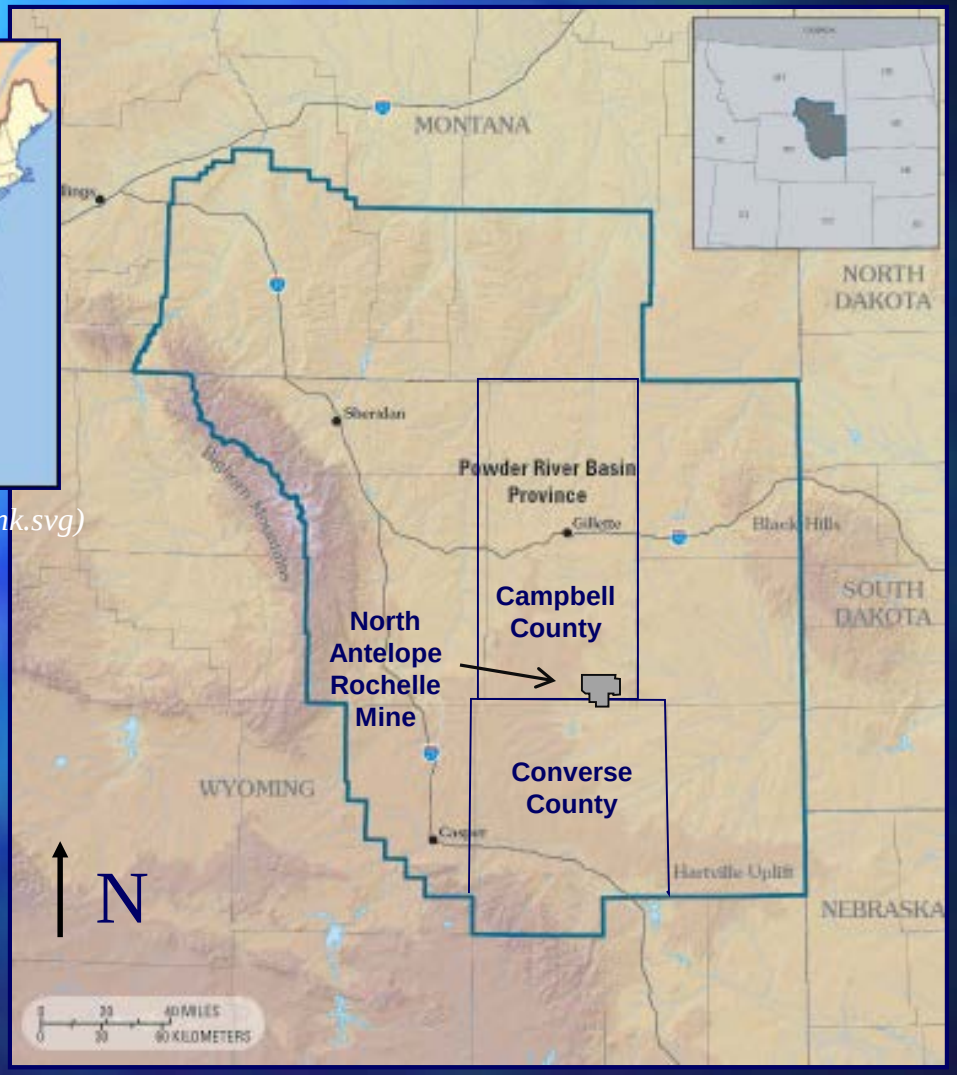
Sustaining Raptor Populations at the North Antelope Rochelle Mine in Northeast Wyoming

Gwyn McKee - Thunderbird Wildlife Consulting, Inc.
Paul Griswold, Marilee O'Rourke – Peabody Powder River Mining, LLC: North Antelope Rochelle Mine
Gillette, Wyoming

Regional Overview: Powder River Basin Coal Region

(http://en.wikipedia.org/wiki/Image:US_Locator_Blank.svg)



(http://pubs.usgs.gov/fs/fs-146-02/Powder-River-Map.jpg)

Powder River Basin-WY

- 12 Surface Coal Mines

Powder River Basin - WY

- 12 Surface Coal Mines
- ~40% of Nation's Coal Supply (2011)
- NARM = ~25% of Total WY Coal Production (2011)

Annual Wildlife Monitoring & Mitigation Guidance Documents for Surface Coal Mines in the Powder River Basin-WY

- Appendix B: Wyoming Department of Environmental Quality-Land Quality Division (Agent of OSM) Coal Rules and Regulations.
- Avian Monitoring and Mitigation Plan: U.S. Fish and Wildlife Service approval required.

