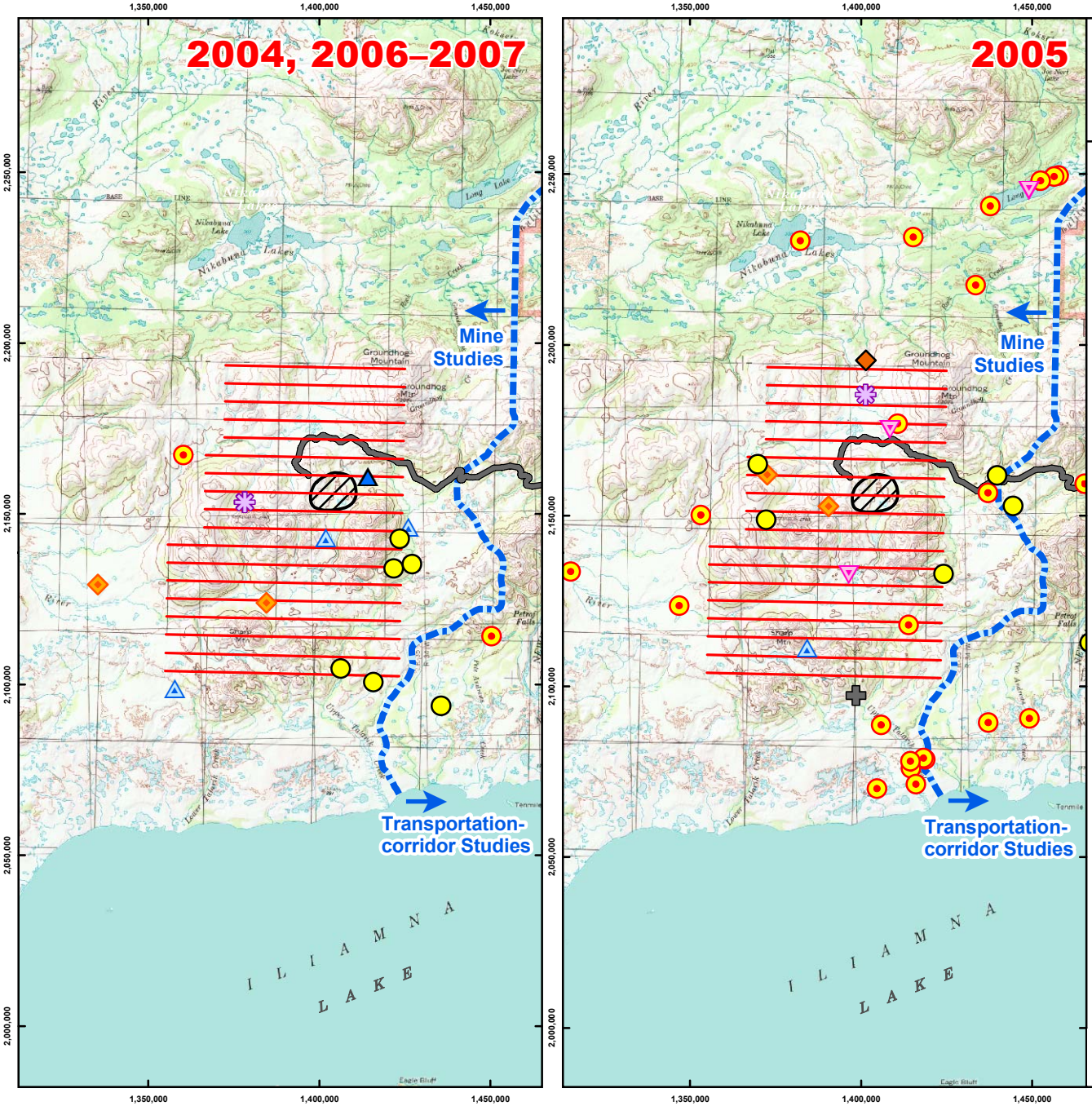

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Figure N-1.14
Observations of Other Mammals, Mine Study Area, 2004–2007

Preliminary Data Only
Do Not Cite or Quote

Legend

	Large Mammal Surveys	Other Surveys
Moose	●	●
Red Fox	◆	◆
River Otter		▽
Tundra Hare		✚
Wolf	▲	△
Wolverine		✱

