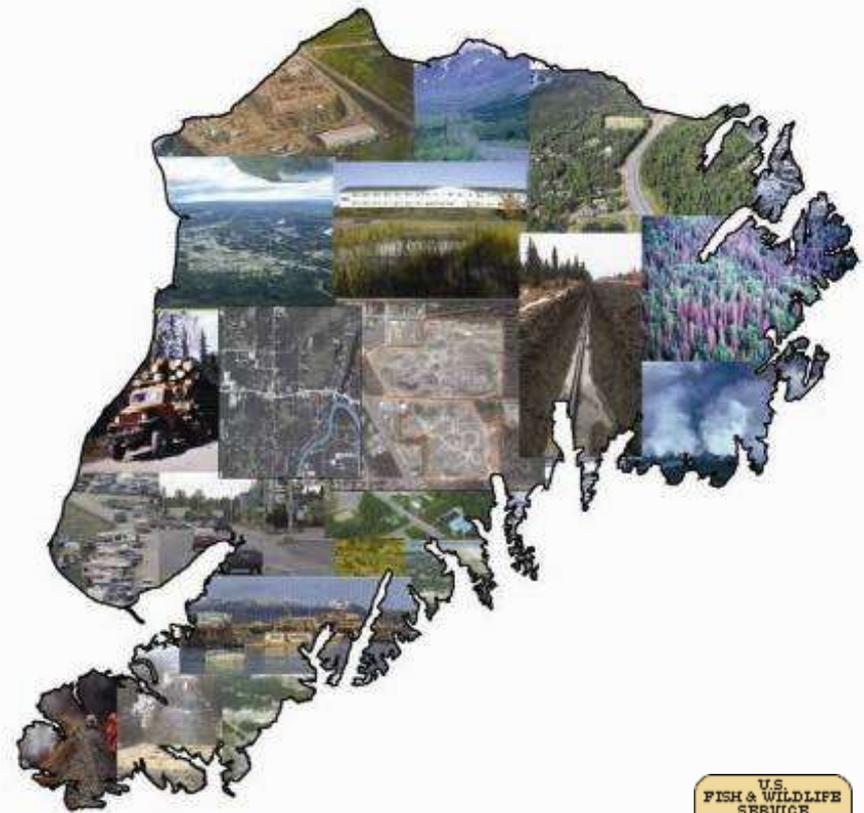


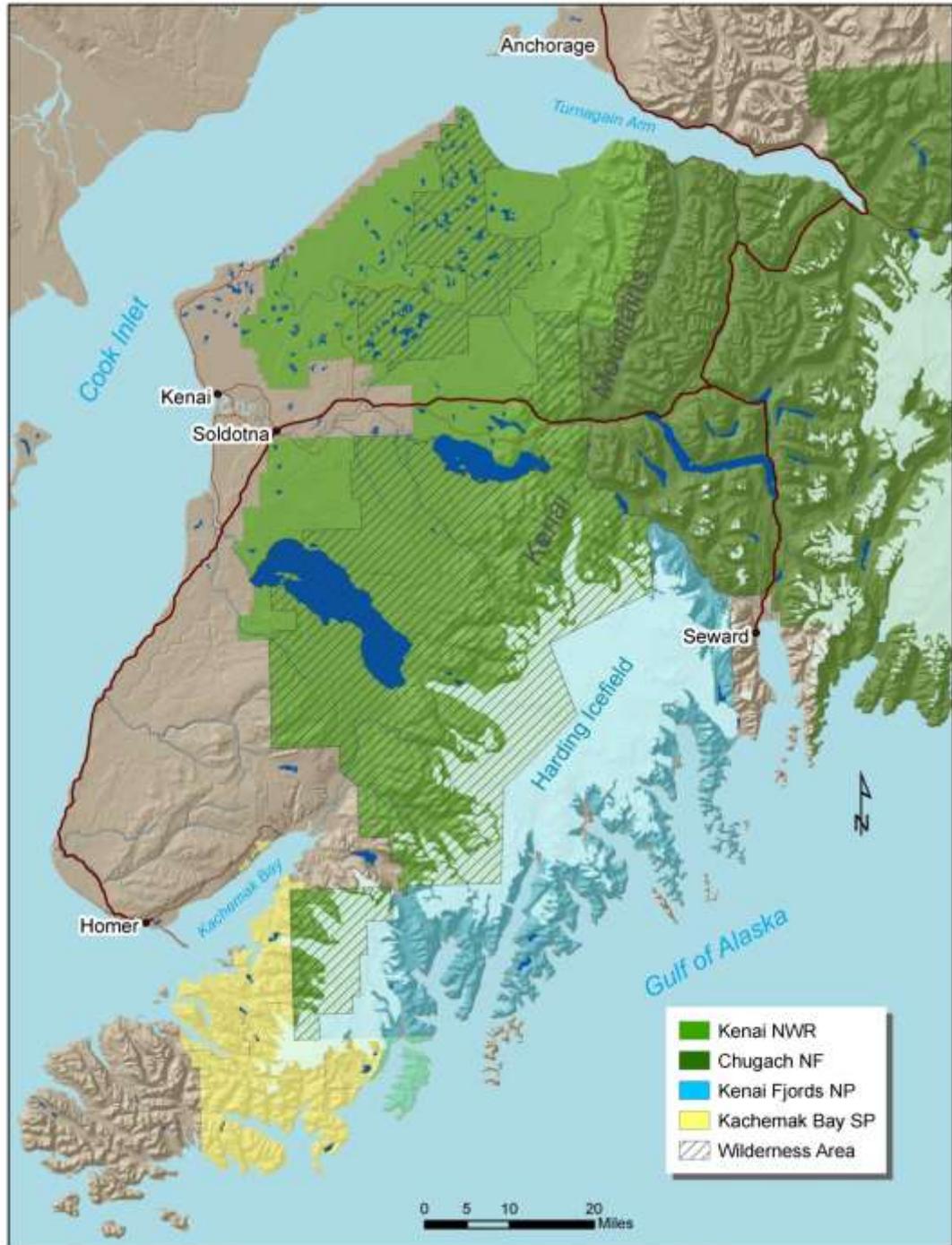
Kenai Mountains to Sea

Maintaining landscape connectivity on the rapidly changing Kenai Peninsula



John Morton









05.15.2007



3230B

6/14/2004 9:



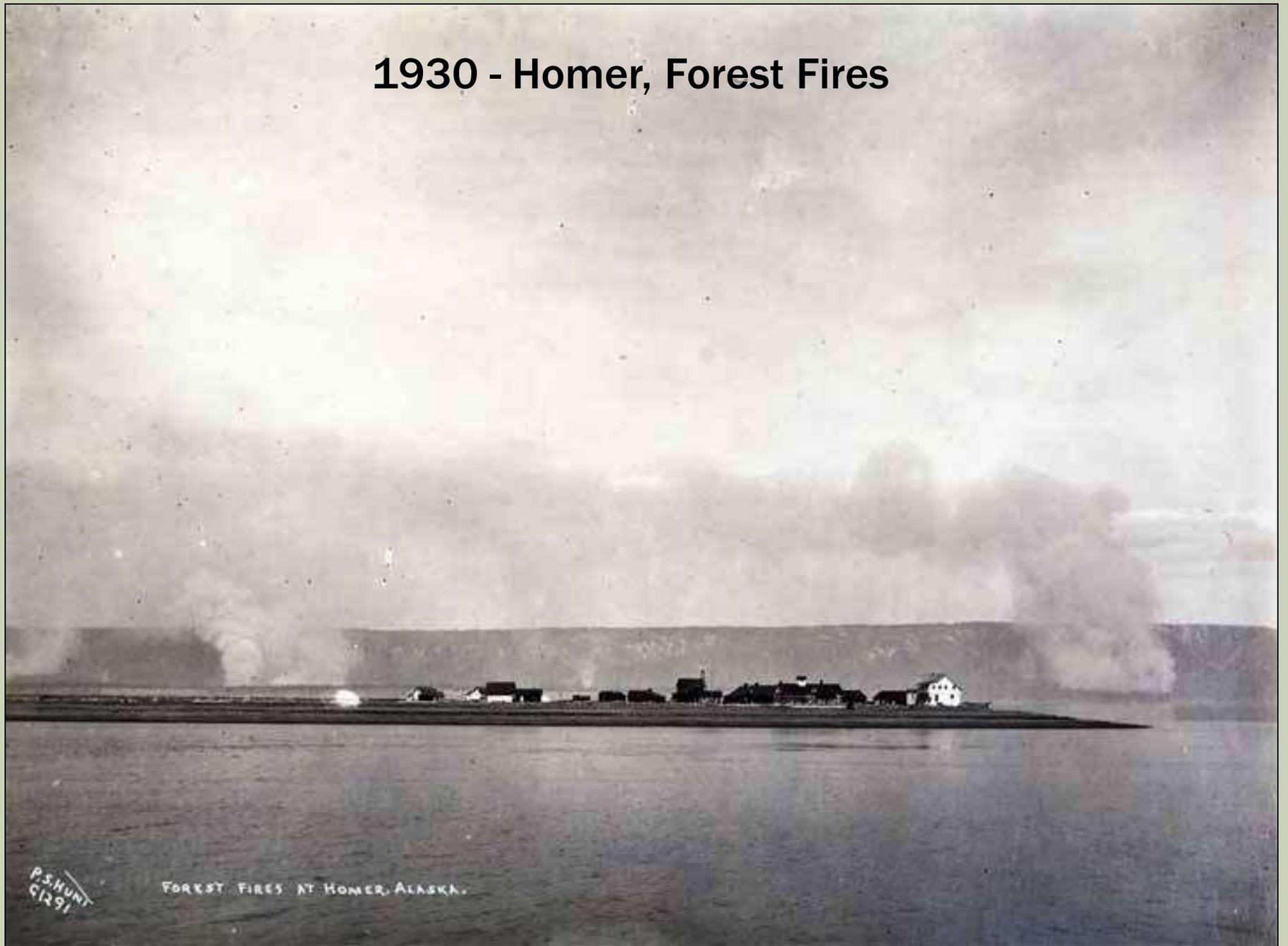








1930 - Homer, Forest Fires



P.S. HUNT
61291

FOREST FIRES AT HOMER, ALASKA.

