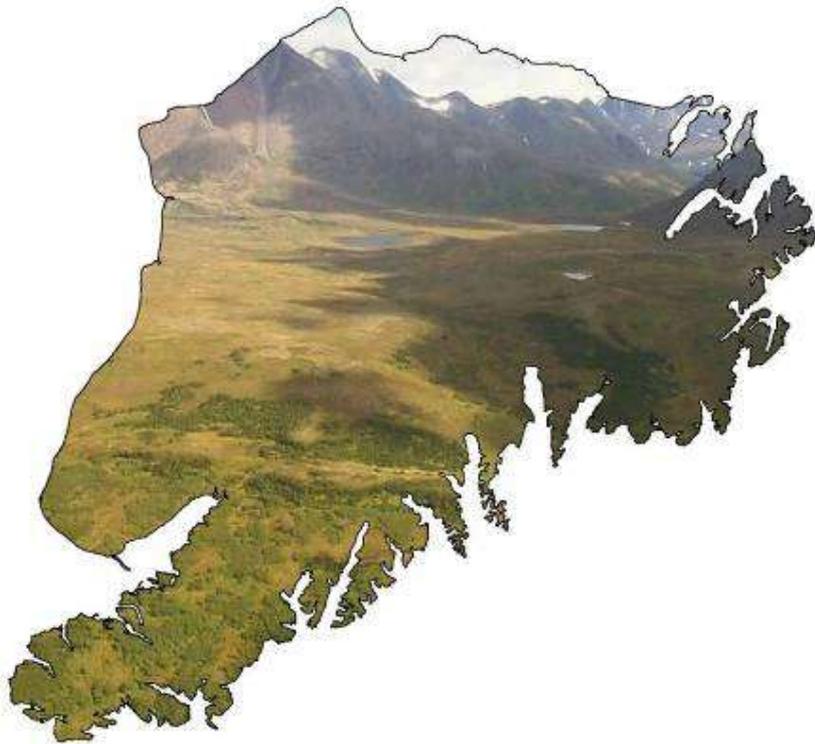
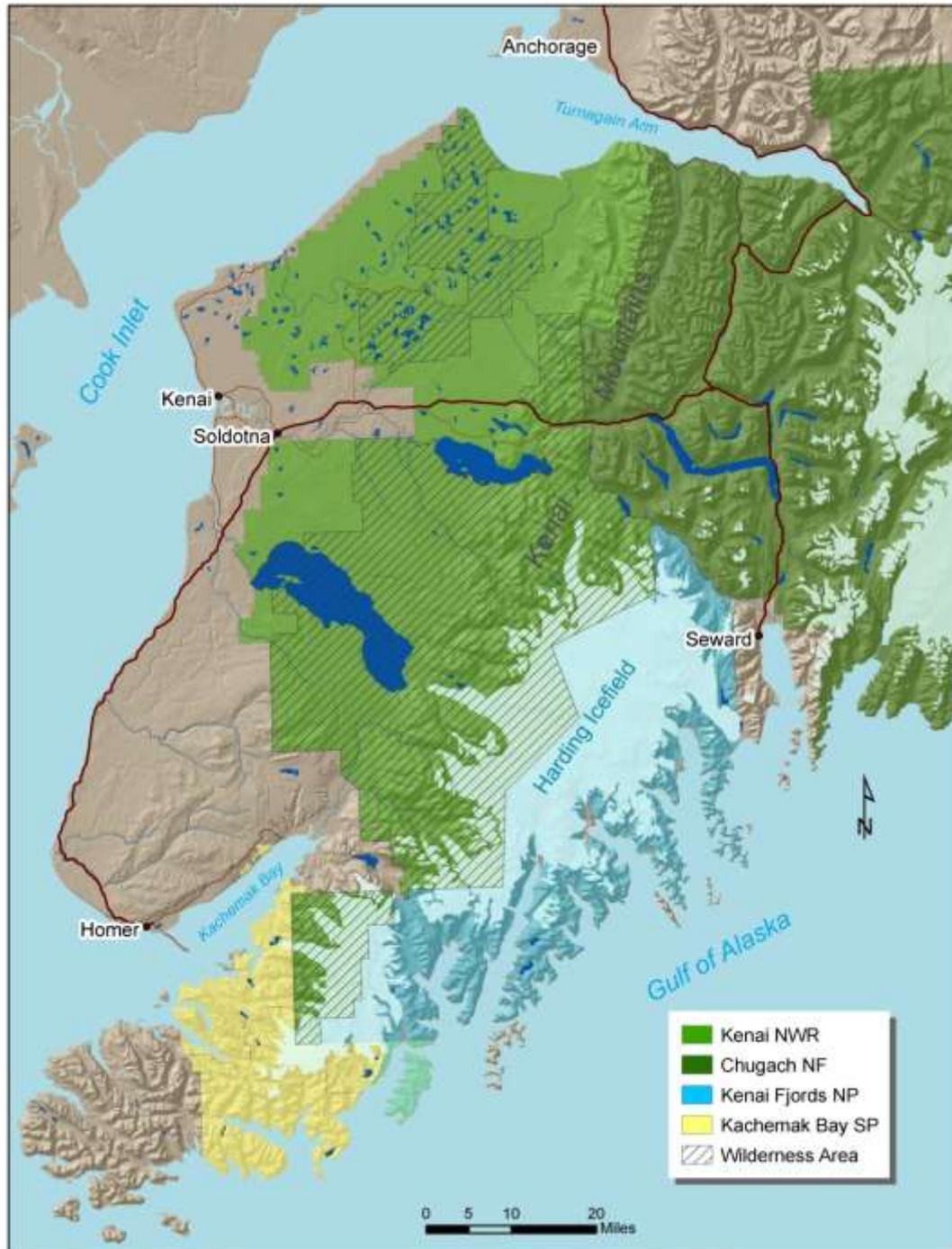