Aerial-survey Transect
General Deposit Location
Possible Road Alignment

Miles: 0 2 4 6 8 10 12
Kilometers: 0 5 10 15 20
Scale 1:550,000
N

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

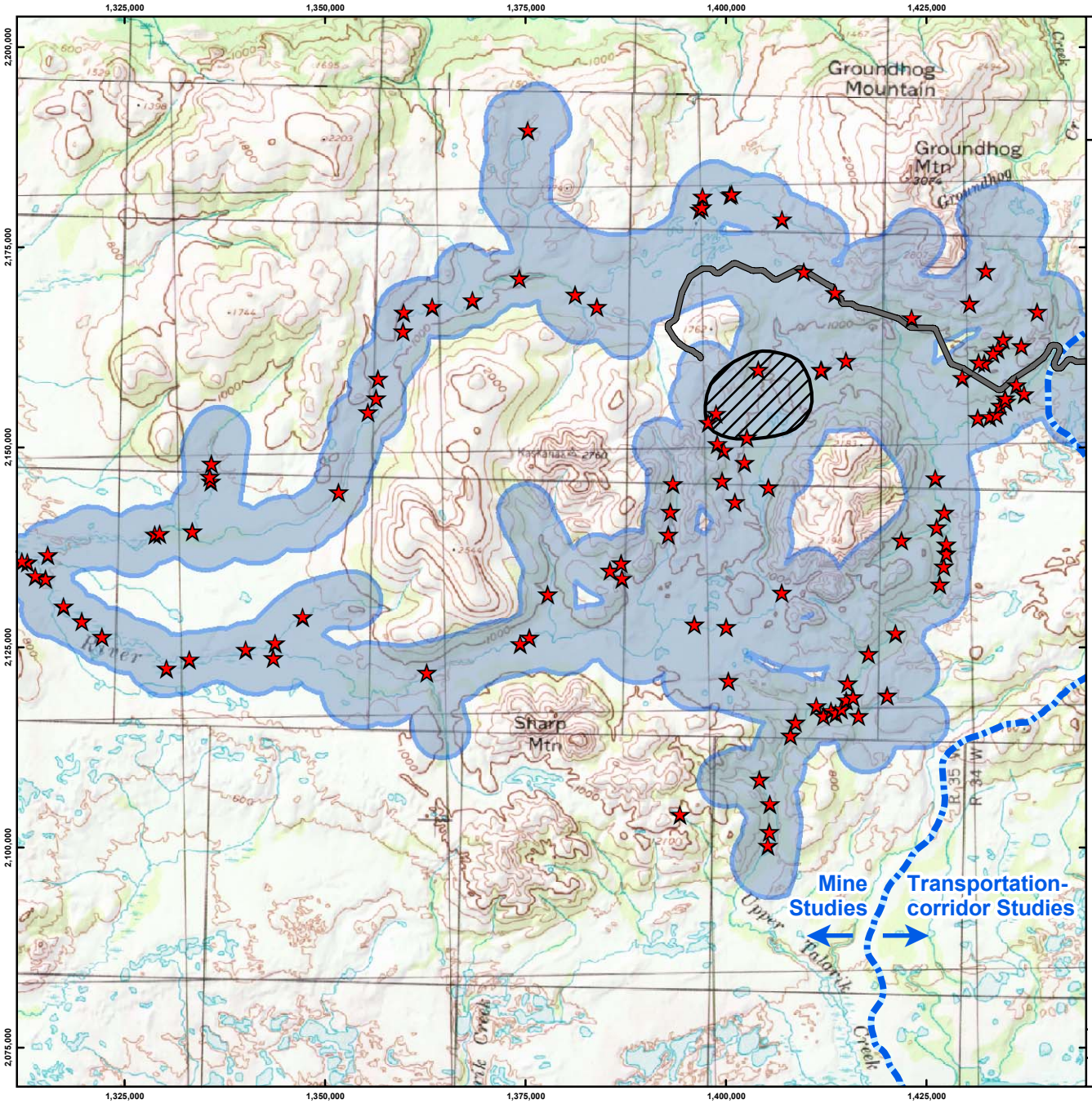

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Figure N-1.15
Active Beaver Colonies, Mine Study Area, October 2005