Nesting Raptors: What are the Options?

- Accept

- Prevent (Try)

- Remove (Effective?)

- Mitigate
  - Relocate
  - Redesign
  - Modify Approach

Nest Relocation Regulatory Requirements - Eagles

- Coal Mines: Raptor Mitigation Plan & USFWS Approval (USFW Required for All)
- USFWS Permit Required
  - Nest Take During Resource Development or Recovery
  - 50 CFR part 13
  - 50 CFR 22.25
  - Notifications (pre- and post-removal)
  - 2 year Post-action Monitoring
  - Annual Reports
- WGFD-Chapter 33 Permit
  - Annual Report

Nest Relocation Regulatory Requirements – Other Raptors

- Coal Mines: Raptor Mitigation Plan & USFWS Approval (USFW Required for All)
- USFWS Permit Required
  - Special Purpose-Relocate
  - 50 CFR Part 13
  - 50 CFR 21.27
  - Annual Report for Action Year
- WGFD-Chapter 33 Permit
  - Annual Report

Nest Relocation Regulatory Requirements – USFS Surface

- USFWS Permit
- WGFD Chapter 33 Permit
- USFS BABE Analysis
- USFS Special Use Permit and Special Use Off-Road Travel Permit, if Applicable
- Annual Reports

Nest Relocation Regulatory Requirements – BLM Surface/Minerals

- Minimum Requirements
  - USFWS Permit
  - WGFD Chapter 33 Permit
  - BLM BA Analysis
  - Additional BLM/USFWS Guidance?

General Raptor Nesting Requirements

- Territory Availability
- Nest Site Availability
- Foraging Opportunities – Prey & Habitat
- Limited Human Disturbance (Unless Acclimated)

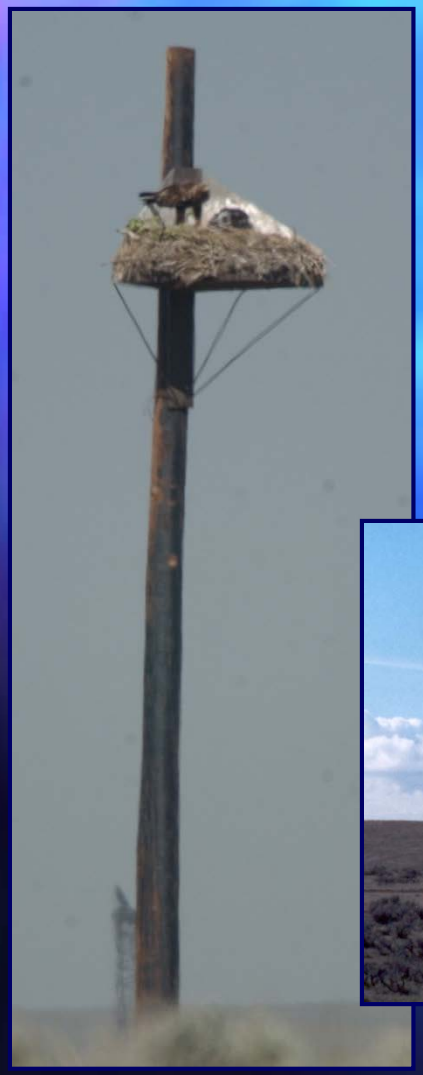
- Current Reclamation Practices Appear to Create Adequate Raptor Habitat
- Use of Reclamation Should Increase Over Time

Objectives: Raptor Nest Mitigation

- Inactive Nests Relocated to Maintain Resource
- Inactive Nests Relocated to Maintain Alternate Nests within an Active Territory
- Active Nests Strategically Relocated to Encourage Current and Future Continued Use
- Active Nests Removed and Eggs or Young Fostered to Preserve Resource While Discouraging Future Nesting at Site
- Artificial Nest Platforms and Snags Erected to Create New or Alternate Nesting Opportunities

Methods: Raptor Nest Mitigation

Raptor mitigation methods were first developed at surface coal mines in the Powder River Basin in Wyoming to relocate golden eagle (*Aquila chrysaetos*) nests ahead of mining (Postovit et al. 1982a, etc.).