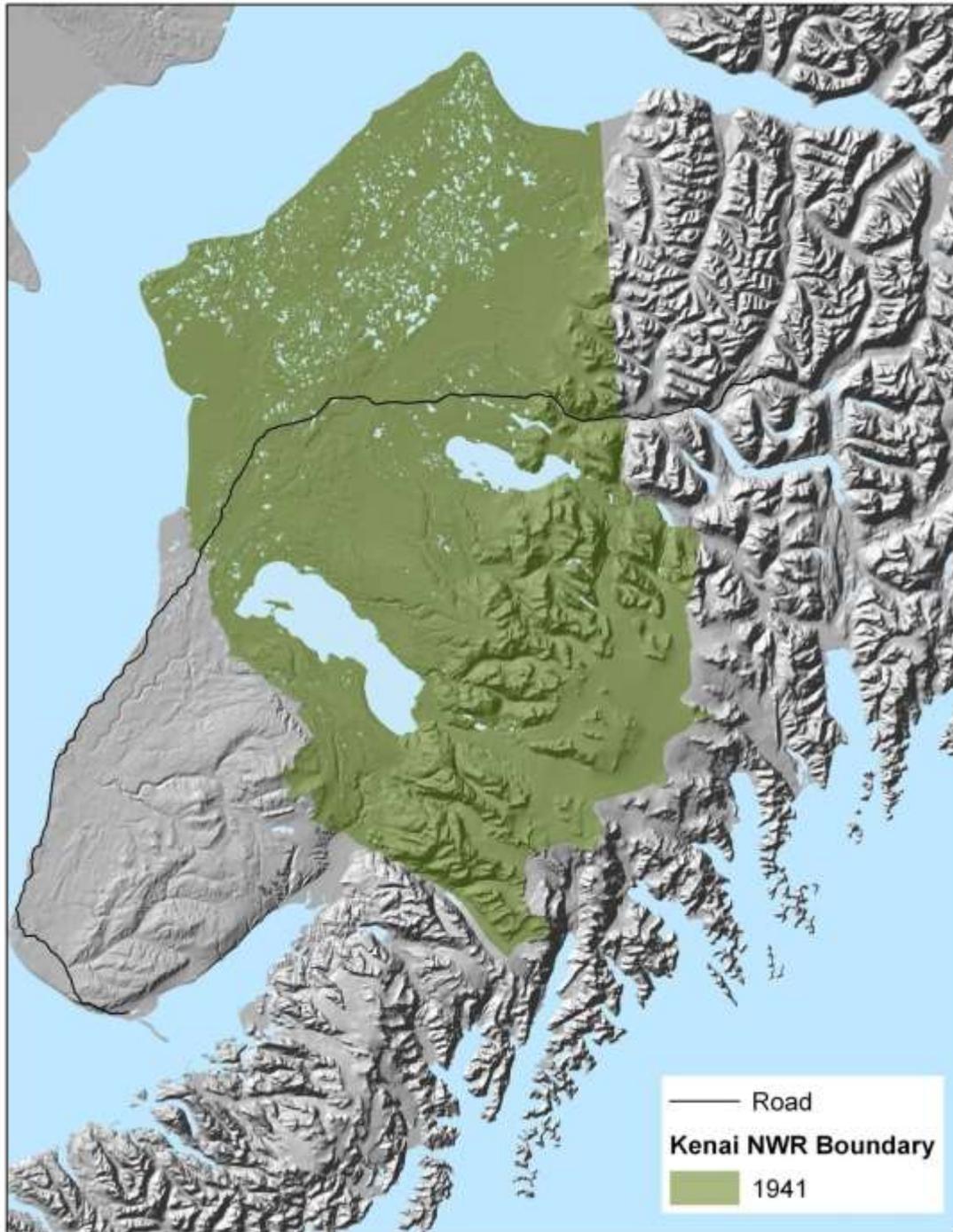
1941

**Kenai National Moose Range
established
2.1 million acres**



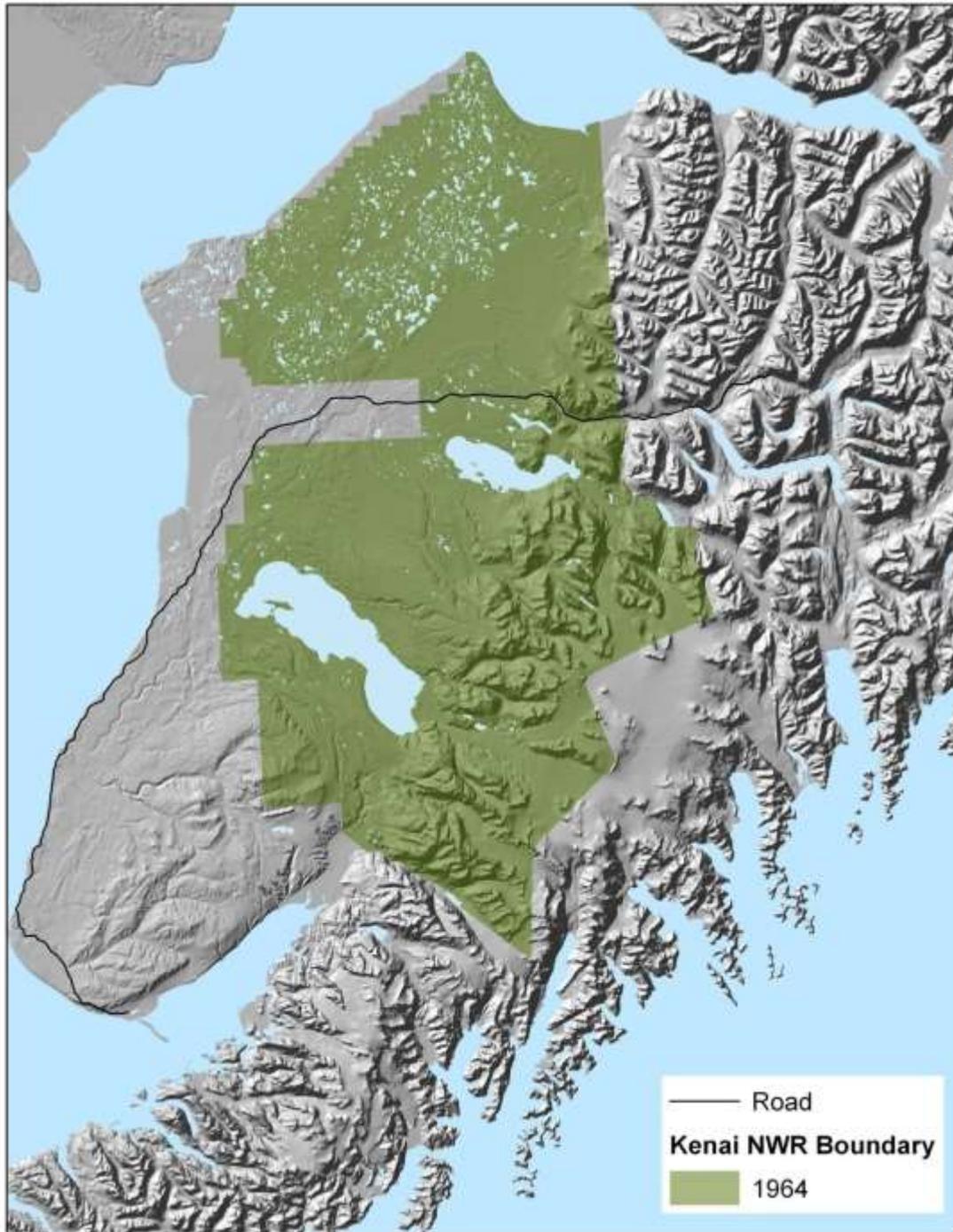
1951

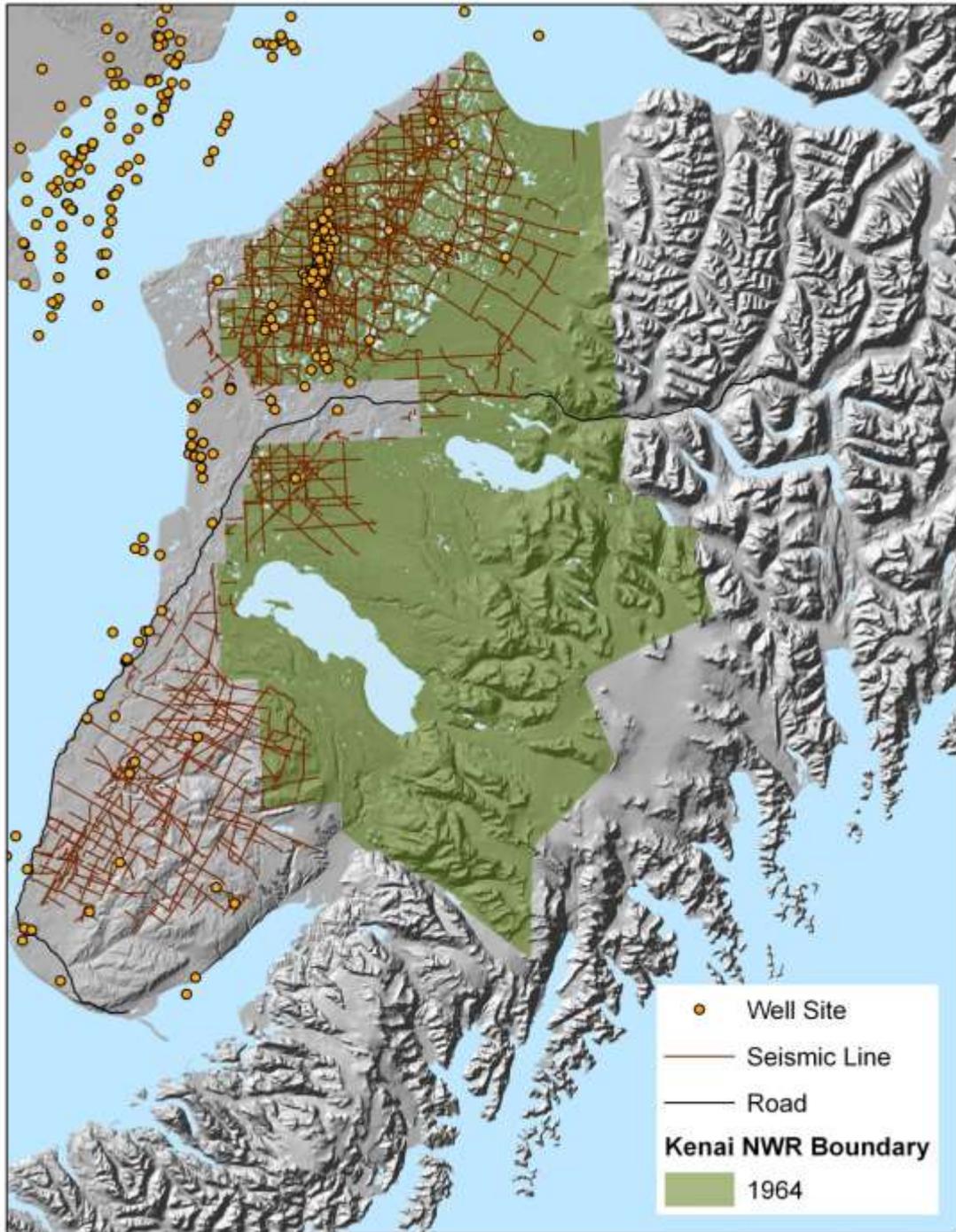
Sterling Highway completed



1964

- ✓ 1957 Discovery Well
- ✓ 3 townships removed to create 6 mile-wide Sterling development corridor
- ✓ boundary pulled back from Cook Inlet

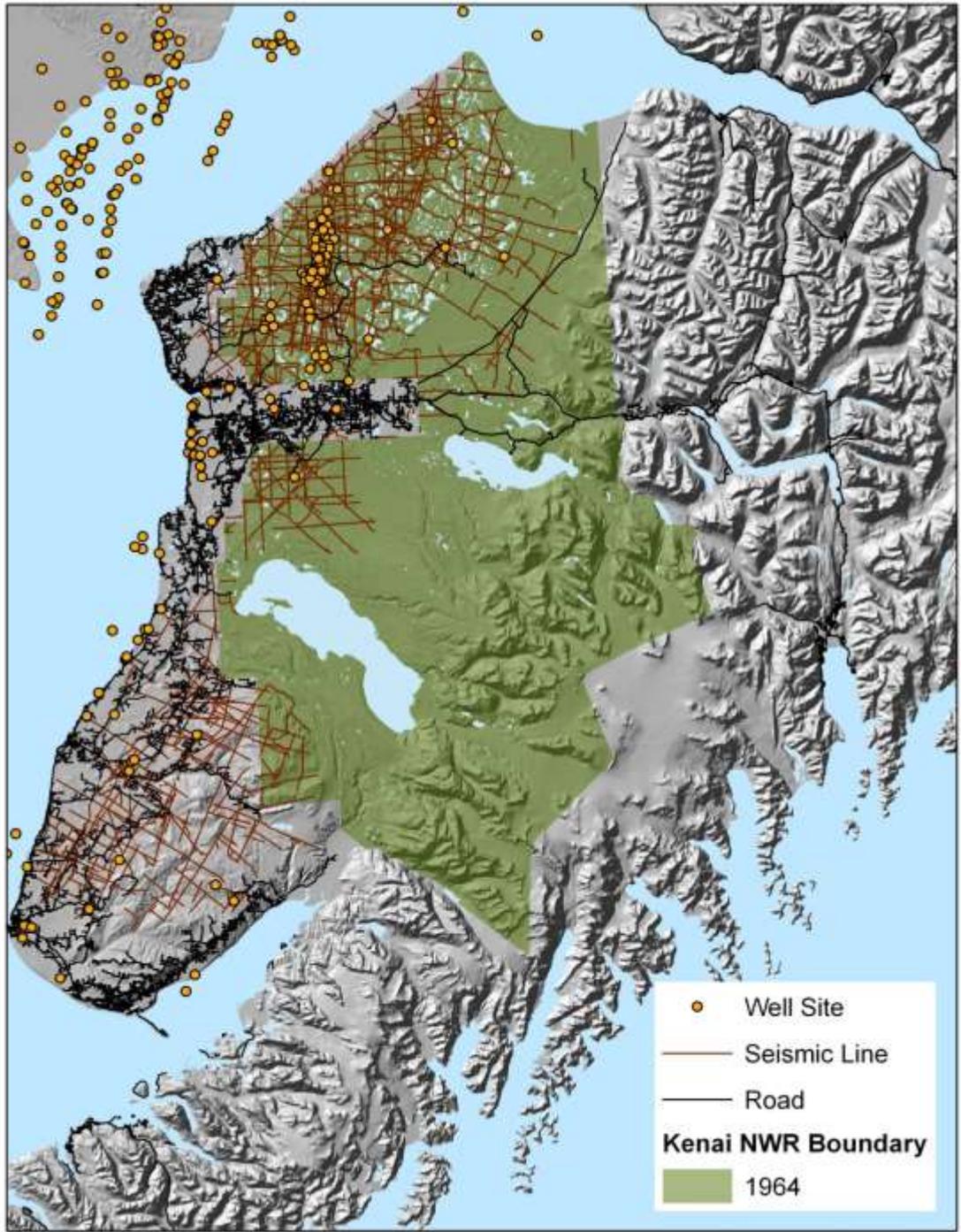




Commercial oil and gas extraction

- ✓ 13,252 acres of active leases
- ✓ 104 oil & gas pads, 188 wells
- ✓ >90 buildings
- ✓ 71 miles of pipelines
- ✓ 94 miles of roads
- ✓ >1,800 miles of seismic lines