Preliminary Data Only
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Legend

- Beaver Colony
- Survey Area
- General Deposit Location
- Possible Road Alignment

Miles 0 1 2 3 4 5
Kilometers 0 2 4 6 8
N

Scale 1:235,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

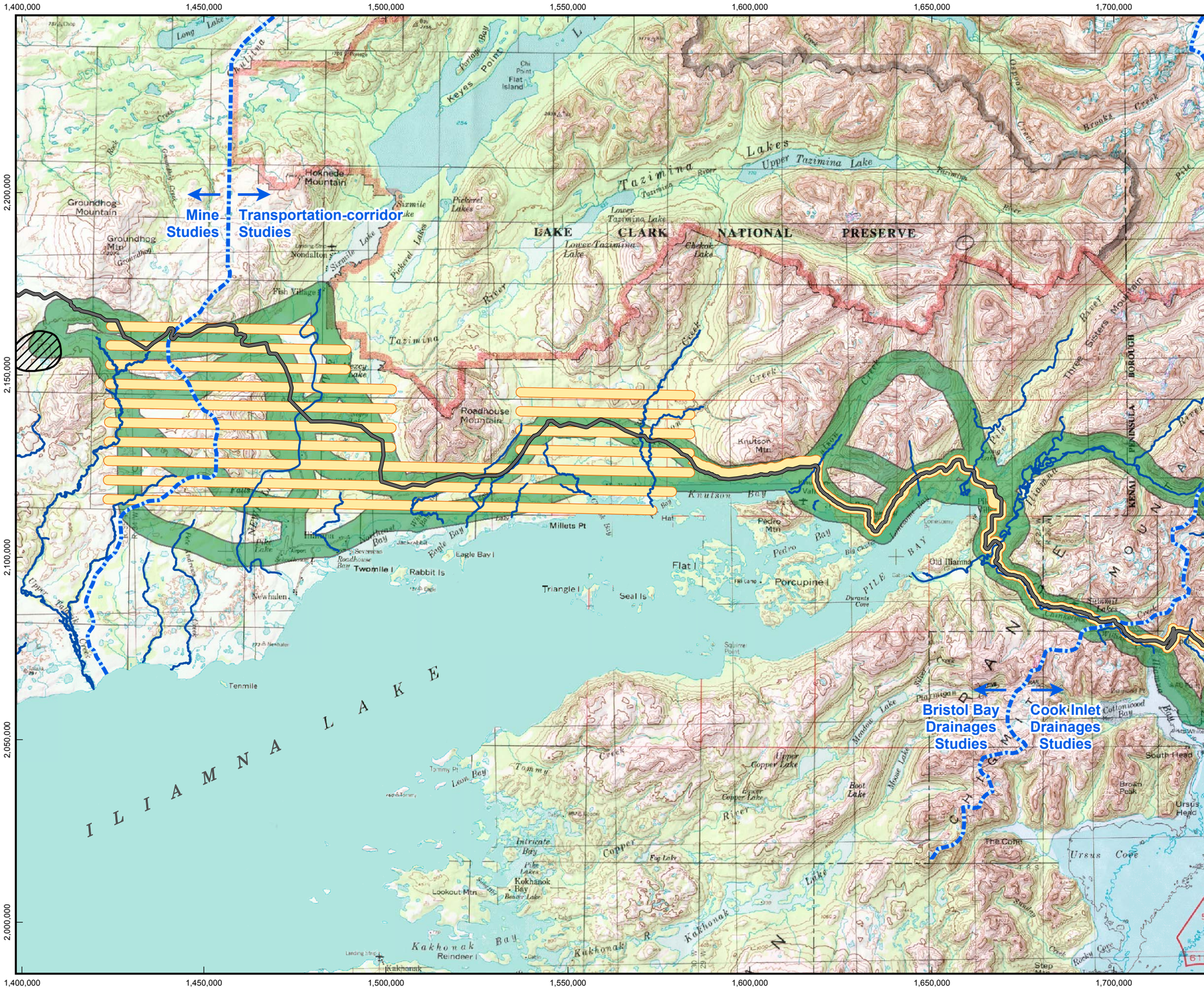

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Figure N-1.16
Survey Areas for Large Mammals, Transportation Corridor, Bristol Bay Drainages, 2004–2006