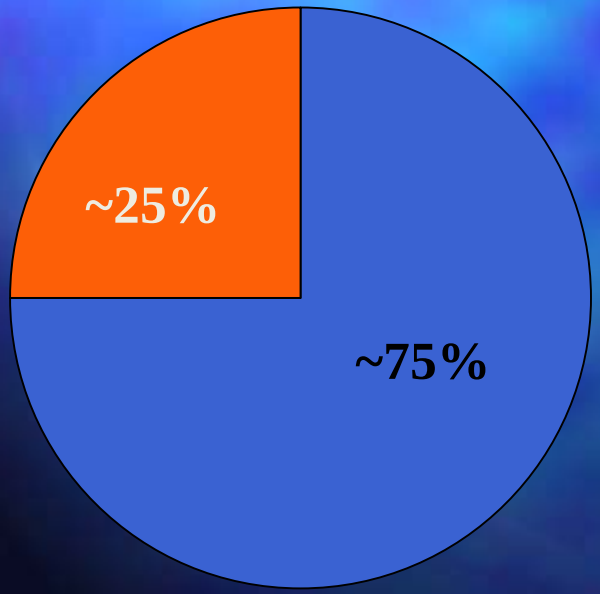


Results: Raptor Nests Relocated or Created as Mitigation Measures by TWC in Northeast Wyoming Since 1980

- 33 years, 10 mines, 100+ nests
- Relocated or created to mitigate for:
  - Ferruginous hawk (*Buteo regalis*) – 50+
  - Golden eagle (*Aquila chrysaetos*) - 28
  - Red-tailed hawk (*Buteo jamaicensis*) - 11
  - Burrowing owl (*Athene cunicularia*) - 7
  - Swainson's hawk (*Buteo swainsoni*) - 4
  - Great horned owl (*Bubo virginianus*) – 2
  - Northern harrier (*Circus cyaneus*) - 1

Raptor Use of Mitigation Nests Relocated or Created as Mitigation Measures by TWC in Northeast Wyoming Since 1980