Roads

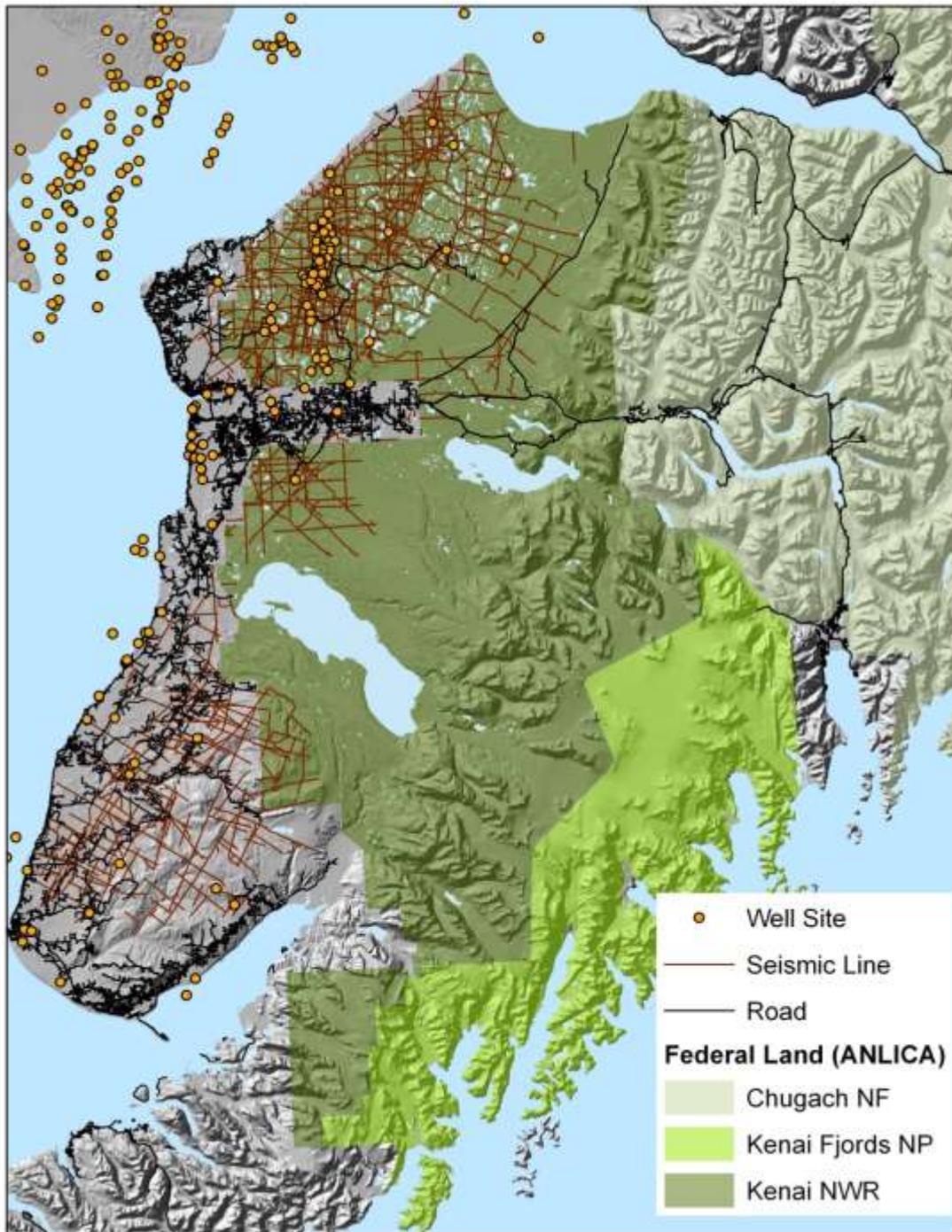
✓ 3,016 miles of road, crossing anadromous streams at 381 locales

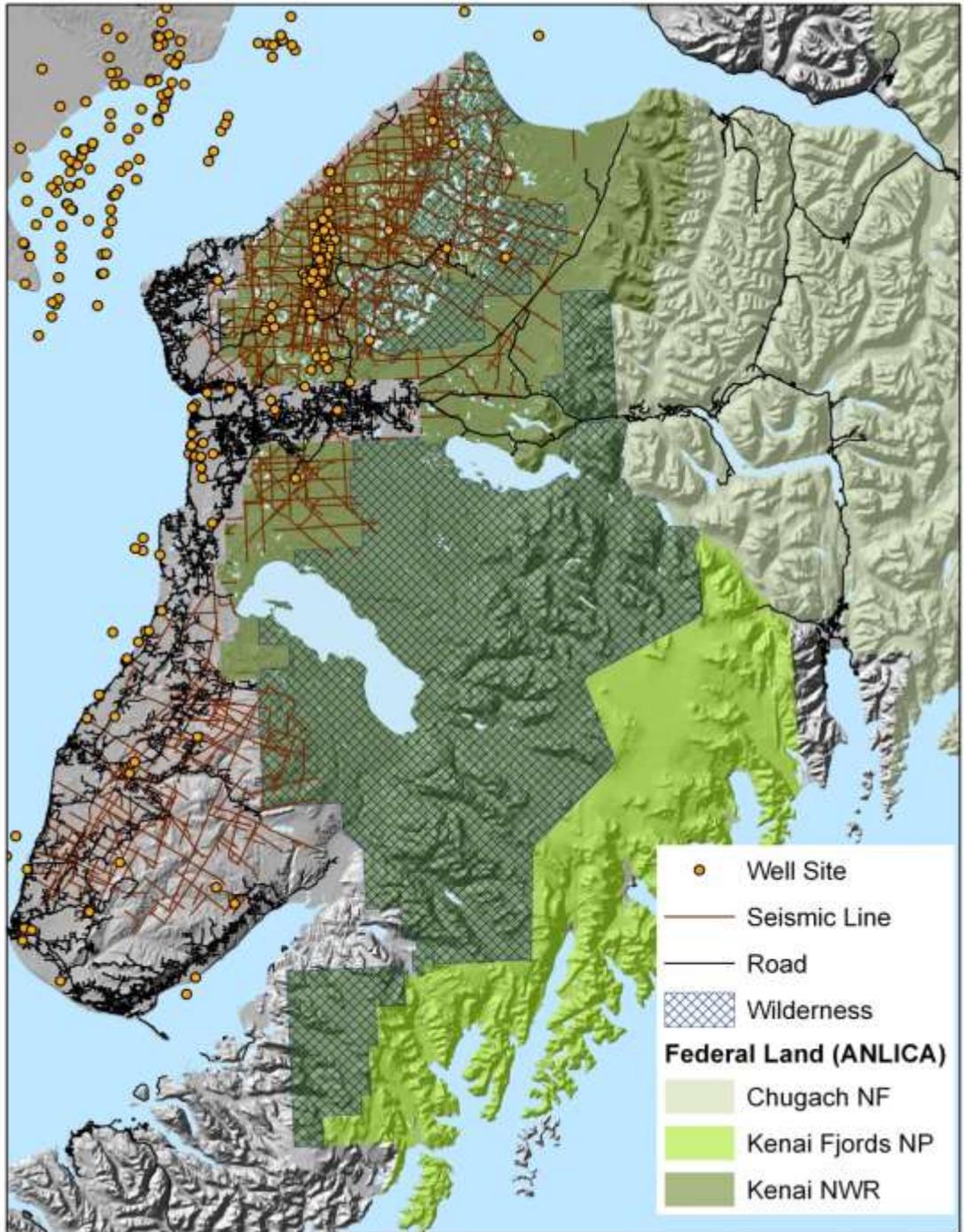
✓ >1 million vehicles on 22 miles of Sterling Highway that bisects KENWR
= 2 vehicles/minute/day
= 250 moose-vehicle collisions/yr



1980

ANILCA establishes Federal conservation units in Alaska





Congressionally-designated Wilderness

1.3 million acres

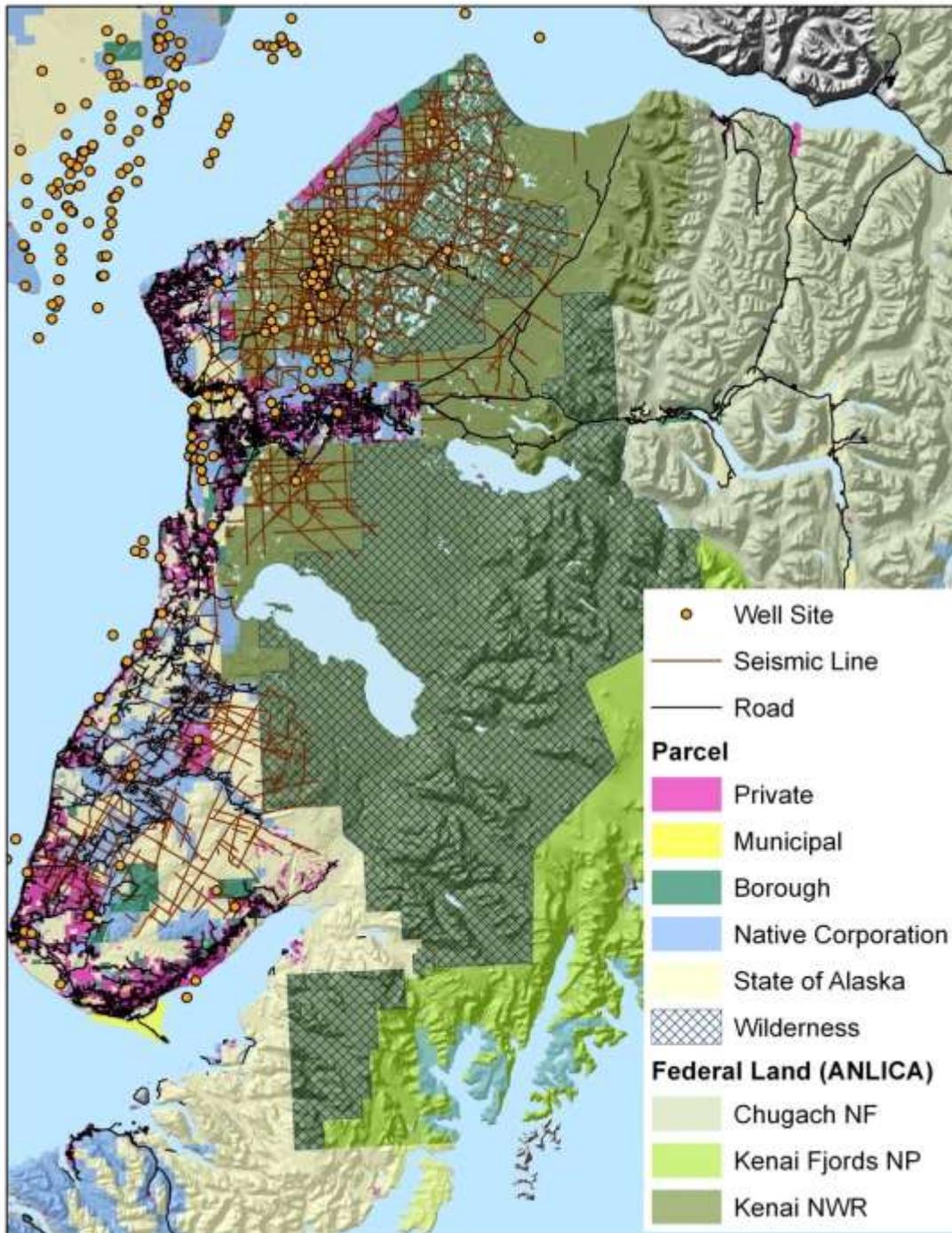
- Andrew Simons**
 ✓ 295 mile perimeter
 ✓ 1.1 million acres