Kenai National Wildlife Refuge Weed-Free History and Policy



John Morton
Kenai National Wildlife Refuge





- **Conserve fish and wildlife populations and habitats in their natural diversity**
- **Ensure water quality and necessary water quantity**
- **Ensure biological integrity, diversity and environmental health**

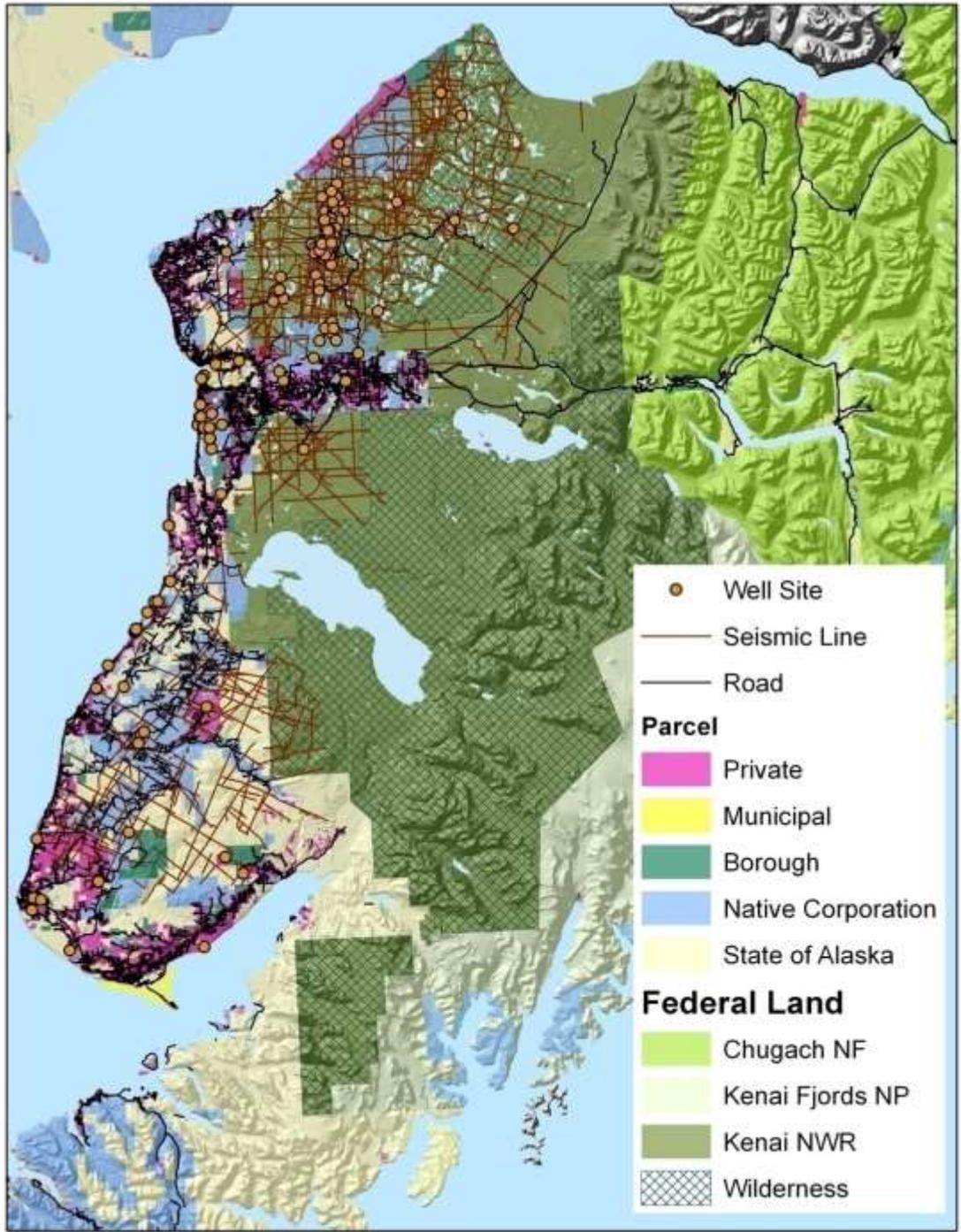




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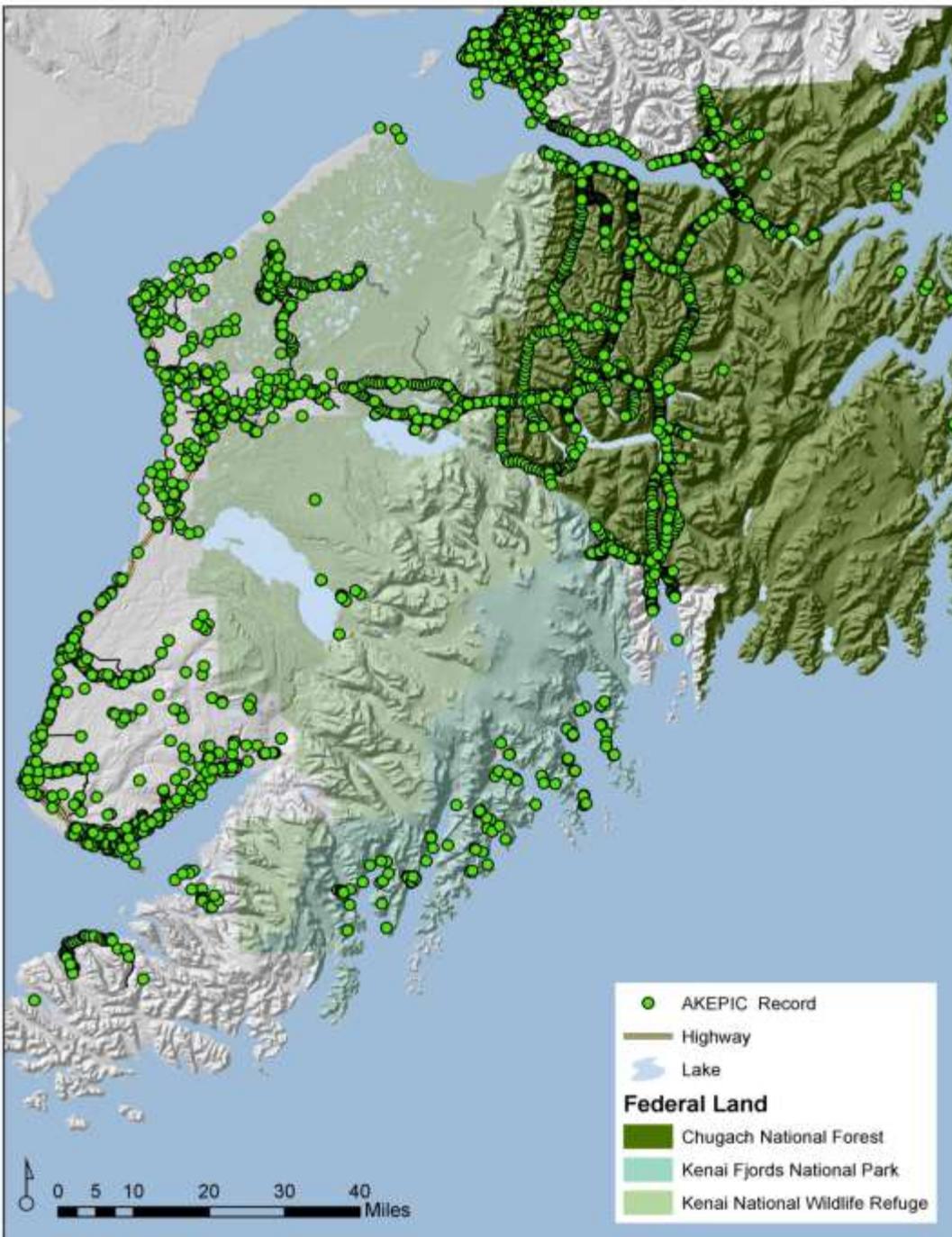


