



## Monitoring Reclaimed Lands



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# Monitoring for successful Reclamation

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# Site Information

- Unit Name – or number
- Study Site – Specific Site where monitoring data is collected
- Date
- Observer
- Methods
- Date Study Established & GPS Coordinates



# Predisturbance Inventory

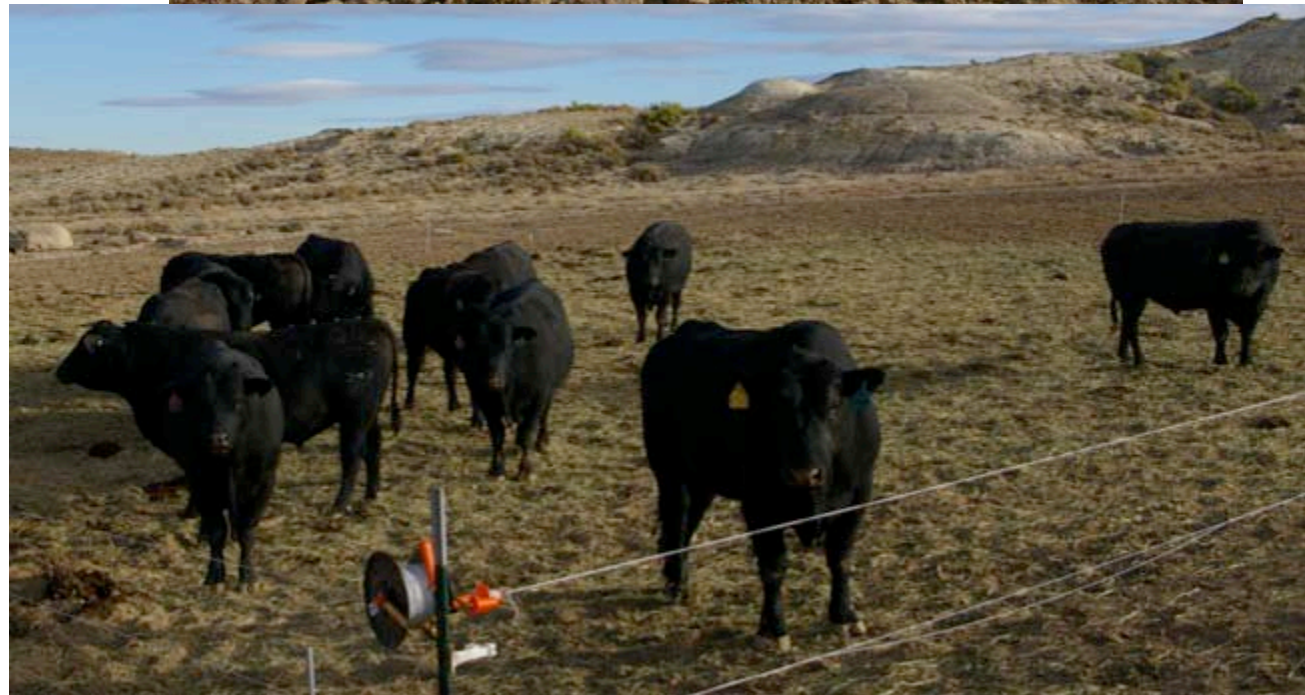
- ❖ Identify Ecological Site
  - Soil types
  - Depth
- ❖ Record Plant Species
- ❖ Determine Cover
  - Grasses
  - Forbs
  - Shrubs
  - Bare Ground
- ❖ Landscape appearance
  - Slope
  - Drainage patterns
- ❖ Wildlife



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# Seedbed

- Clods
- Moisture
- Firmness




# Seeding

- Species
- Rate
- Depth
- Timing



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# After seeding

## Erosion: Water

- Rill-the development of small ephemeral concentrated flow paths a few centimeters in depth.
- Sheet-involves the removal of a uniform thin layer of soil across a large area
- Gulley-formed by the coalescence of many rills



# Wind Erosion

- May expose seed
- Cover downwind seed reducing or preventing the emergence of some species.





# Germination

- When ground temperatures reach a constant  $50^{\circ}$ - $55^{\circ}$  begin checking for seed germination.
- Check a number of locations within the reclaimed area.
- Precipitation Amount & Timing



# Emergence

- Check for soil crust
- If crust is present use harrow to break crust
- Continue to monitor after emergence throughout growing season



# Plant Density & Composition

- Count plants within a ½ meter frame at several locations within the reclaimed area.
- Determine species composition
- Are the desired species present?



# Competition

- Weeds
- Spray or not to spray?
  
- Patience: it may take two to three years for establishment



## Vegetation Monitoring Methods

- Sample Point
- Daubenmire
- Line intercept
  
- Follow Agency Guidelines (BLM, USFS, ETC)
- Private Landowner's stipulations



## Additional useful Information in Monitoring report

- Track Processes:
- Topsoil stripping depth
- Ripping/topsoil spreading
- Seed variety/rate and seeding method
- Soil amendments
  - Fertilizer
  - Compost etc
- Weed control methods



# Monitoring Method References

- Sample Point
  - » <http://www.ars.usda.gov/services/software/download.htm?softwareid=254>
- Daubenmire
  - [www.blm.gov/nstc/library/pdf/MeasAndMon.pdf](http://www.blm.gov/nstc/library/pdf/MeasAndMon.pdf).
- Cover By Life form
  - Monitoring Manual for Grasslands, Shrublands, and Savanna Ecosystems VII (Herrick et al. 2005)