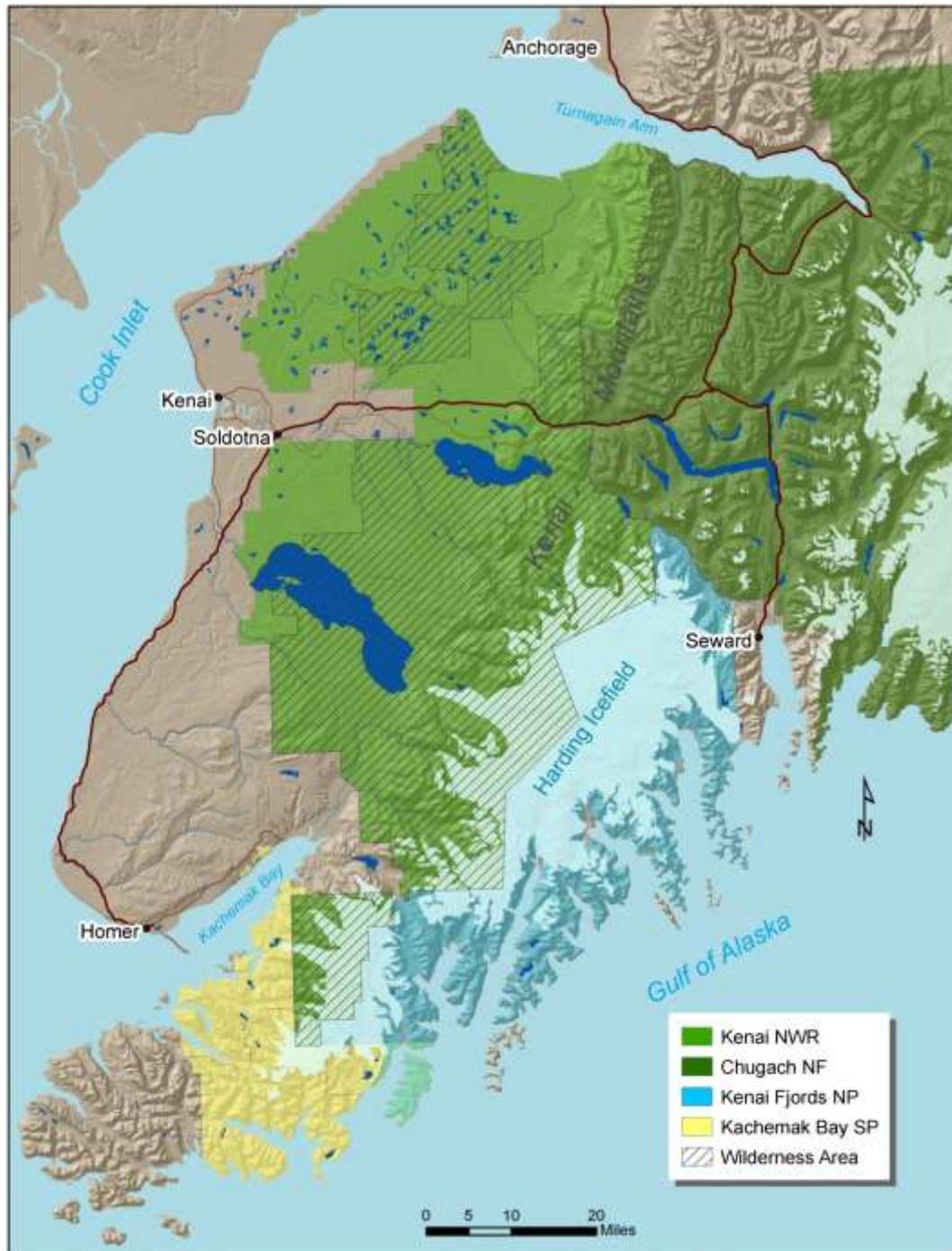
- Dave Spencer**
 ✓ 138 mile perimeter
 ✓ 187,000 acres

- Mystery Creek**
 ✓ 40 mile perimeter
 ✓ 46,000 acres

2010

- ✓ ~56,000 people in Kenai Peninsula Borough
- ✓ 238,800 acres of private lands divided into 55,000 parcels
- ✓ 2.2% human population growth
= 1,000 new residents/year
= 1.5 housing units/day
- ✓ 175 miles wildland-urban interface

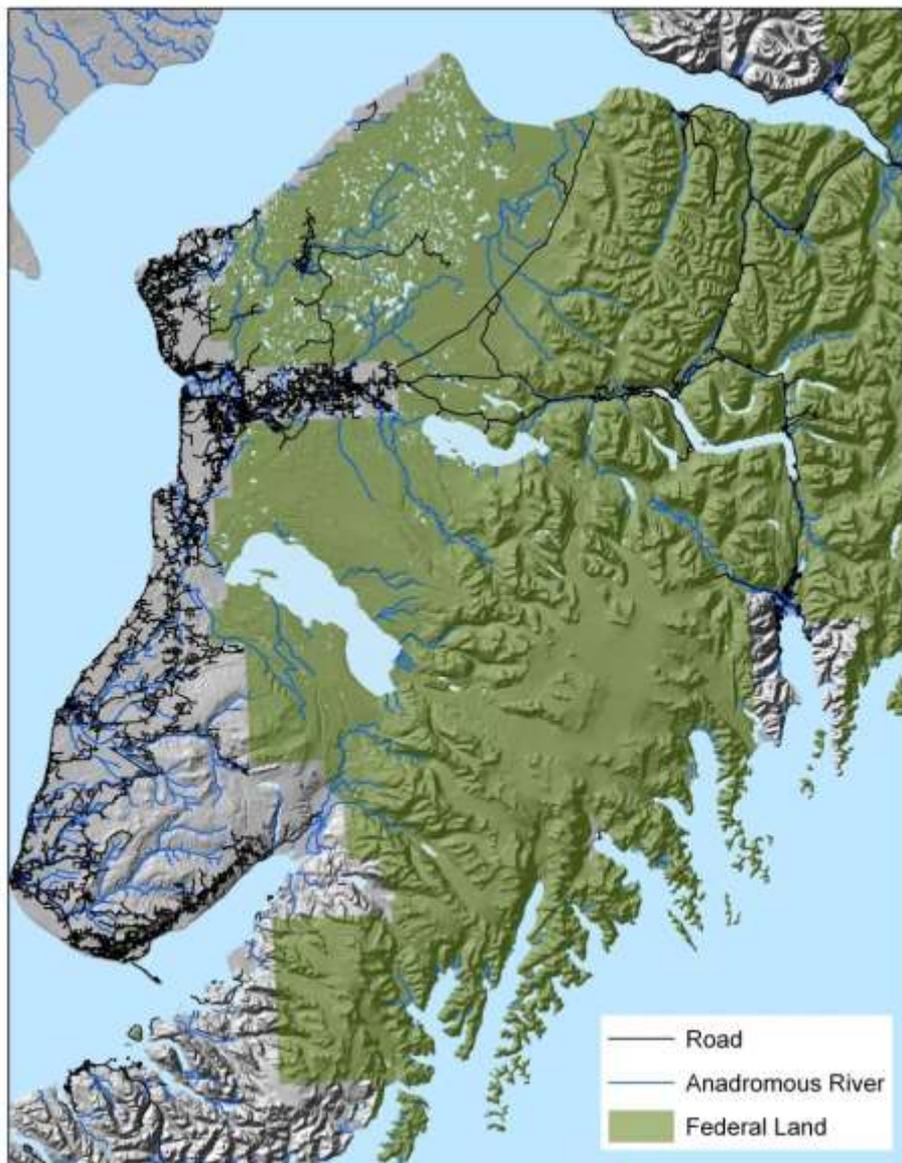




Federal lands = 4.37million acres (73%)

Nonfederal lands = 1.65 million acres (27%)

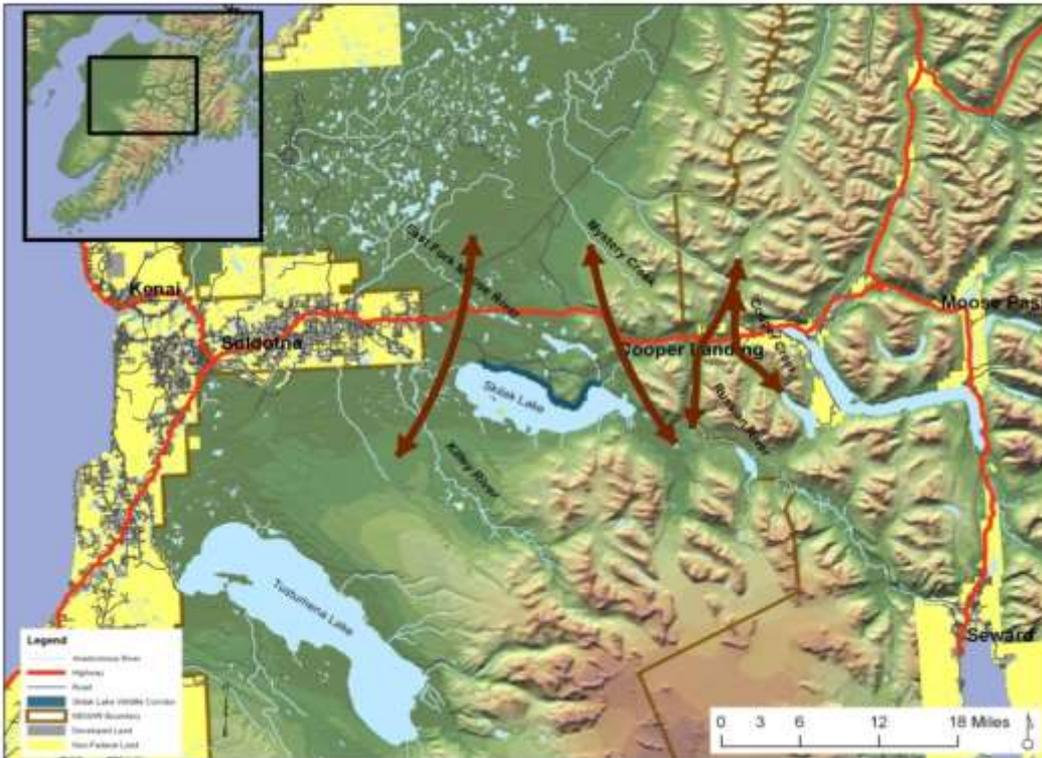
Unique geography of development on the western Kenai makes most streams vulnerable



**377 anadromous stream outlets
(1784 miles)**

- ✓ 20 interjurisdictional = 990 miles
(392 miles in private land)
- ✓ 140 on private lands = 520 miles
- ✓ 217 on federal estate = 274 miles

Unique geography of development on the western Kenai makes most streams vulnerable and our landscape bisected



- ✓ 65 miles from Seward Highway to Kenai River mouth
- ✓ <20% available for north-south wildlife movement

Some of our watersheds are ecologically compromised

Of 126 watersheds...

- 99 have anadromous streams representing 1,785 miles
- 44 have anadromous streams that cross roads, of which 30 have inadequate culverts
- 26 have reed canary grass
- 9 have northern pike
- 2 have Elodea



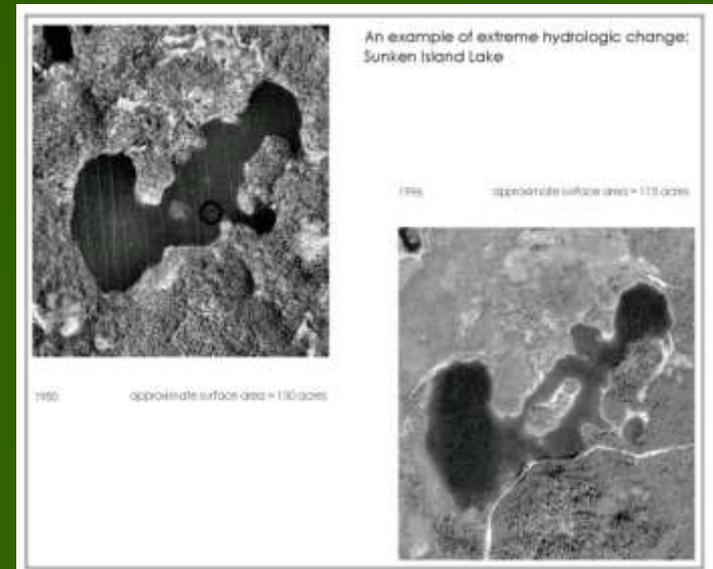


And what about rapid climate change?