- ~58,000 people on Kenai Peninsula
- 3,000+ miles of roads, crossing anadromous streams at 381 locales
- 175 miles wildland-urban interface
- 1.7 million vehicles/year on 22 miles of Sterling Hwy that bisects the Refuge



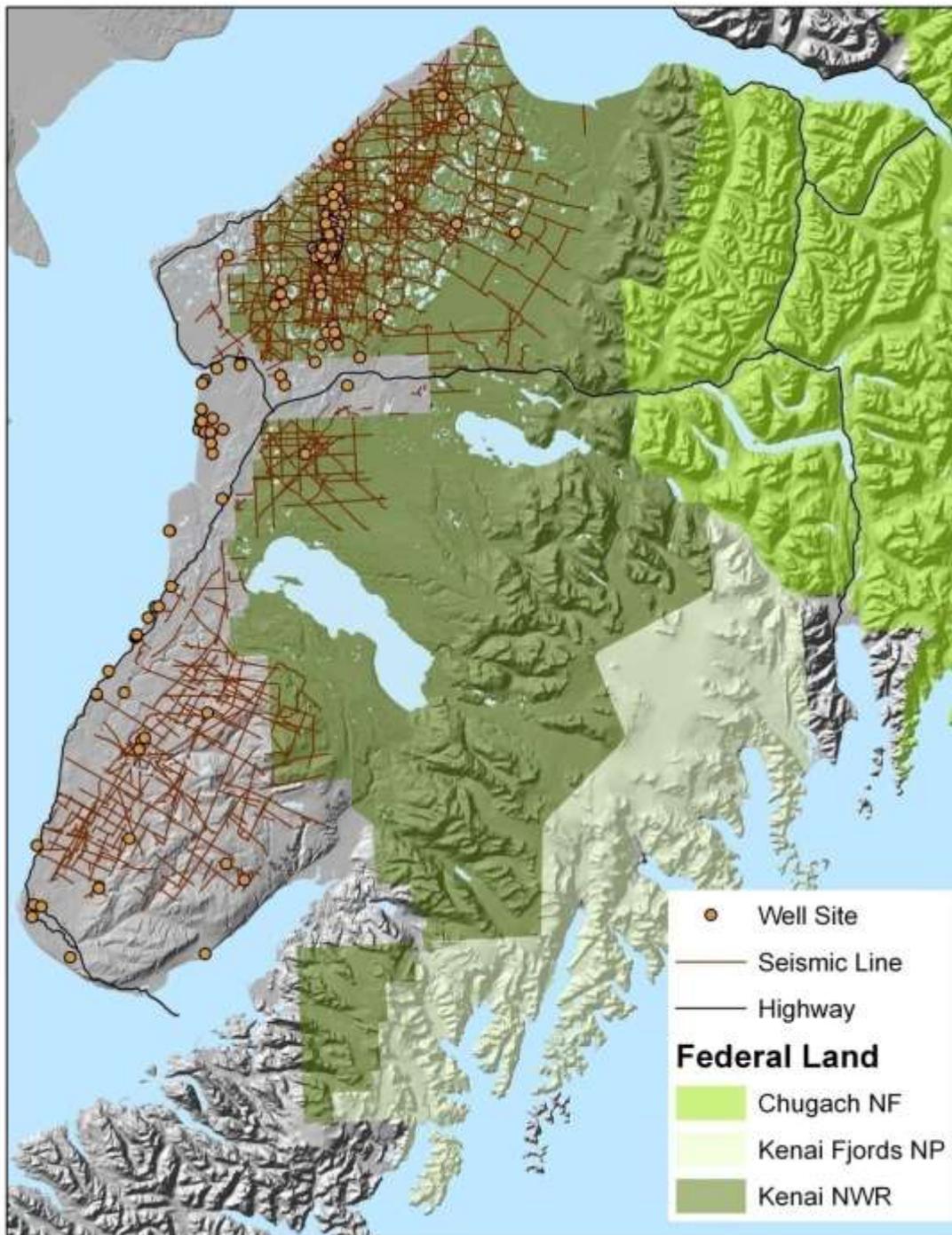
Invasive plants

- 115 exotic plant species
- 27,772 records since 2002 mostly associated with roads
- 50+ species poised to invade from Anchorage