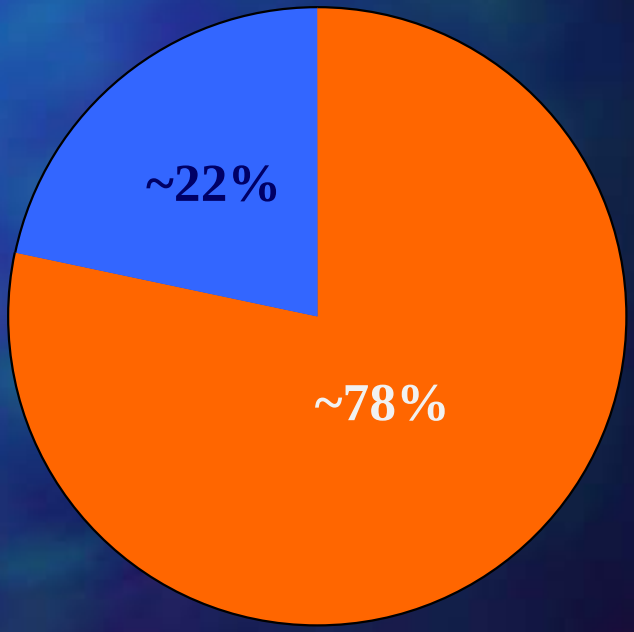
Previously Active



Never Used

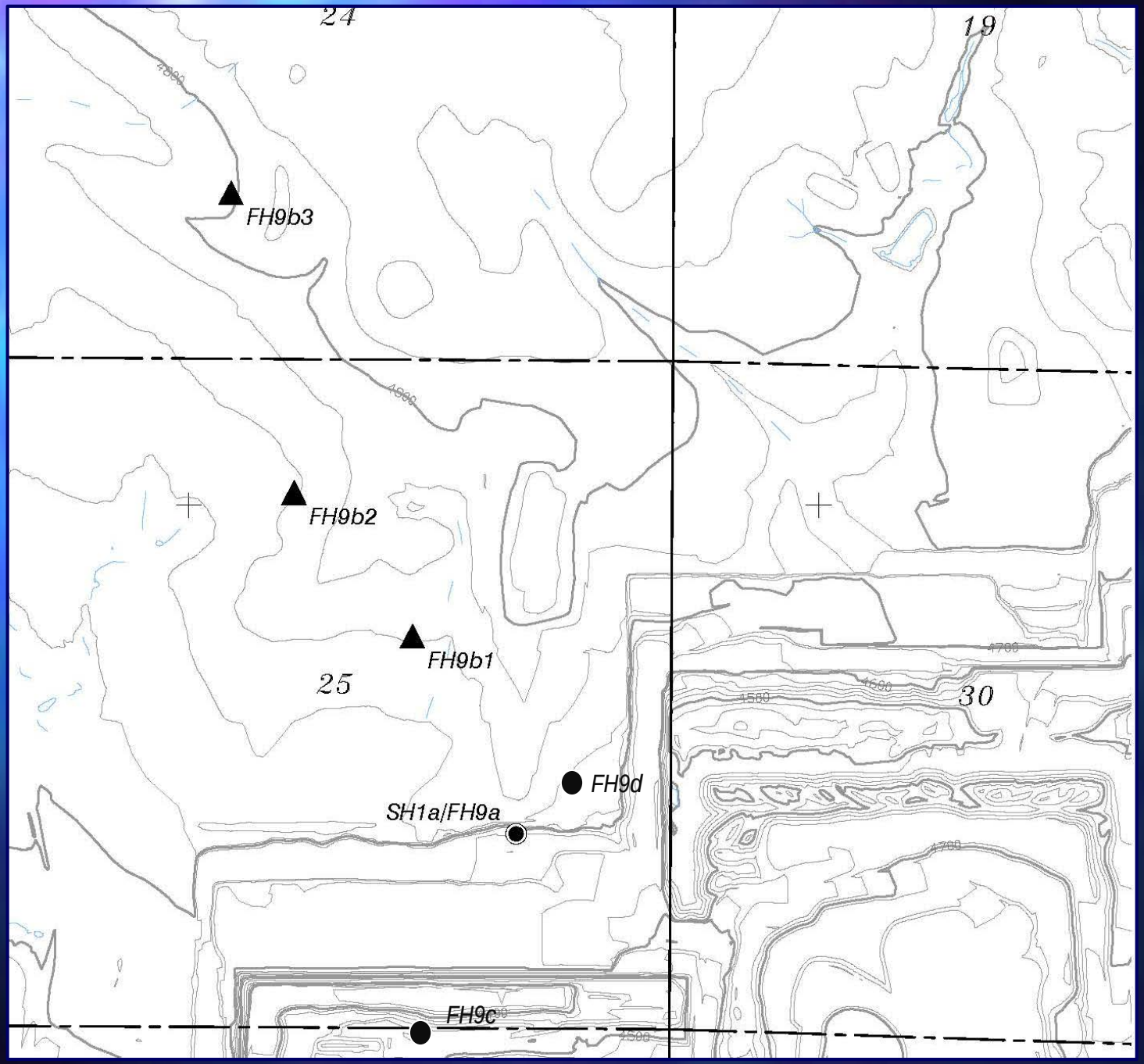
Used

Previously Inactive



Case History: FH9 Pair

- Territory active since at least 1994
- 2000 – FH9b[1] platform in place, inactive (FH9c, 9d)
- 2002 – FH9b[1] moved to base of FH9d tree
  - 3 downy young placed on platform
  - Incrementally moved back to FH9b[1] site in two moves over next 12 days)
  - Moved to FH9b[2] in fall 2002
- 2003-2011 – young fledge in 6 of 9 years at FH9b[2]
- 2012 – FH9b[3] prior to nesting season; successful
- 2013 – FH9b[3] active


24
19
FH9b3
FH9b2
FH9b1
25
30
FH9d
SH1a/FH9a
FH9c

Reclamation as Raptor Habitat

- Nesting:
  - Nest Relocation Sites, Snags, and Platforms
  - Suitable Nesting Habitat (Ground, Elevated)