Measured rates of climate change impacts on the Kenai Peninsula

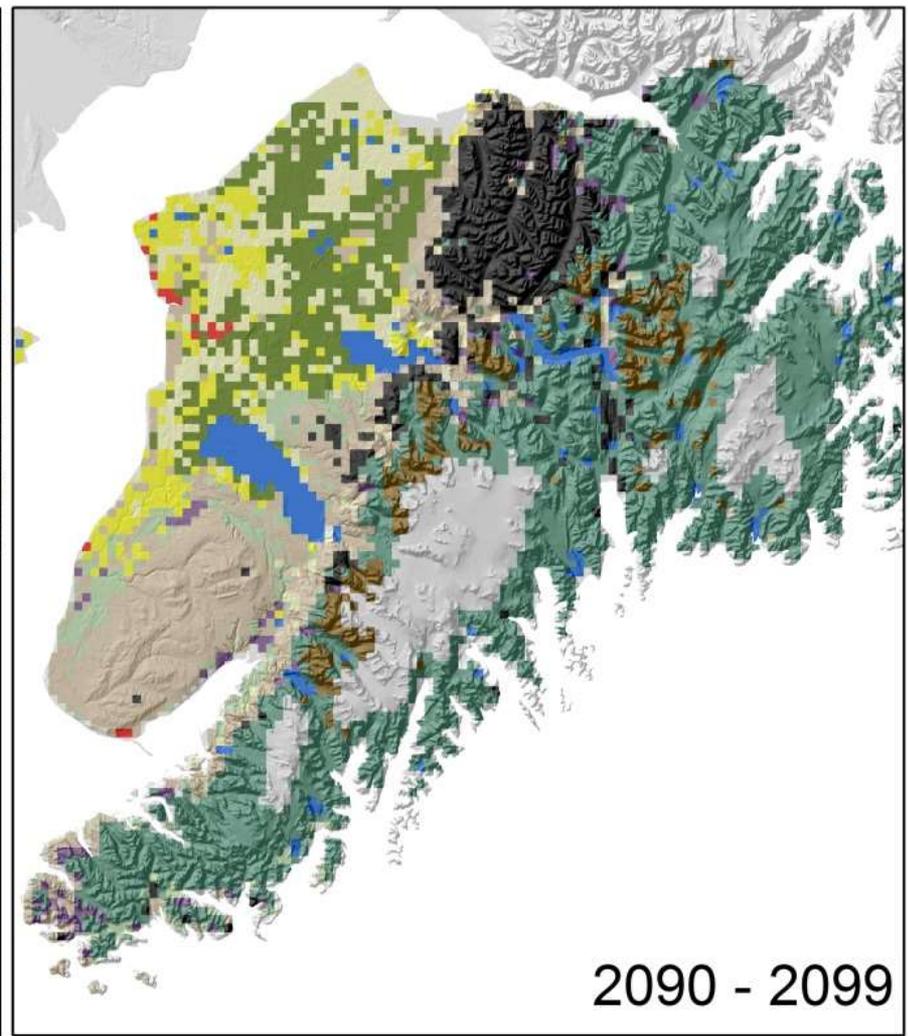
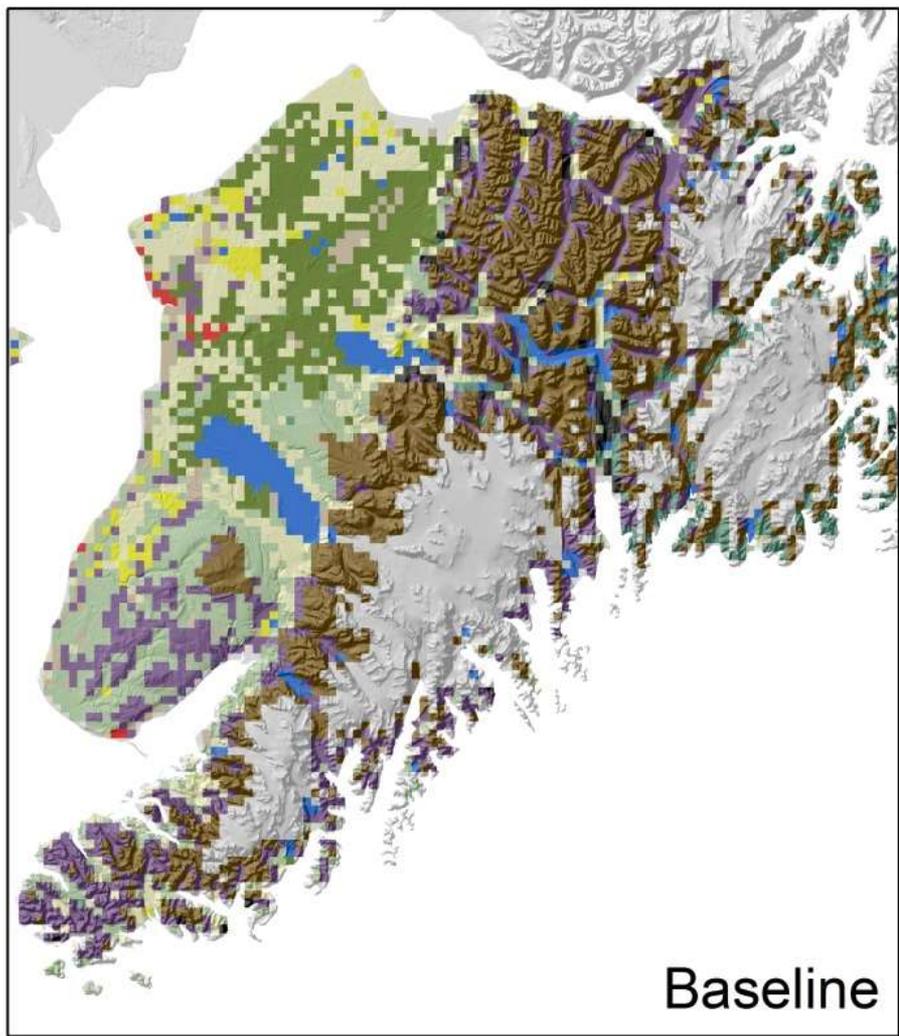


- available water (60% loss since 1968)
- wetlands (6 – 11% per decade since 1950)
- glaciers (5% surface area, 21 m elevation since 1950)
- + SB beetle outbreaks (triggered by 2 consecutive warm summers)
- + treeline (10 m per decade)
- △ species distributions
- △ wildfire (spring, grass)



Conversion of white/Lutz spruce forests to *Calamagrostis* savannah



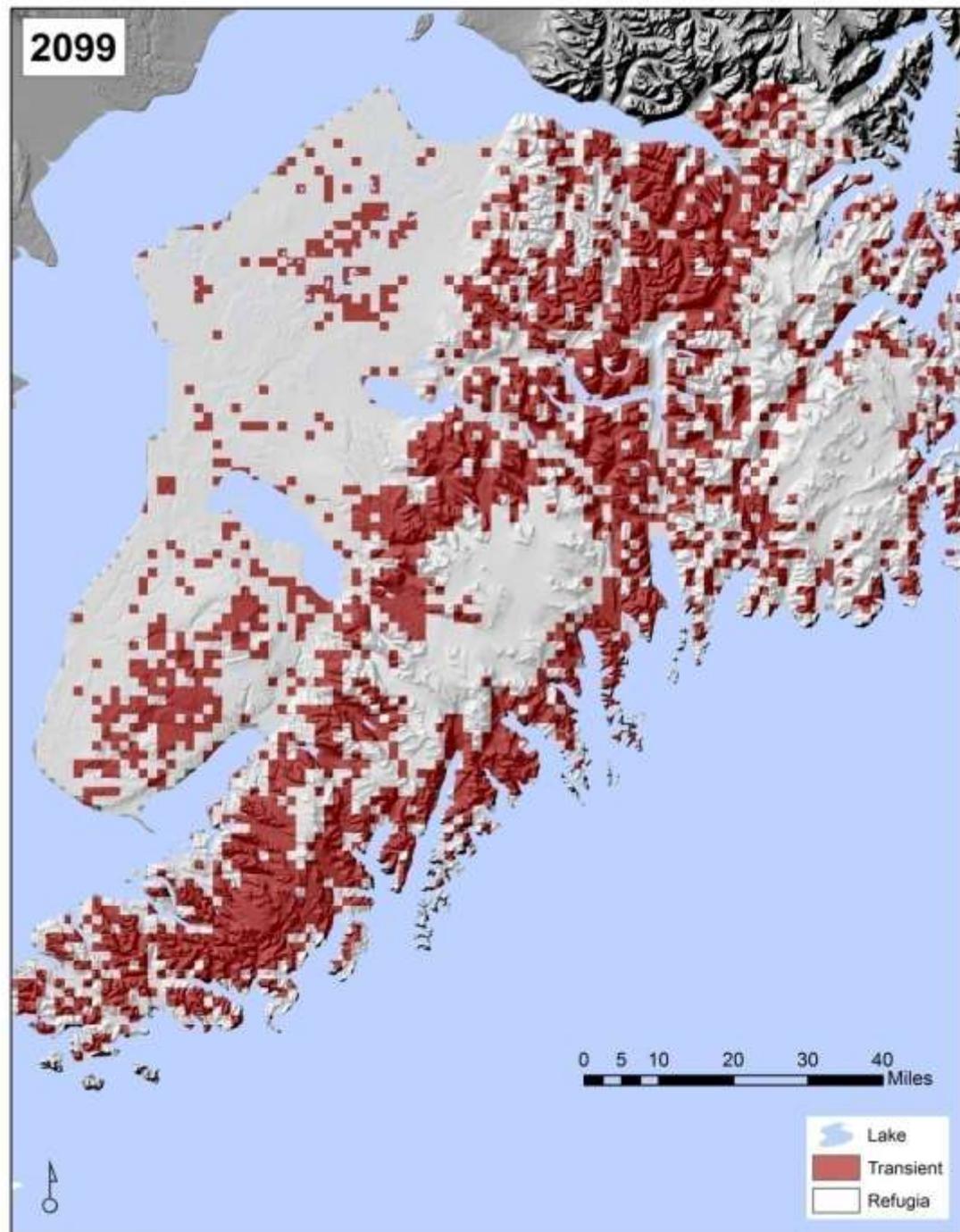


- | | | |
|--|---|--|
|  Alpine |  Herbaceous |  Mountain Hemlock |
|  Anthropogenic |  Ice |  Shrub |
|  Black Spruce |  Mixed Conifer |  Water |
|  Deciduous |  Mixed Forest |  White-Sitka Spruce |



37% of the Kenai Peninsula is forecasted to change landcover type by 2099!

- ✓ Eastern side shows **afforestation** of alpine (hemlock) and coast (Sitka spruce)
- ✓ Western side shows **deforestation** (white and black spruce), expanding grasslands



Kenai Mountains to Sea partnership



Kachemak Heritage Land Trust

Focused conservation for
Alaska's Kenai Peninsula



PACIFIC BIRDS
HABITAT JOINT VENTURE



Kenai Watershed Forum



GOAL

Promote resilience to rapid climate change and land development by ensuring maintenance of peninsula-wide connectivity into the future through working with willing landowners, agencies and tribal entities in a non-regulatory context

KENAI MOUNTAINS TO SEA

A Land Conservation Strategy
to Sustain Our Way of Life on the Kenai Peninsula



Kachemak Heritage Land Trust
Audubon Alaska
Cook Inlet Keeper
Kenai Watershed Forum
Pacific Coast Joint Venture
U.S. Fish and Wildlife Service