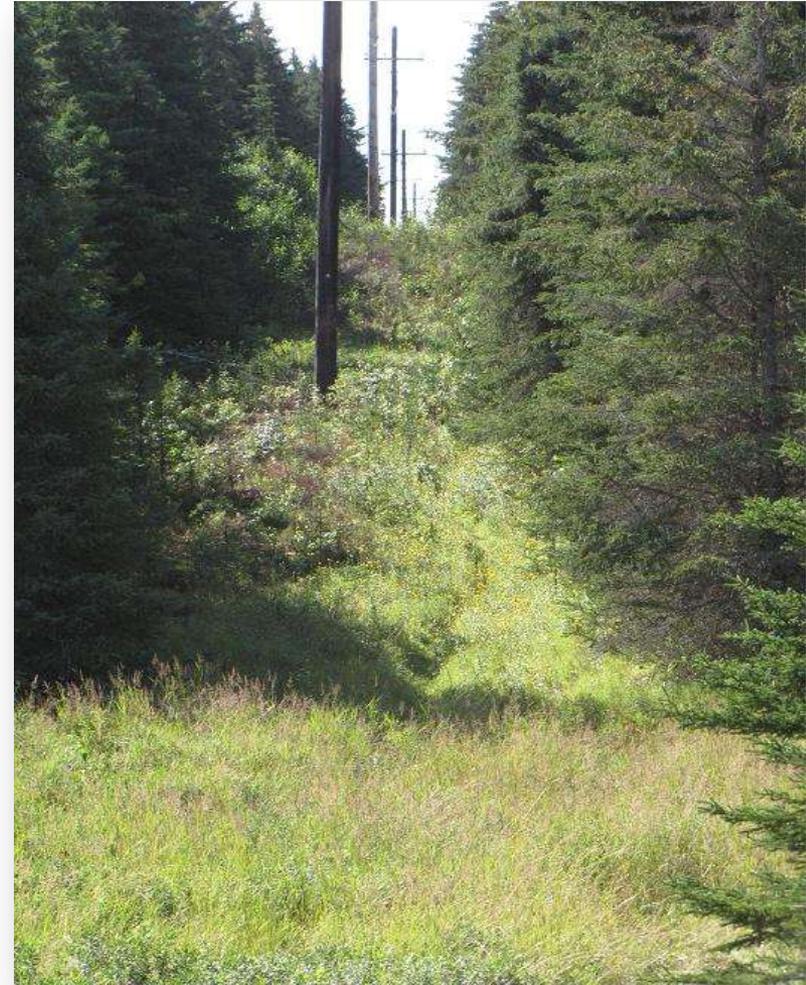


Commercial Oil & Gas Infrastructure

- ✓ 14,042 acres in 3 active leases
- ✓ 104 oil & gas pads, 216 wells
- ✓ >90 industrial buildings & storage areas encompassing 65 acres
- ✓ 71 miles of pipelines
- ✓ 215 miles of roads
- ✓ >1,800 miles bulldozed seismic lines



FOOTPRINT	#	MILES	ACRES
Roads		215	2,278
Oil & Gas			621
Pipelines		71	345
Seismic Lines		1,837	3,194
Hiking Trails	29	66	40
Horse Trails	2	34	21
Ski Trails	8	13	8
Canoe Routes	2	117	71
Power Lines		49	597
Cabins	13		2
Campgrounds	20		46





**Kenai NWR is relatively
pristine at the landscape level
(2 million acres) but generally
contaminated with exotic
plants wherever the human
footprint (~7000 acres) occurs**