Preliminary Data Only
Do Not Cite or Quote

Legend

- 2004 Survey Area
- August 2004 Stream Survey
- 2005–2006 Survey Area
- General Deposit Location
- Possible Road Alignment

Scale 1:325,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

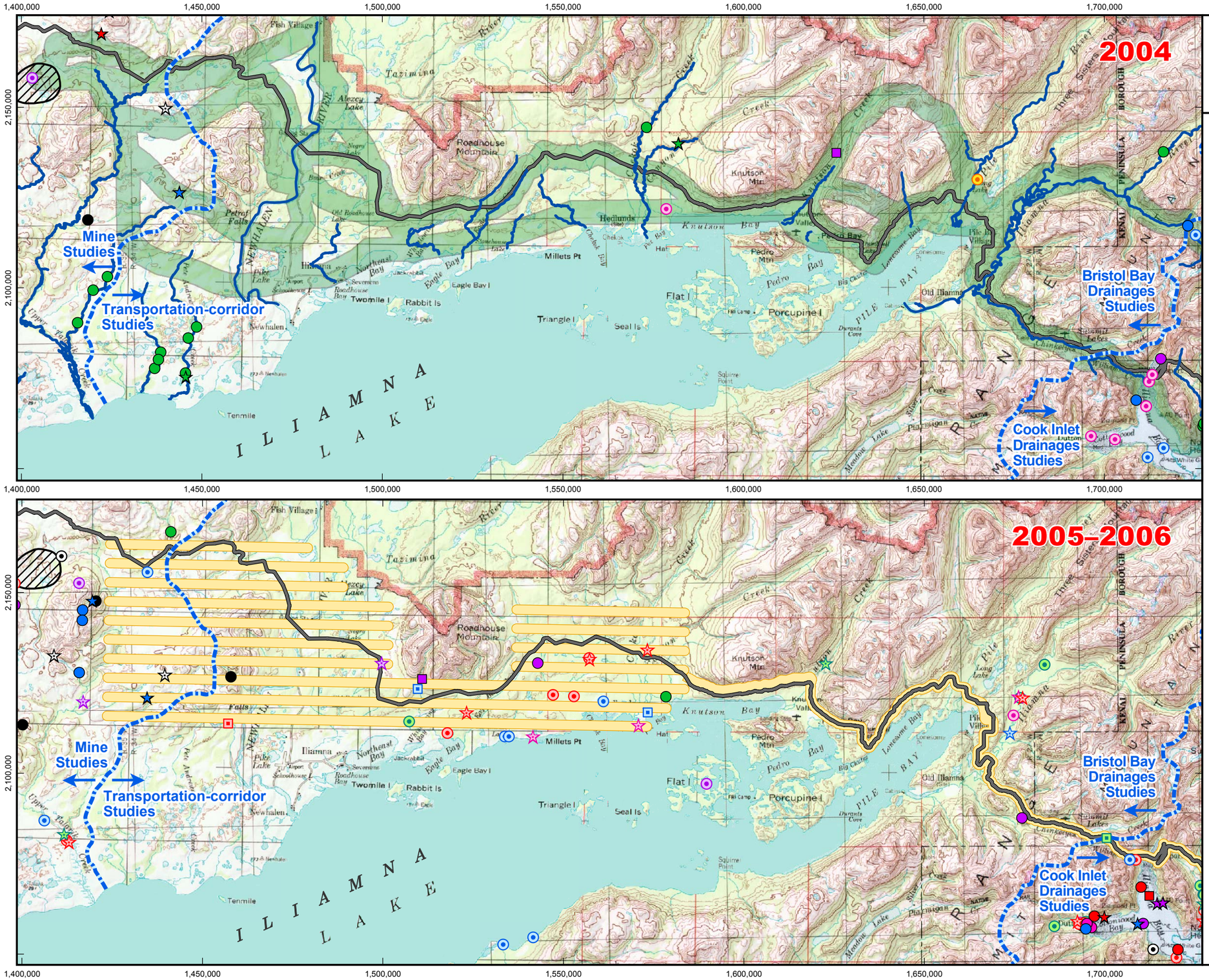

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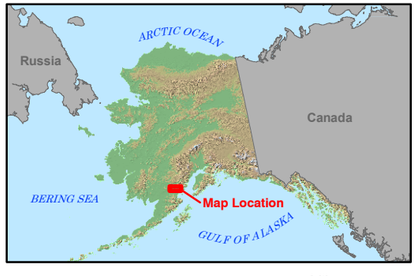
Figure N-1.17
Bear Observations, Transportation Corridor, Bristol Bay Drainages, 2004–2006