February 2015

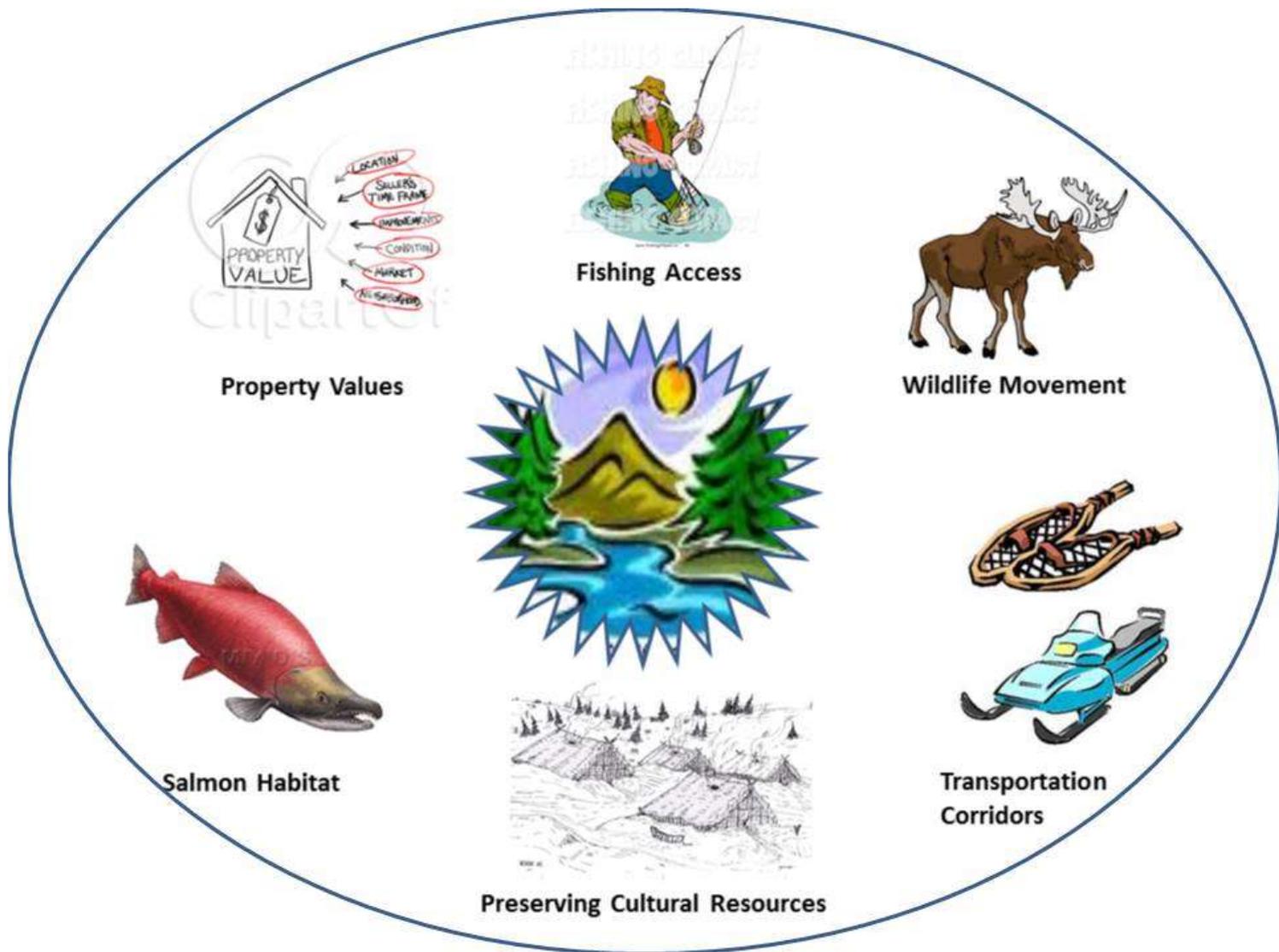
Other things being equal, conserving anadromous riparian corridors is smart...

- ✓ Saves salmonids
- ✓ Maintains hydrology
- ✓ Provides wildlife movement corridors
- ✓ Provides contiguous and linear green infrastructure
- ✓ Connects conservation estates
- ✓ And in a world of rapidly changing vegetation due to climate change, is the one sure bet.

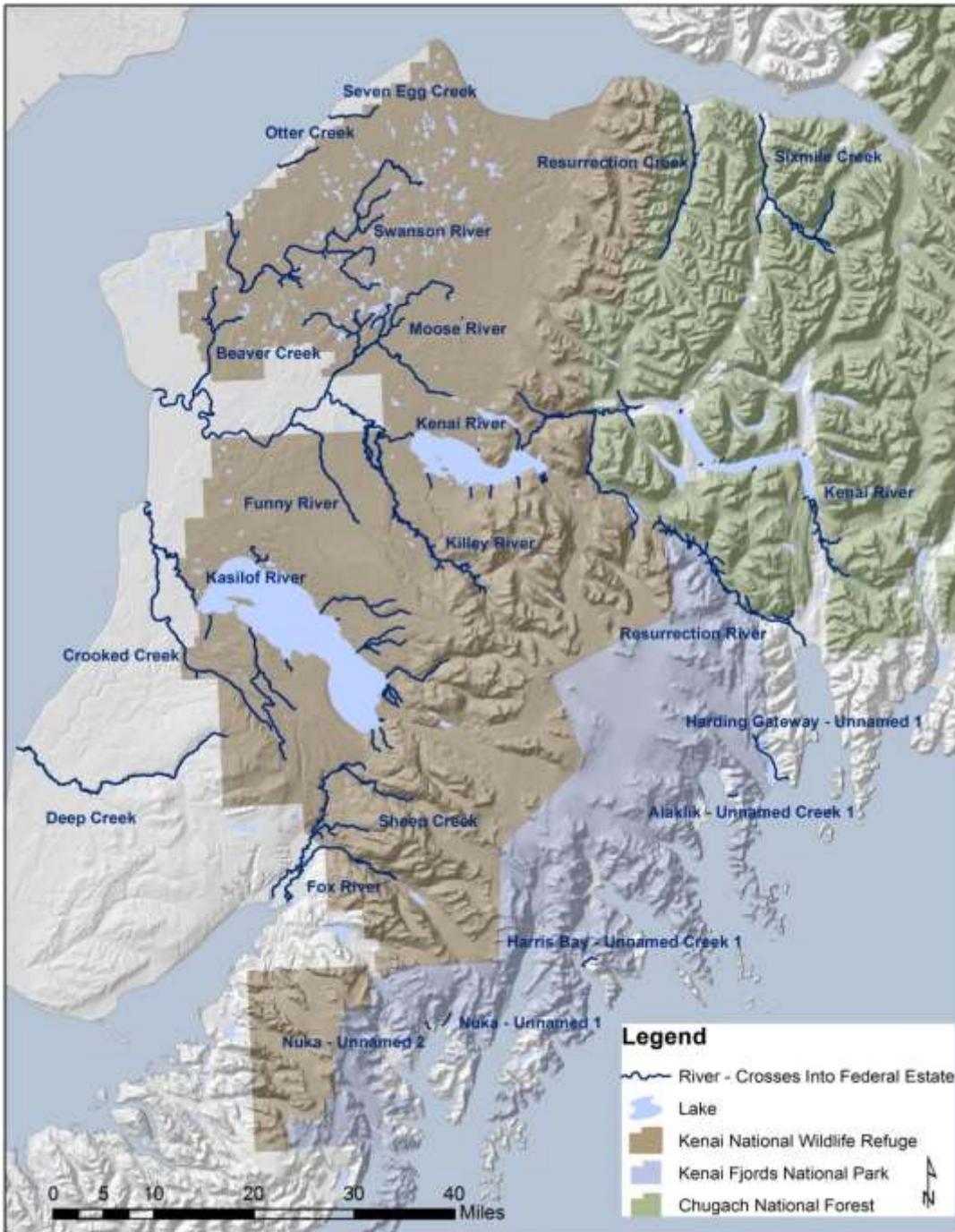


OBJECTIVES

- ✓ Conserve and/or restore landscape connectivity between publicly-managed and privately-owned lands by focusing on parcels adjacent to selected anadromous streams
- ✓ Work with partners to identify suite of opportunities to conserve and/or restore selected parcels through acquisition and/or less-than-fee-simple approaches
- ✓ Identify appropriate funding sources for selected parcels
- ✓ Create focused outreach to key decision-makers, stakeholders, and landowners
- ✓ Share strategy with governmental and Native landowners and other partners



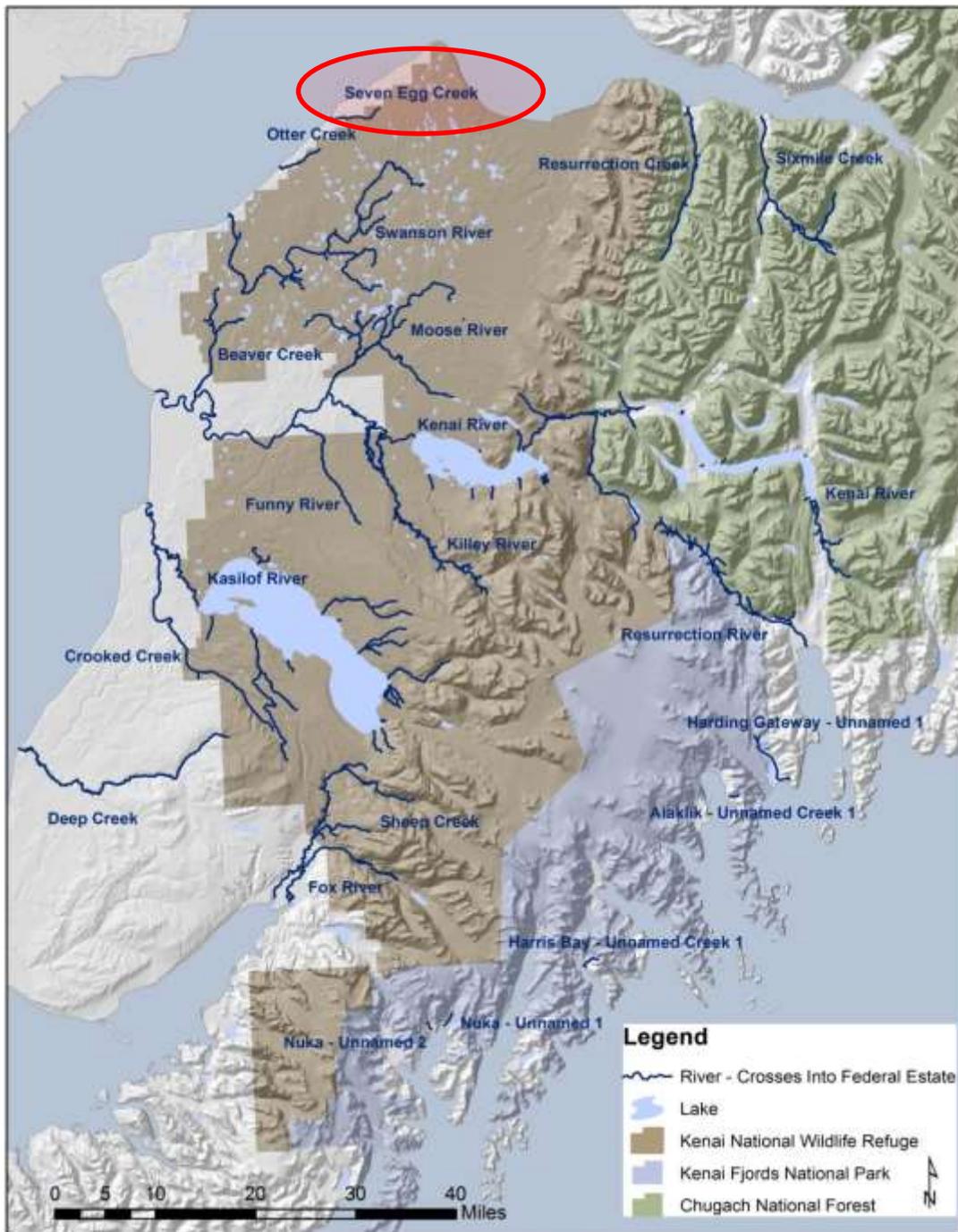
Mountain-to-sea corridors, as contiguous green infrastructure, are a means to promote and sustain natural resource-based community assets that may be different in rural versus urban settings



Of 206 named anadromous streams on the Kenai Peninsula, 141 are completely within Federal lands and 45 are completely outside Federal lands

— the M2S strategy leverages the 20 stream corridors that are partially protected

Name	Miles Outside Federal Lands	River Miles Inside Federal Lands	Total River Miles	Anadromous River Miles	Watershed Acres
Aialik Bay (unnamed)	0.4	1.9	2.3	1.0	1,580
Beaver Creek	4.0	17.9	21.8	20.1	39,500
Crooked Creek	16.8	29.2	45.9	31.6	35,141
Deep Creek (North Fork)	34.3	16.7	51.0	34.8	138,528
Fox River	10.3	106.8	117.1	47.5	102,443
Funny River	4.5	62.4	67	17.5	95,012
Harding Gateway (unnamed)	3.8	19.7	23.5	7.1	69,992
Harris Bay (unnamed)	2.0	0.3	2.3	2.1	11,714
Kasilof River	14.0	307.8	321.8	104.9	527,324
Kenai River	48	471.6	519.6	127.8	1,380,758
Killey River	2.7	198.4	201.1	60.5	150,112
Moose River	2.2	135	137.2	65.5	145,750
Nuka Bay (Ferrum Creek)	1.5	3.7	5.2	2.7	9,821
Nuka Bay (unnamed 1)	0.4	8.2	8.7	1.6	
Nuka Bay (unnamed 2)	0.7	6.4	7.1	1.1	30,759
Otter Creek	3.3	4.3	7.6	5.4	26,146
Resurrection Creek	0.5	198	198.5	22.4	108,165
Resurrection River	6.2	145.3	151.5	46	141,729
Seven Egg Creek	4.7	8.1	12.8	6.0	23,300
Sheep Creek	8.2	56.1	64.3	22.2	83,746
Sixmile Creek	10.2	194.6	204.8	40.3	168,512
Swanson River	1.4	106.1	107.5	88.5	182,014