Wind-dispersed plants are a real problem

The answer is blowing in the wind





Bird vetch in Cooper Landing



Birdsfoot trefoil
Alsike clover
Common timothy



Birdsfoot trefoil
Oxeye daisy
Alsike clover



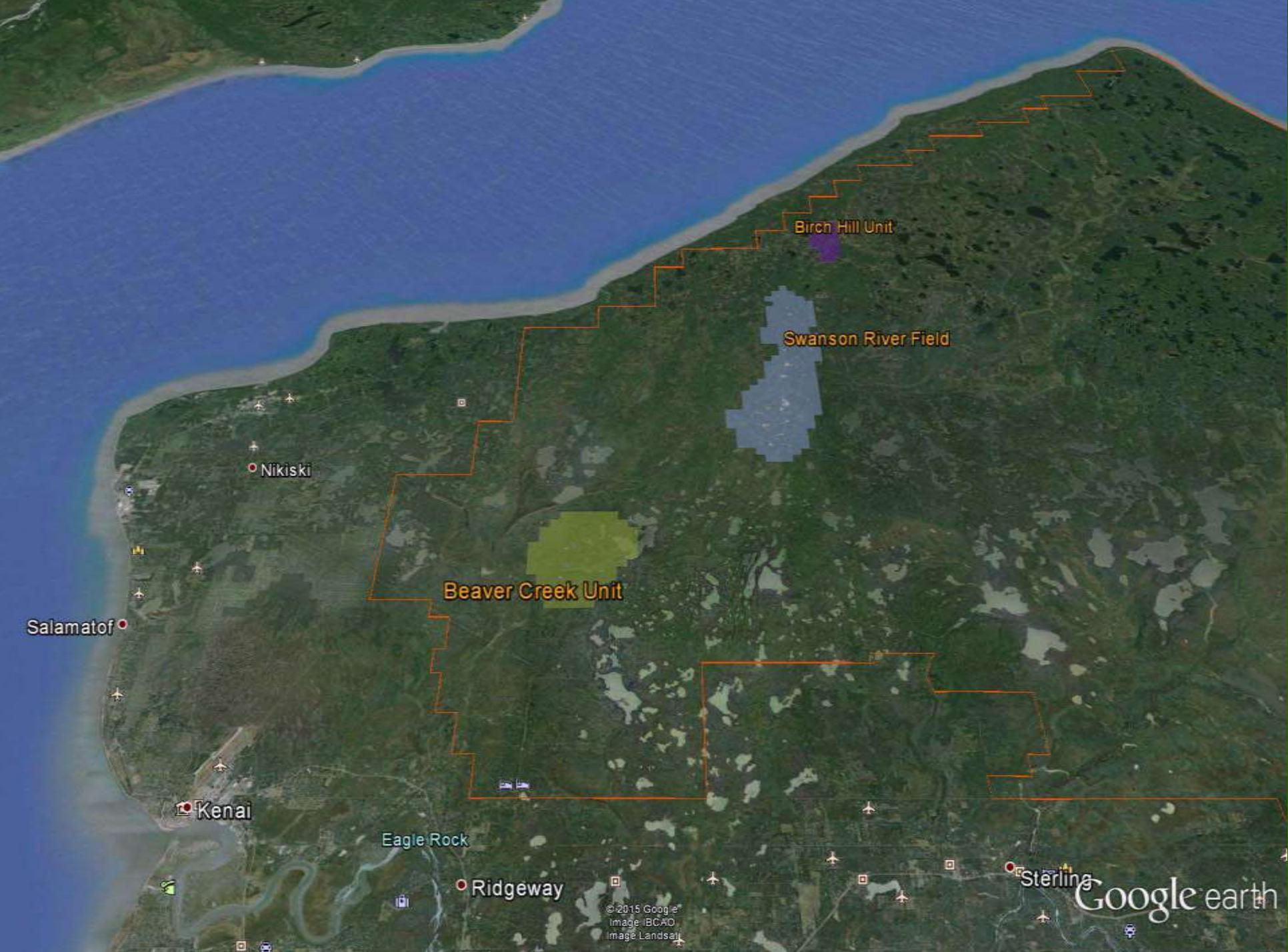
Orange hawkweed
Oxeye daisy



Butter and eggs



White sweetclover



Birch Hill Unit

Swanson River Field

Beaver Creek Unit

Nikiski

Salamatof

Kenai

Eagle Rock

Ridgeway

Sterling

Google earth

© 2015 Google
Image: IBCAD
Image: Landsat

Swanson River Oil & Gas Field

- 65 well pads, 43 miles of roads, 12 acres gravel/sand pits, 62 acres buildings and large compressor plant
- 2009 - Chevron provided \$36K for control of invasives
- Graded well pads twice/year to minimize plants going to seed AND blocked access to inactive pads to limit seed dispersal
- 2012 - Hilcorp Alaska became operator and ramped up activities, resulting in significant ↑ in traffic/movement of equipment, gravel/sand materials into the field... Along with this came gravel contaminated with weed propagules





2010: Weed-Free Certification Program launched in Alaska

2011: District volunteers trained to conduct Certified Weed-Free Forage field inspections