- Foraging:
  - Adequate Prey Base (Rodents and Lagomorphs)
  - Hunting Perches

Case History: GE1 Pair

- 32 Year History at NARM (1982 – 2013)
- 20-Year Intensive Monitoring Program (1984-2003)
- Annual Monitoring 2004 – Present (every 2-3 weeks)

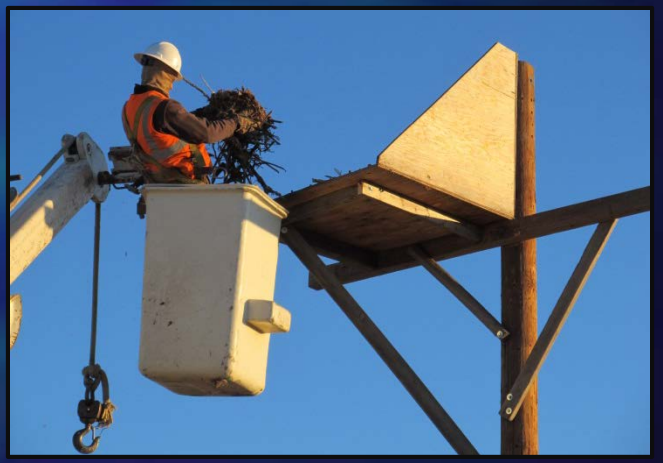
GE1 Pair

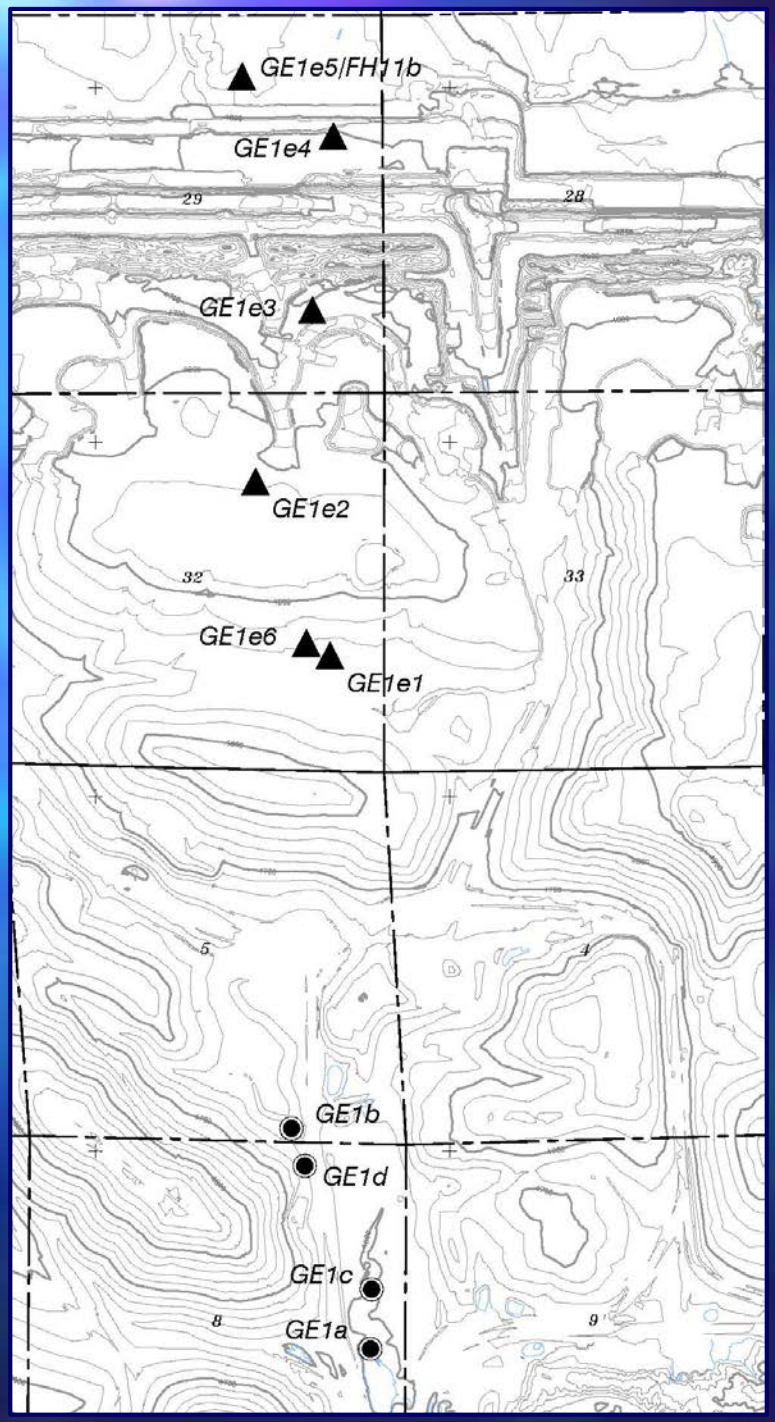
- 1982 – 1986 Pair uses GE1a tree nest
- 1986 – GE1a moved to GE1d tree
  - GE1d mitigation tree nest never used; D-N 1991
  - GE1c R-M due to encroaching mine operations
- 1987 – 1992 Pair uses GE1b tree nest
- 1993 - GE1b moved to GE1e[1] platform pre-season
  - Remains there through 1999 nesting season (7 yrs)
  - Active 5 of 7 years (1995-1999)/Successful 2 yrs
- 2000 - 2002 Platform at GE1e[2]; Successful 3 yrs
- 2003 – 2004 Platform at GE1e[3]; Active 2 yrs/Succ 1 yr
- 2005 – Platform at GE1e[4]; Successful

GE1 Pair

- 2006 - 2011 Platform at GE1e[5] (6 yrs)
  - Active 5 yrs/Successful 3 yrs
  - Ferruginous Hawks fledge young from platform 2008

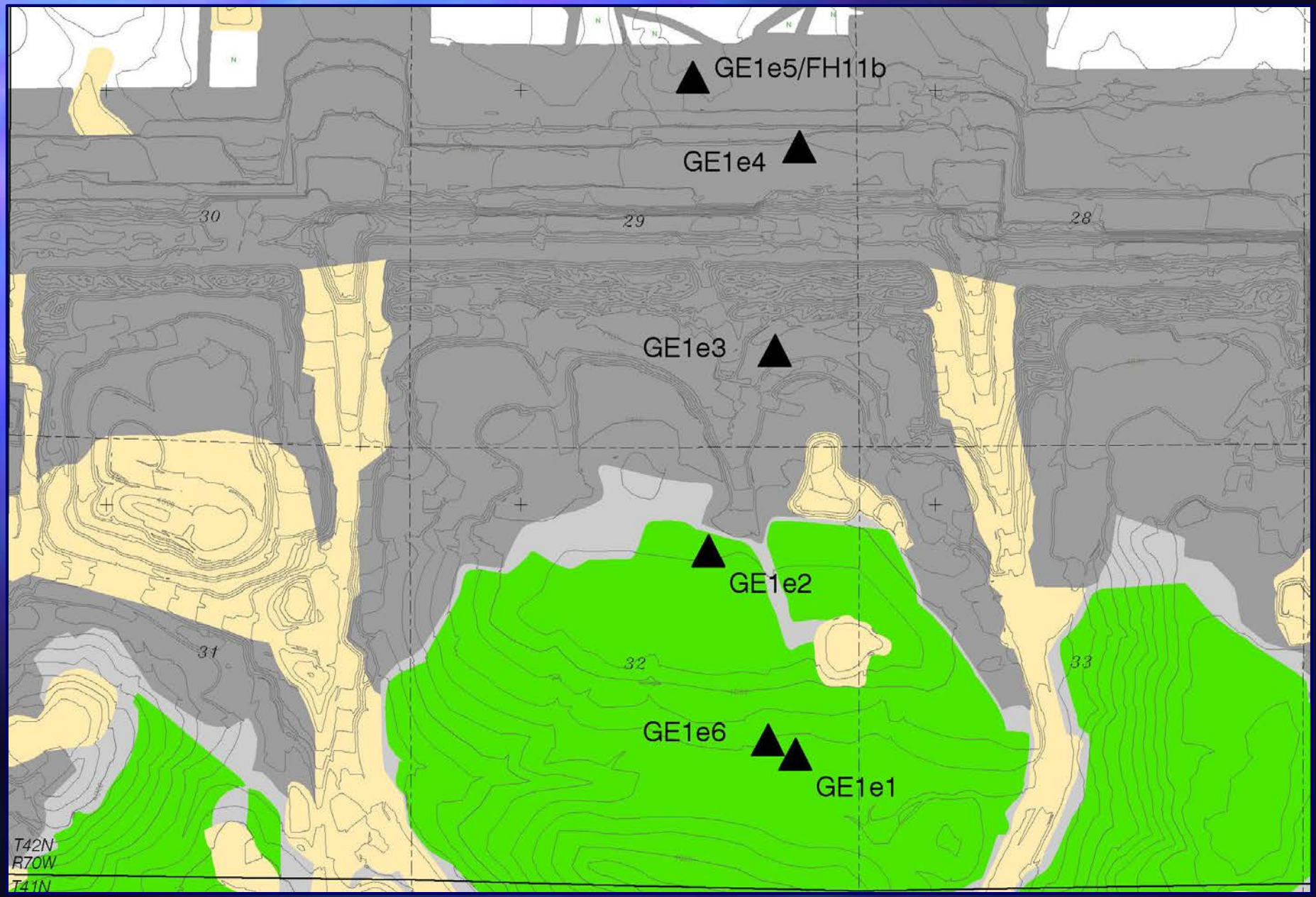
- Summary GE1e Platform 1993 – 2011
  - Moved 2.75 miles from GE1b tree nest (≤1.3 mi/LOS)
  - Moved 3.6 miles from original GE1a tree nest
  - Active 16 of 19 years/Successful 10 of 16 years




GE1e5/FH11b
GE1e4
29
28
GE1e3
GE1e2
32
33
GE1e6
GE1e1
5
4
GE1b
GE1d
GE1c
8
GE1a
9

GE1 Pair

- December 2011 – Move platform 1.5 miles LOS south to permanent reclamation at GE1e^{6}
- 2012 Female loses mate, tends GE1e^{6} site alone
- 2013 Female gets new mate, incubating on GE1e^{6}


GE1e5/FH11b
GE1e4
30
29
28
GE1e3
GE1e2
31
32
33
GE1e6
GE1e1
T42N
R70W
T41N

Conclusions

- Long-term wildlife monitoring provides an important foundation of knowledge that enhances successful avian mitigation efforts at surface coal mines in northeast Wyoming.
- Proactive monitoring and mitigation efforts = fewer conflicts between wildlife and resource extraction, and a better understanding of viable solutions when conflicts are unavoidable.
- Implementation of appropriate mitigation measures results in sustained raptor populations while accommodating the needs of mining operations.

Acknowledgements

The North Antelope Rochelle Mine has consistently and voluntarily exceeded the wildlife monitoring and/or mitigation requirements set forth by State and Federal regulators since the mid-1980s. The individuals, companies, and agencies below have created a strong partnership in mitigation, providing the support and flexibility needed to succeed.

North Antelope Rochelle Mine

(Bryan Hansen, Paul Griswold, Marilee O'Rourke, Jeff Goldsmith, Scott Belden)

Thunderbird Wildlife Consulting, Inc.

(Powder River Eagle Studies, ICF International)

(Howard and Bonnie Postovit, Gwyn McKee, Nichole Rubeck-Schurtz)

Agencies

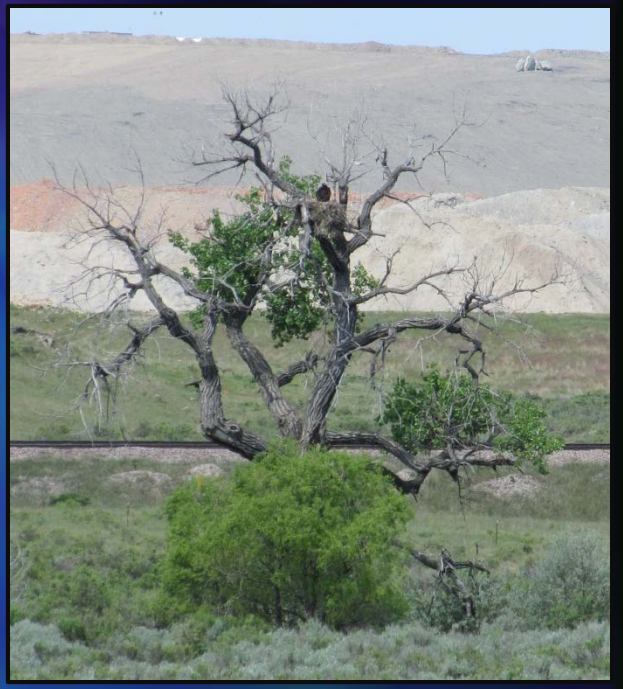
U.S. Fish and Wildlife Service

(Linda Downey, Kelly Gonzales, Kevin Kritz)