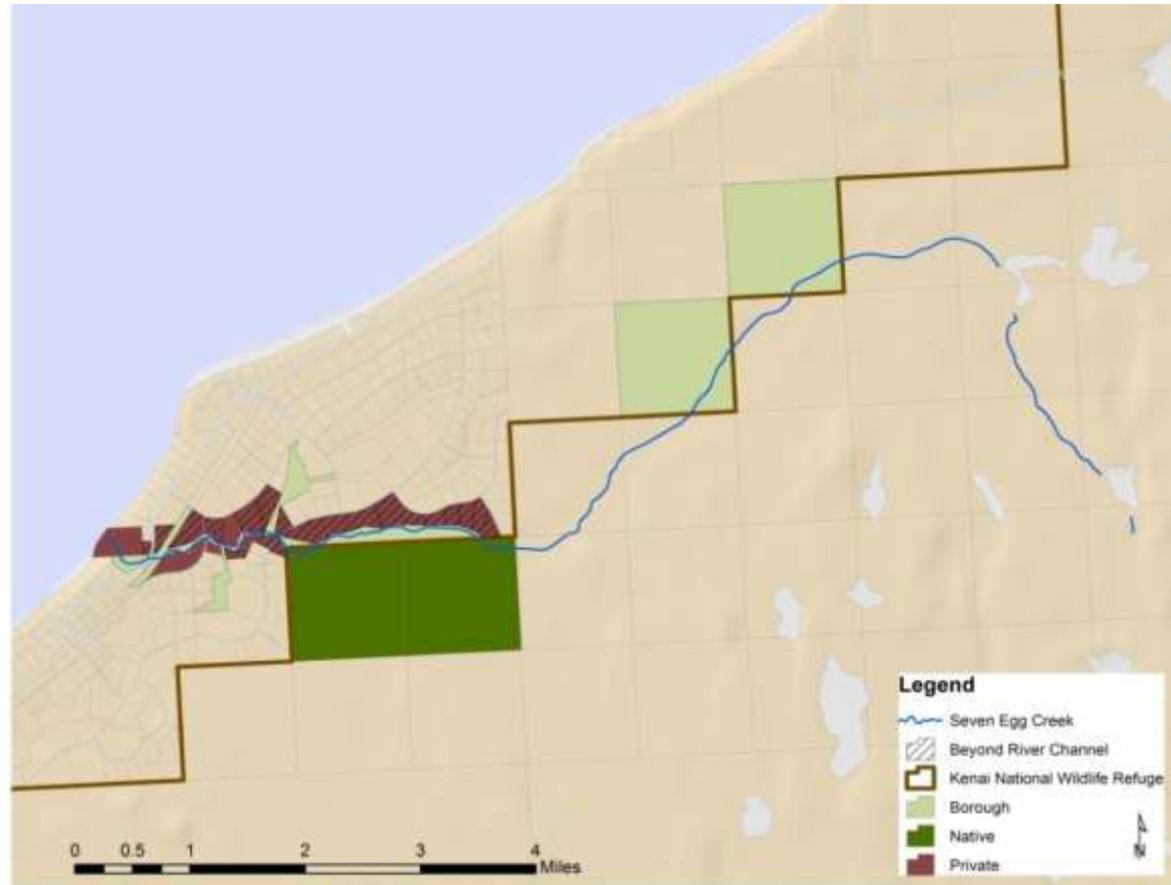


Seven Egg Creek Corridor

Seven Egg Creek Corridor

Of 34 parcels that comprise a potential corridor, only 7 private parcels valued at \$148,500 actually border Seven Egg Creek. Only five parcels are “improved” (\$10,000 - \$76,000) including two private parcels adjoining, and three private parcels that are adjacent, to the creek channel.

63% of 12-mile stream corridor is already protected

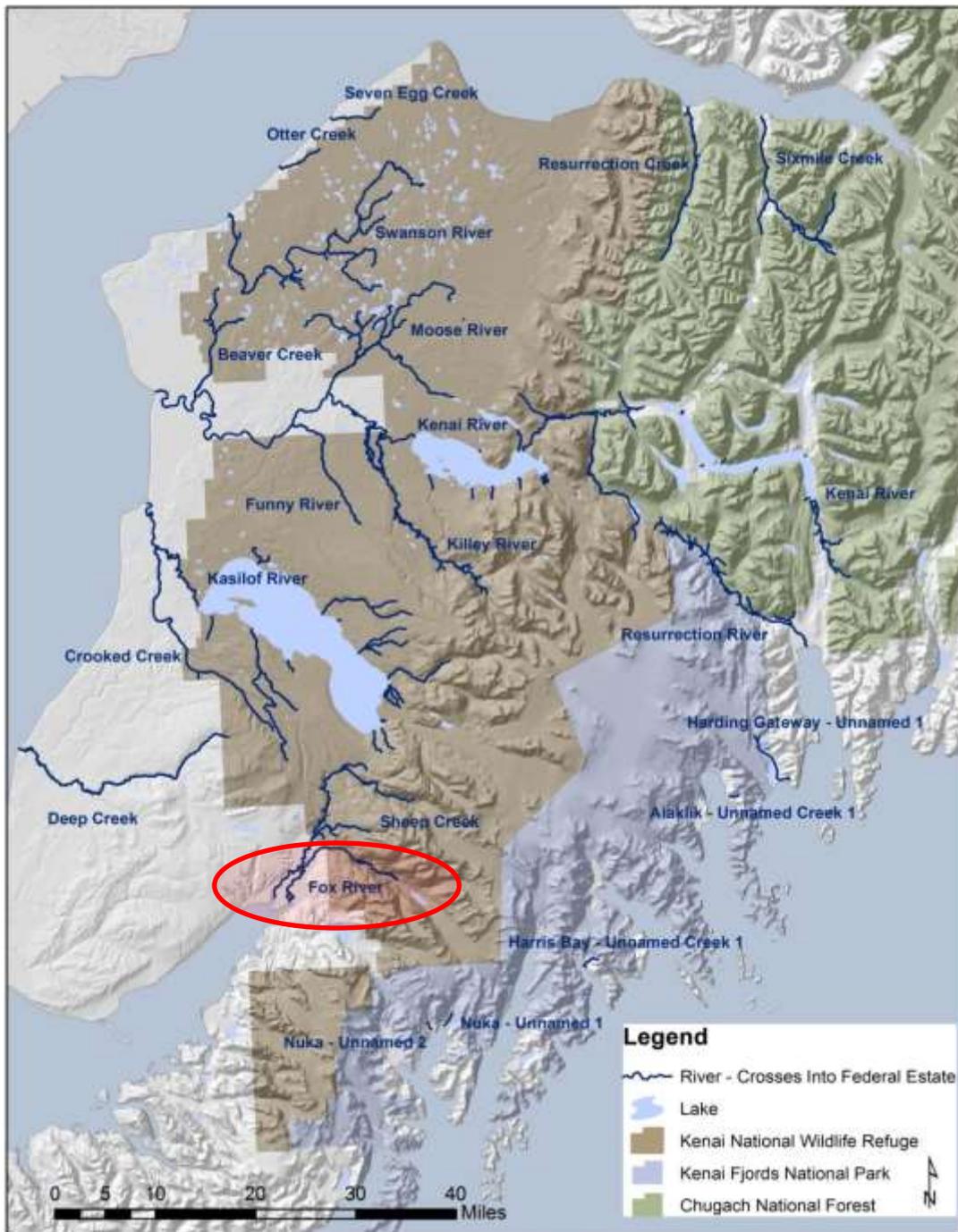


Seven Egg Creek Corridor



Seven Egg Creek Corridor





Fox River-Sheep Creek Corridor

Fox River-Sheep Creek Corridor



Fox River-Sheep Creek Corridor

Only 3 parcels intersect these 2 corridors. Real opportunity to establish contiguous landscape corridor from Wilderness in Kenai Mountains to Kachemak Bay with a combination of fee-simple acquisition and a negotiated conservation easement (i.e., to fence out cattle and horse) on at least Sheep Creek, if not both rivers.

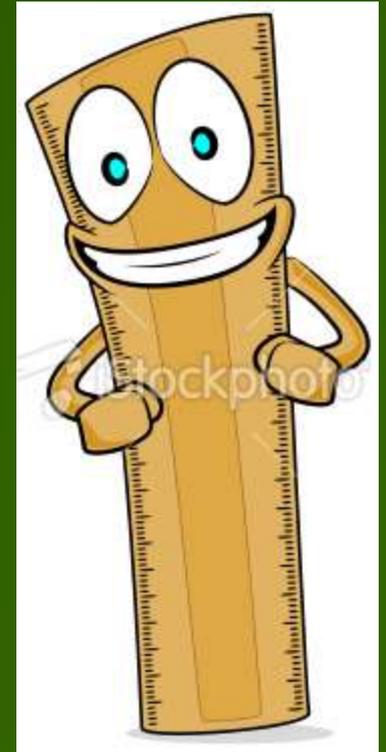
90% of 117 mile stream corridor is already protected



➤ **Think spatially...**

New yardstick to measure success

- ✓ **Rather than acres conserved or agreements administered**
- ✓ **Consider completion of contiguous corridor from mountains (Federal estate) to sea**

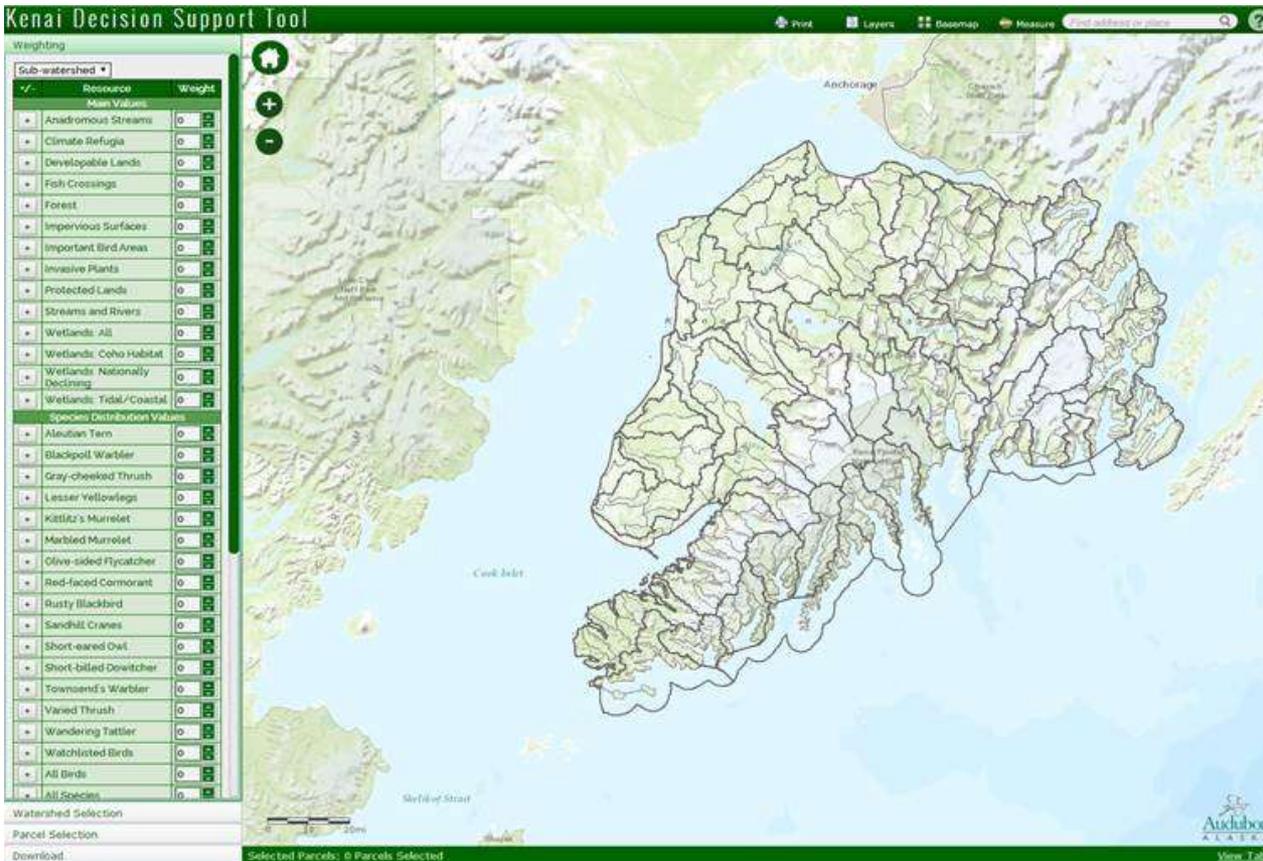


3 proposed corridor widths

An aerial photograph showing a wide, meandering river flowing through a lush green landscape. The river is surrounded by grassy fields and scattered trees. In the background, a dense forest of evergreen trees covers a hillside. The sky is clear and blue.

- ✓ 50-ft setback to sustain hydrologic function
- ✓ 400-m wildlife corridor (total width)
- ✓ Ecological function (site specific)
(marine derived nutrients)

Kenai Decision Support Tool for parcel selection



- ✓ Anadromous streams
- ✓ Climate refugia (landcover)
- ✓ Developable lands
- ✓ Culverts
- ✓ Impervious surface
- ✓ Audubon IBAs
- ✓ Invasive plants
- ✓ Land cover
- ✓ Land ownership
- ✓ Priority corridors
- ✓ Soil
- ✓ Bird habitats
- ✓ Hydrology
- ✓ Stream refugia (temperature)
- ✓ Wetlands
- ✓ Coho salmon habitat
- ✓ Moose winter habitat
- ✓ Watershed

Next steps

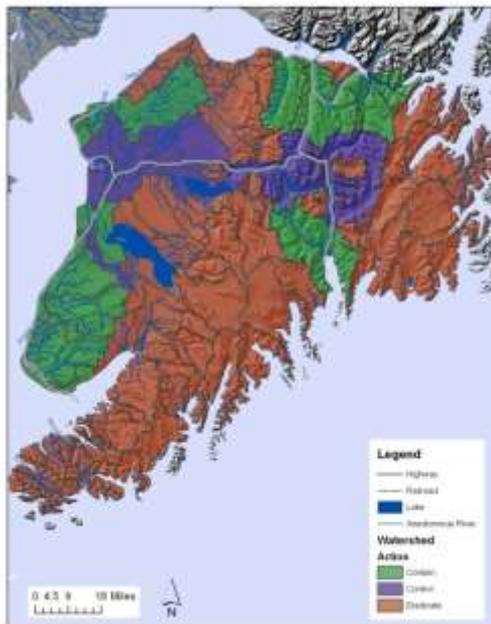


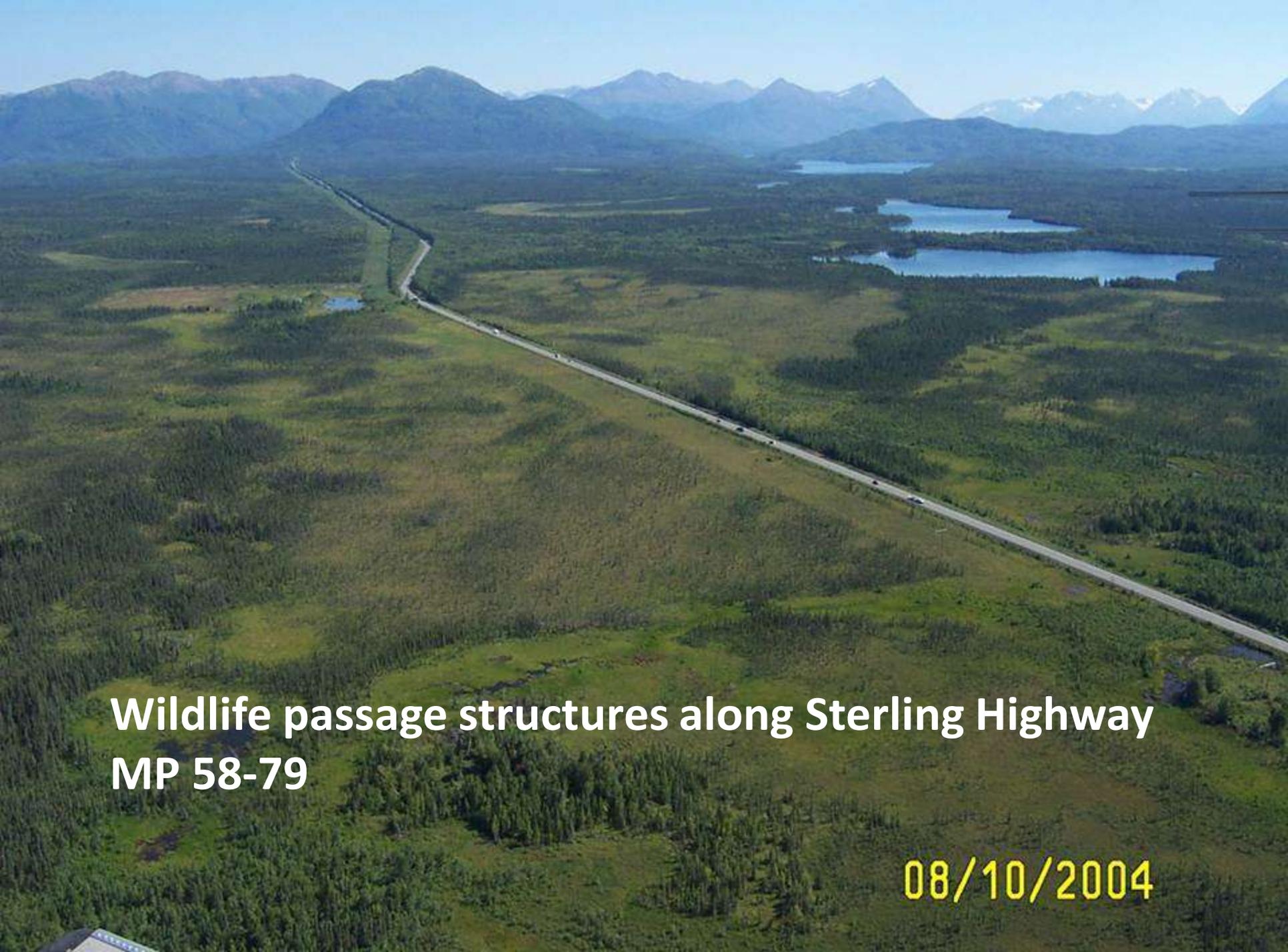
- ✓ \$50K for project manager to focus on implementation (identifying corridor-specific, parcel-specific conservation strategies)
- ✓ Link with Kenai Peninsula Borough land selection and planning efforts



Peninsula-wide invasive species management

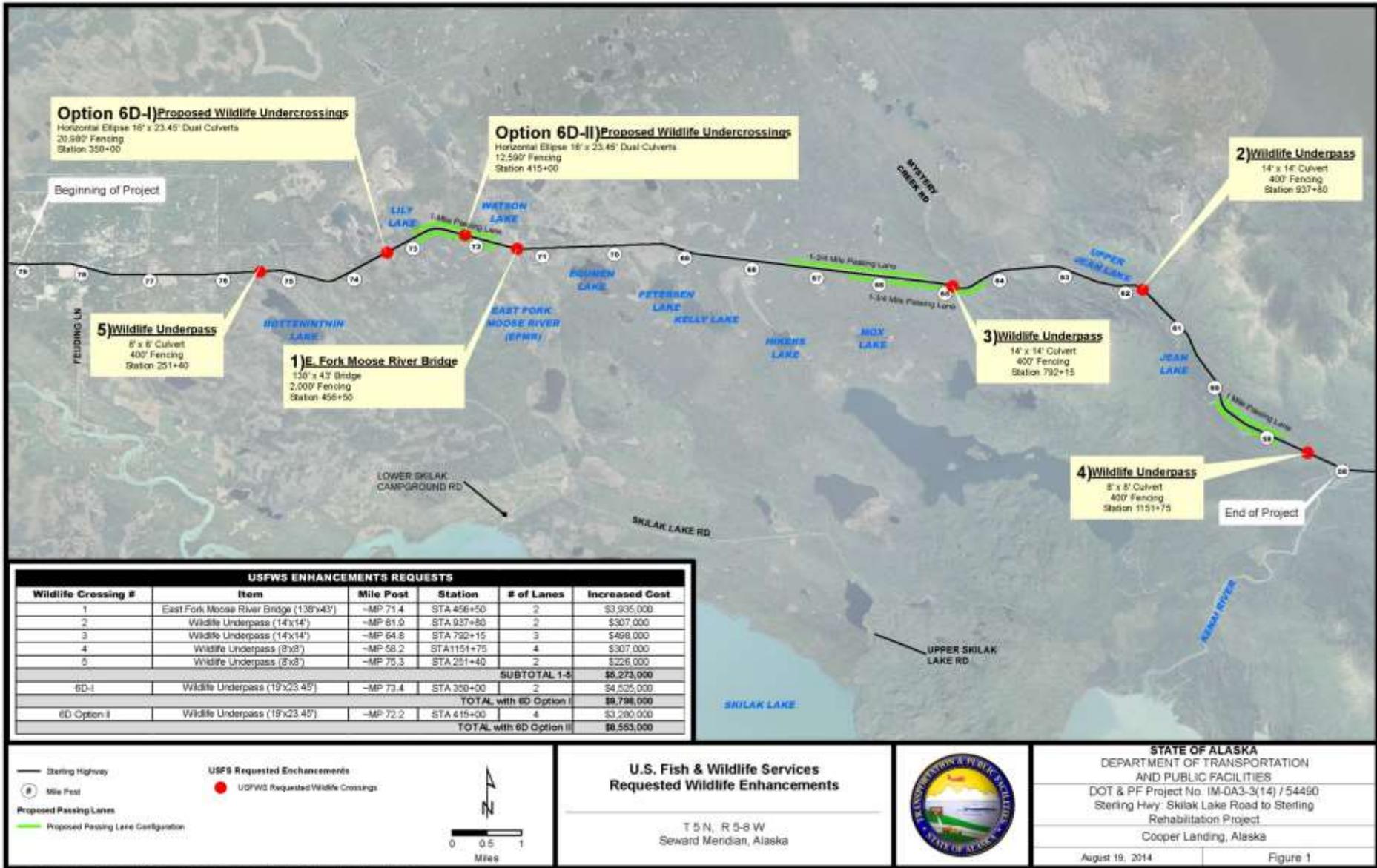
- ✓ Strike team on AK-DOT ROWs
- ✓ Elodea eradication from KP
- ✓ Spatially-explicit reed canary grass plan

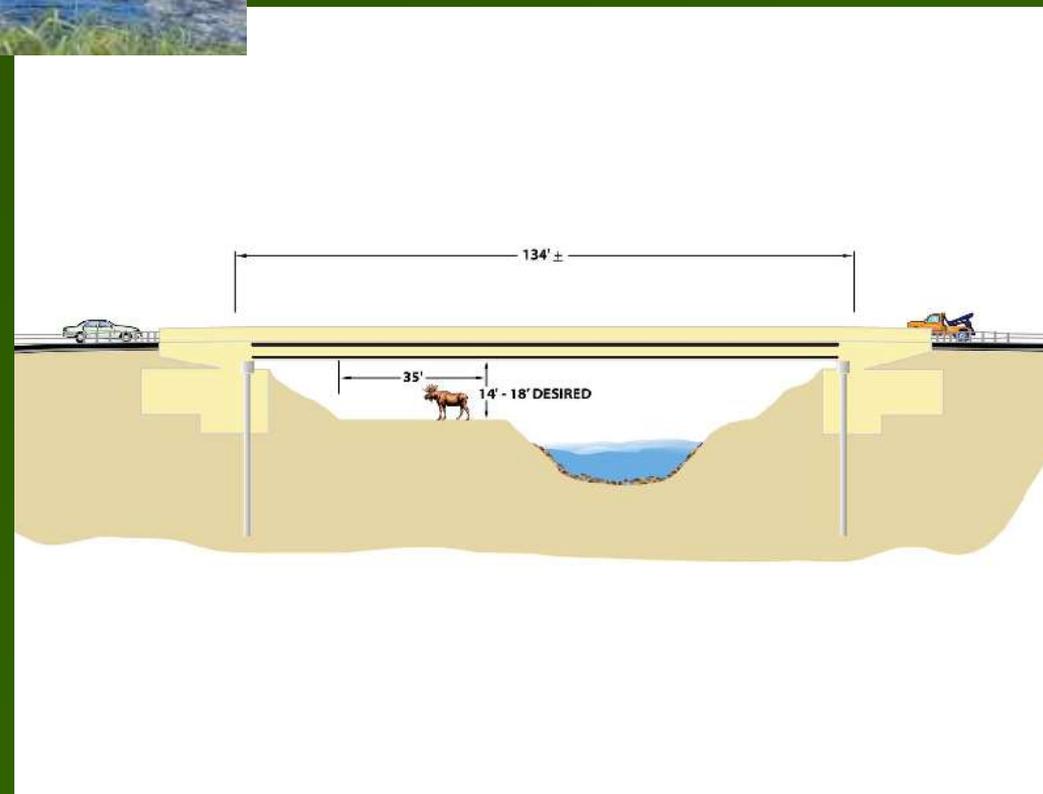




**Wildlife passage structures along Sterling Highway
MP 58-79**

08/10/2004







Questions????

06.27.2006