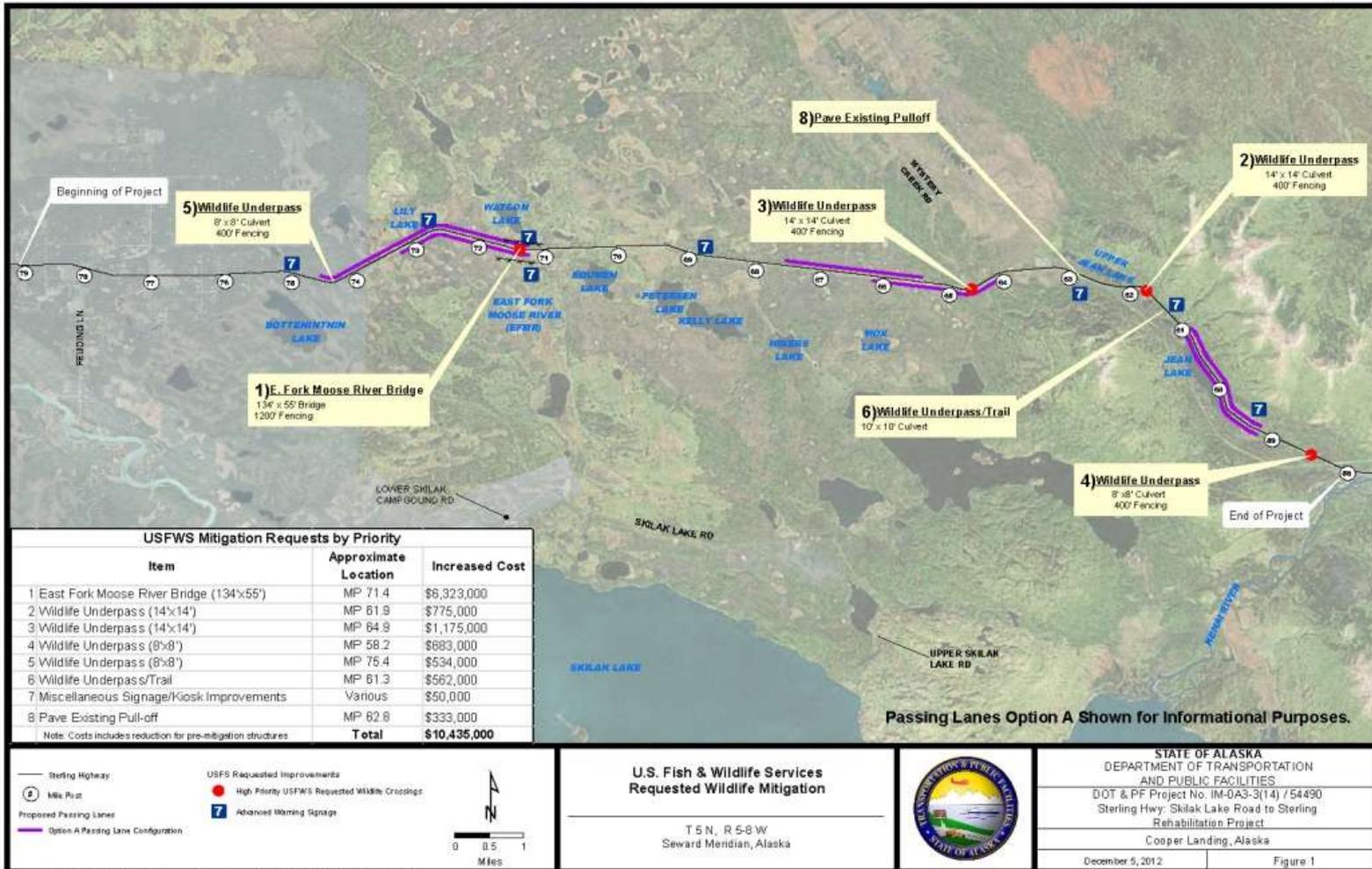
2013: Kenai NWR began requiring use of Certified Weed-Free Gravel for all construction and restoration projects on Refuge land