Preliminary Data Only
Do Not Cite or Quote

Legend

	Large Mammal Surveys		Other Surveys
	Brown Bear w/ cubs	Brown Bear w/o cubs	Black Bear w/o cubs
April		●	
May	★	★ ●	■
June	★	★ ●	■
July	★	★ ●	■ ■
August	★	★ ●	■
September	★	★ ●	
October	★	★ ●	

- 2004 Survey Area
- August 2004 Stream Survey
- 2005–2006 Survey Area
- General Deposit Location
- Road Alignment

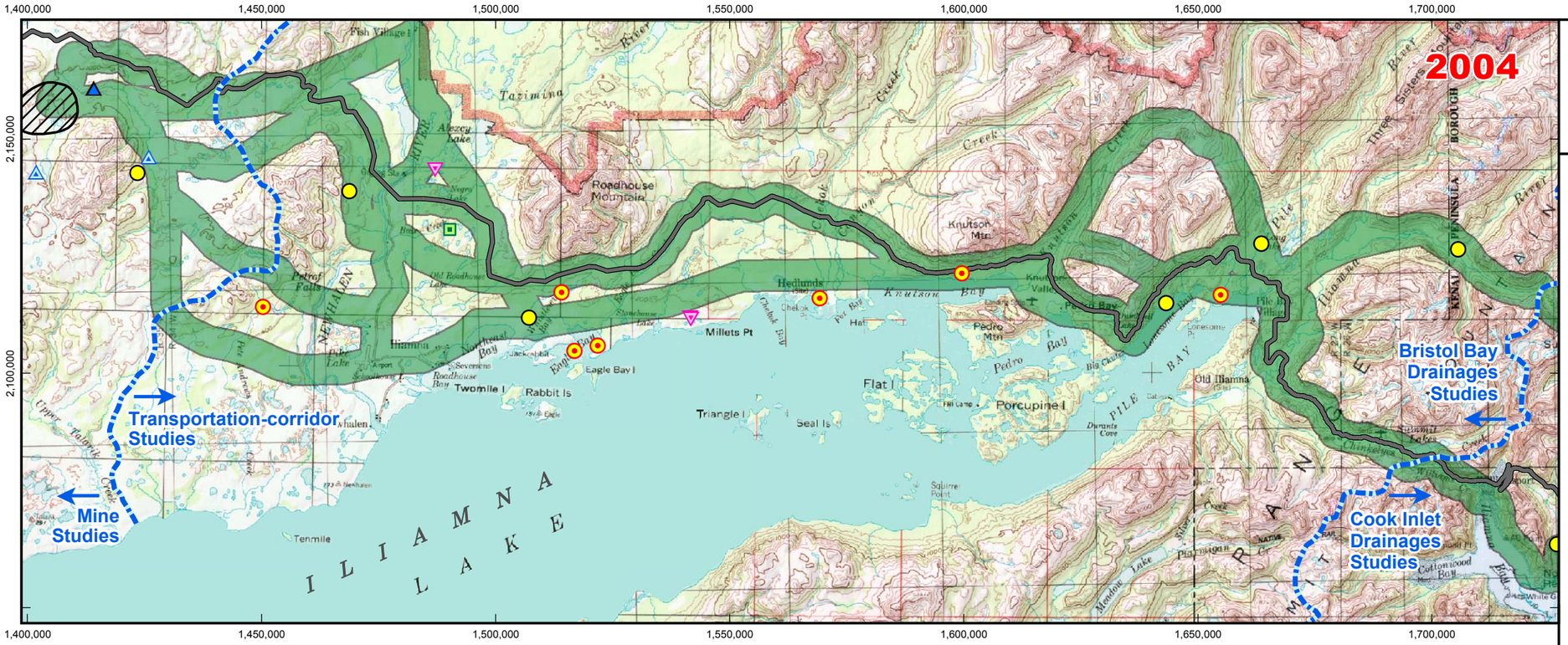


Miles: 0 2 4 6 8 10
Kilometers: 0 2 4 6 8 10 12 14 16

N

Scale 1:325,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum



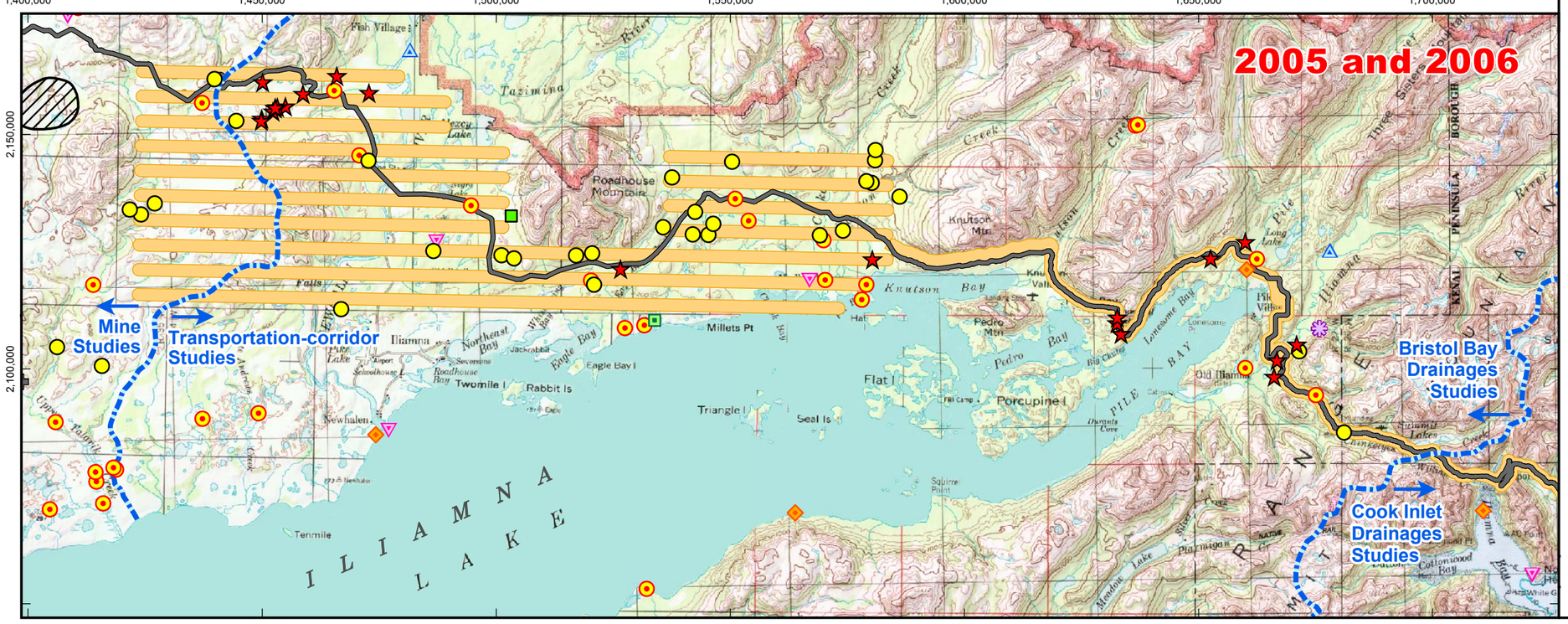


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Figure N-1.18
Observations of Moose and Other Mammals, Transportation Corridor, Bristol Bay Drainages, 2004–2006

Preliminary Data Only
Do Not Cite or Quote

Legend

	Large Mammal Surveys	Other Surveys
Moose	●	●
Coyote	■	■
Red Fox		◆
Beaver Colony	★	
River Otter		▽
Wolf	▲	△
Wolverine		✿

- 2004 Survey Area
- 2005–2006 Survey Area
- General Deposit Location
- Possible Road Alignment

Miles: 0 2 4 6 8 10
Kilometers: 0 5 10 15

N

Scale 1:325,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum