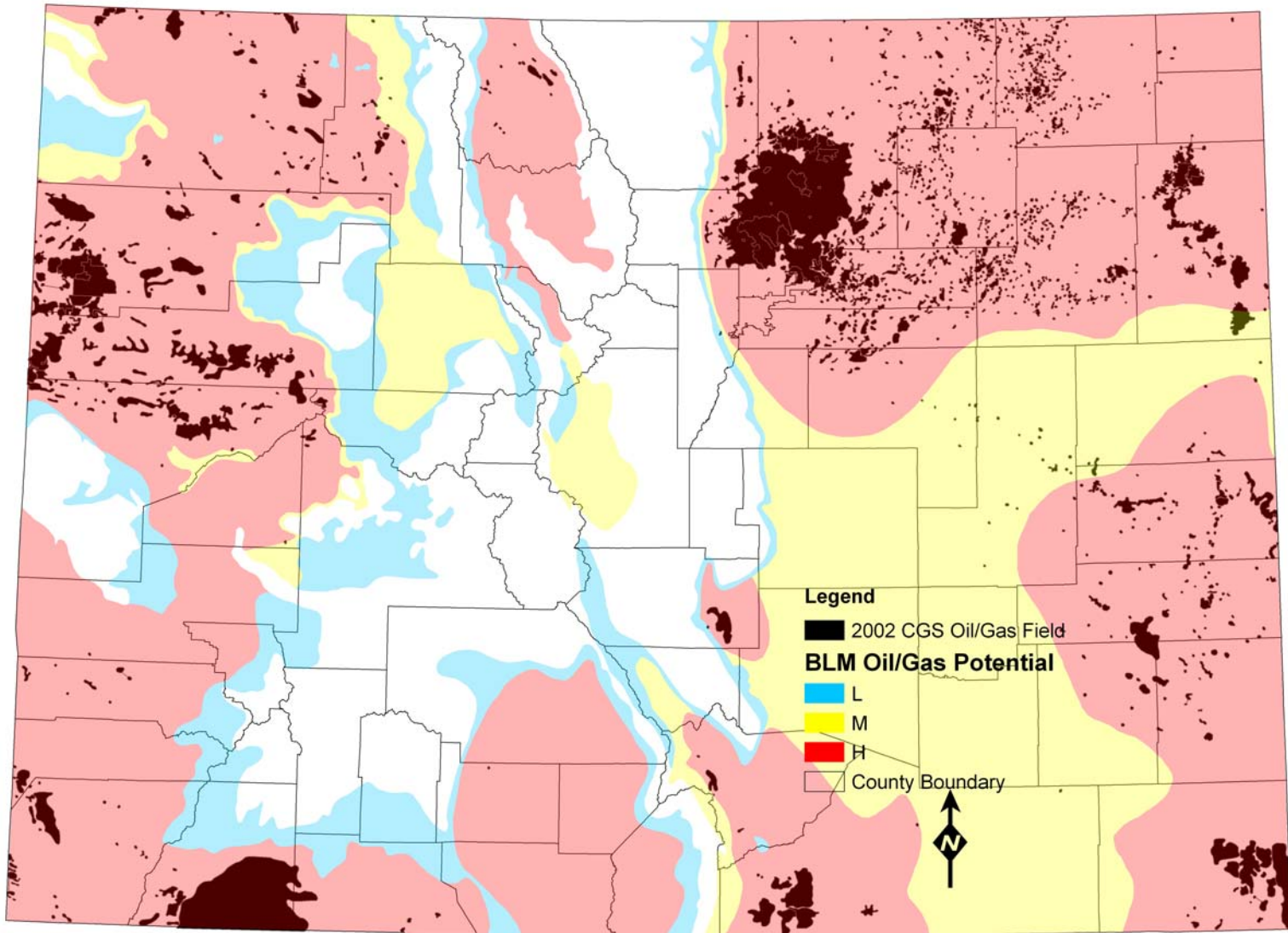




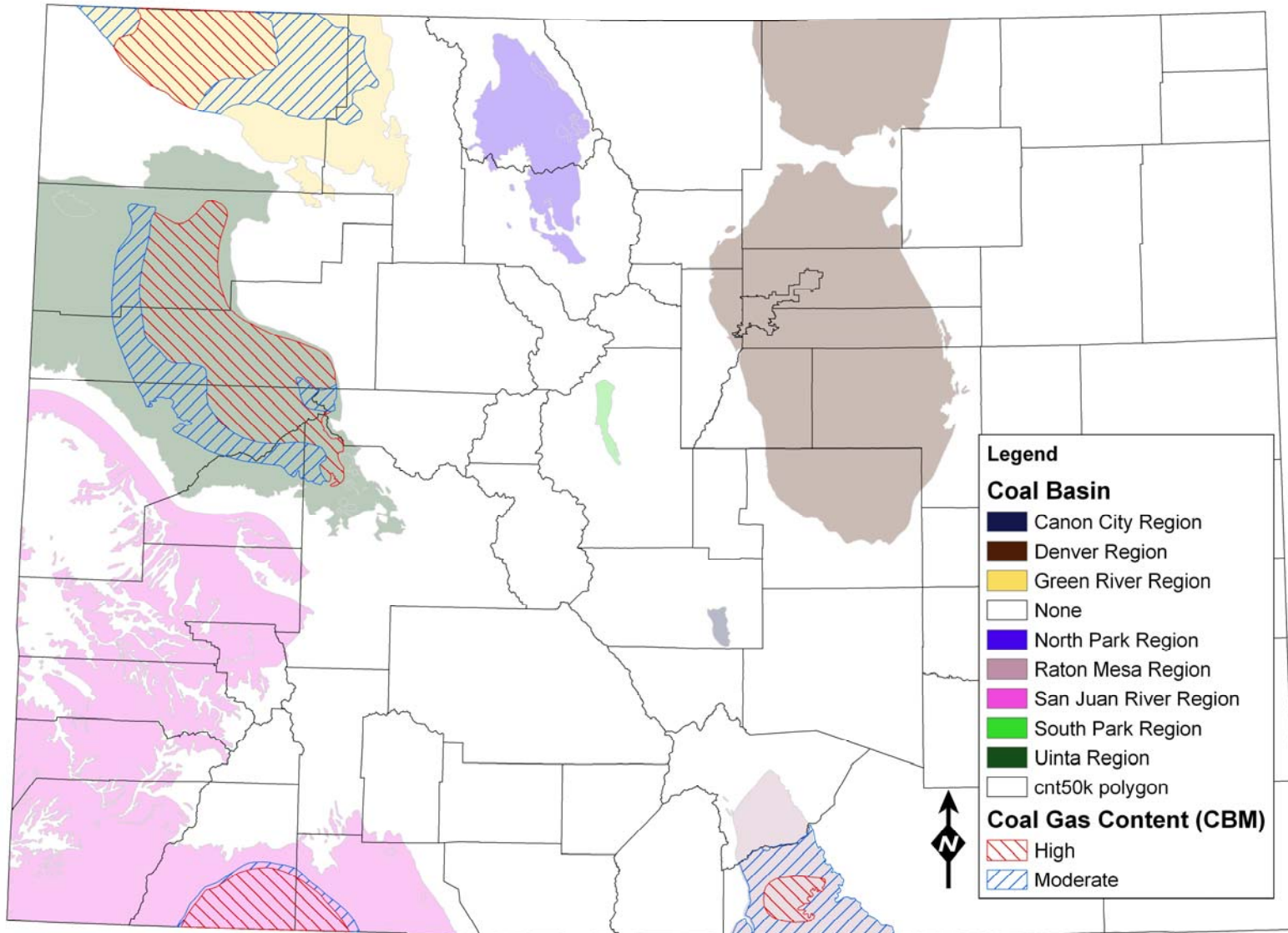
Oil & Gas on Conserved Lands: Impacts and Mitigation

- Steve Boyle
- Senior Biologist, BIO-Logic Environmental

Oil/Gas Potential, Colorado



CBM Potential, Colorado



Conservation Values

-
- **Agricultural**
 - **Natural habitats for plants and animals**
 - **Wildlife**
 - **Open space (scenic values)**



Post file photo



Impacts Can Result from Each Phase of Surface-Disturbing Actions:

- Exploration (~1 year)
- Development (<1 year)
- Production (20-40 years?)
- Reclamation (1-3 years)



Impacts to Agriculture:

- Small area lost to crop or pasture
- Water: wastewater disposal, groundwater contamination or disturbance
- Can be positive impacts to roads, fences, etc.



Impacts to Natural Habitats:

- **Rare or sensitive habitats: wetlands, riparian, cliffs**
- **Surface disturbance can destroy and fragment**
- **Noxious weeds can degrade, especially wetlands and arid sites**
- **Water disturbances and erosion can degrade**



Impacts to Wildlife:

- Some impacts harder to avoid or mitigate
- Species that need space (like big game), species easily disturbed (raptors, lekking grouse)
- Mortality from vehicles, avian predation, and poaching
- Disturbance, affecting habitat use or reproduction
- Surface disturbance and noxious weeds can destroy or fragment habitat



Post file photo



Impacts to Scenic Values:

- What's visible to the public
- How much do the scenic values depend on "pristine"?
- Biggest impacts are likely during development phase

Impact severity relates to:

-
- **Type of resource extracted**
 - **Well density**
 - **Associated infrastructure**
 - **Seasonal timing of human entry**

How Long do Impacts Persist?

-
- **Some: development phase only**
 - **Others: extraction life cycle (20-40 years?)**
 - **A few may persist much longer: noxious weeds, erosion**



Avoid All the Impacts
You Can.

When You Can't,
Mitigate.

- **For problem properties, get a Minerals Assessment Report early**
- **Avoid impacts by acquiring or negating development rights**
- **Mitigate impacts (expert consultation, BLM Best Mgmt. Practices, etc.)**
- **Maintain a dialogue with the developer**