2014: 1st Weed-Free Gravel Certifications issued on Kenai Peninsula

Kenai Refuge Special Use / ROW Permit Stipulations

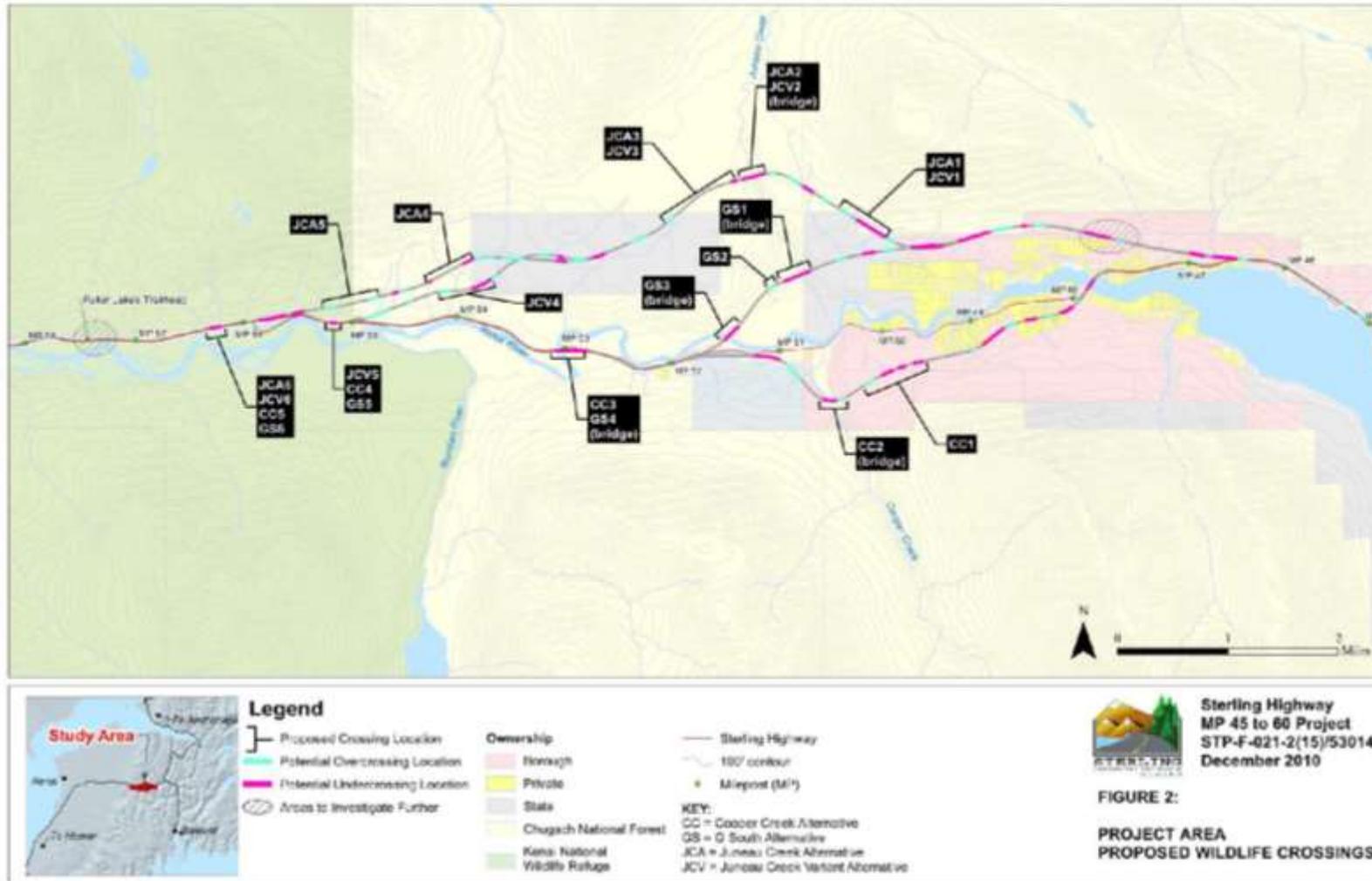
- **Permittee shall be responsible at all times...for preventing the introduction of invasive species on the Refuge and any treatments required, should invasive species be discovered within or directly adjacent to the project area.**
- **In consultation with the USFWS, Permittee shall implement a site-specific monitoring and mitigation plan for invasive species before construction activities commence, including preventative measures, such as cleaning construction equipment that could act as a vector for invasive species.**
- **Permittee shall utilize a gravel source certified as weed-free.**
- **Control and treatment activities shall be conducted under the Service's direction should monitoring detect any injurious plant species.**
- **Prior to entering the Refuge, power/high-pressure washing or steam-cleaning of all potential seed transport surfaces, such as but not limited to wheeled/tracked equipment, helicopter skids and boots of work crews, will be required.**

MP 58-79 Sterling Highway Project



~580,000 cubic yards (1.1 million tons) of certified weed-free gravel for embankment construction and paving!!

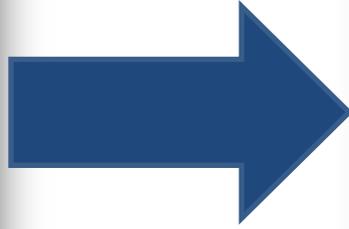
MP 45-60 Sterling Highway Project



Use certified weed-free gravel when available....

Certified Weed-Free Program Summary

- **Certified weed-free gravel** is common sense measure which ultimately will minimize weed introduction/dispersal, save \$\$\$, reduce herbicide use
- Refuge is requiring the use of **certified weed-free forage** for pack livestock
- **Certified weed-free soil** needed for bank restoration, pad remediation and other projects



Questions??