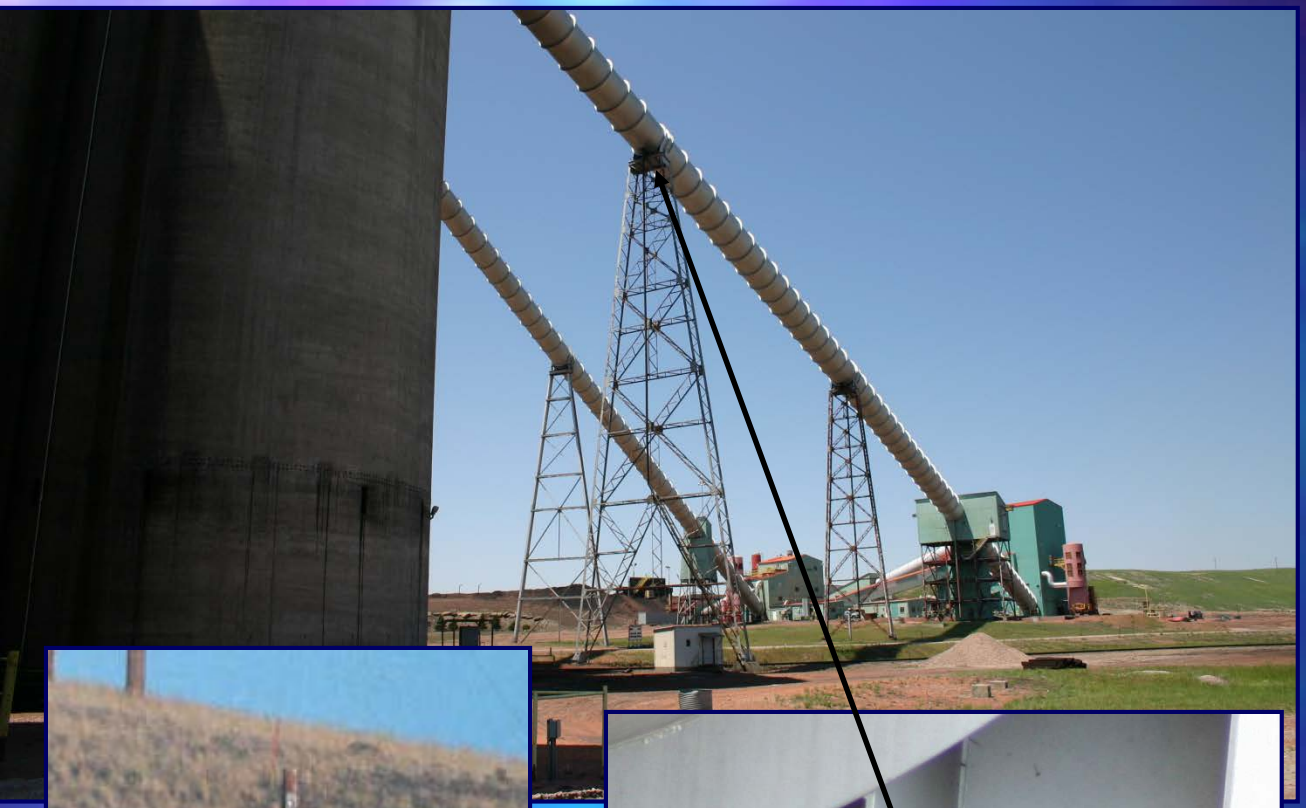
Wyoming Game and Fish Department

(Carol Havlik)

QUESTIONS?



Red-tailed Hawk Nest Progression at Belle Ayr Mine



Relocating an Active Northern Harrier Ground Nest at the Belle Ayr Mine

- Remove Nest and Foster Eggs/Young or Relocate Nest & Eggs