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Considering Plant Succession and Land Use in Reclamation Planning

Best Management Practices in Restoration II Workshop WRRC Pinedale Wyoming

April 30, 2015

Desired Plant Community

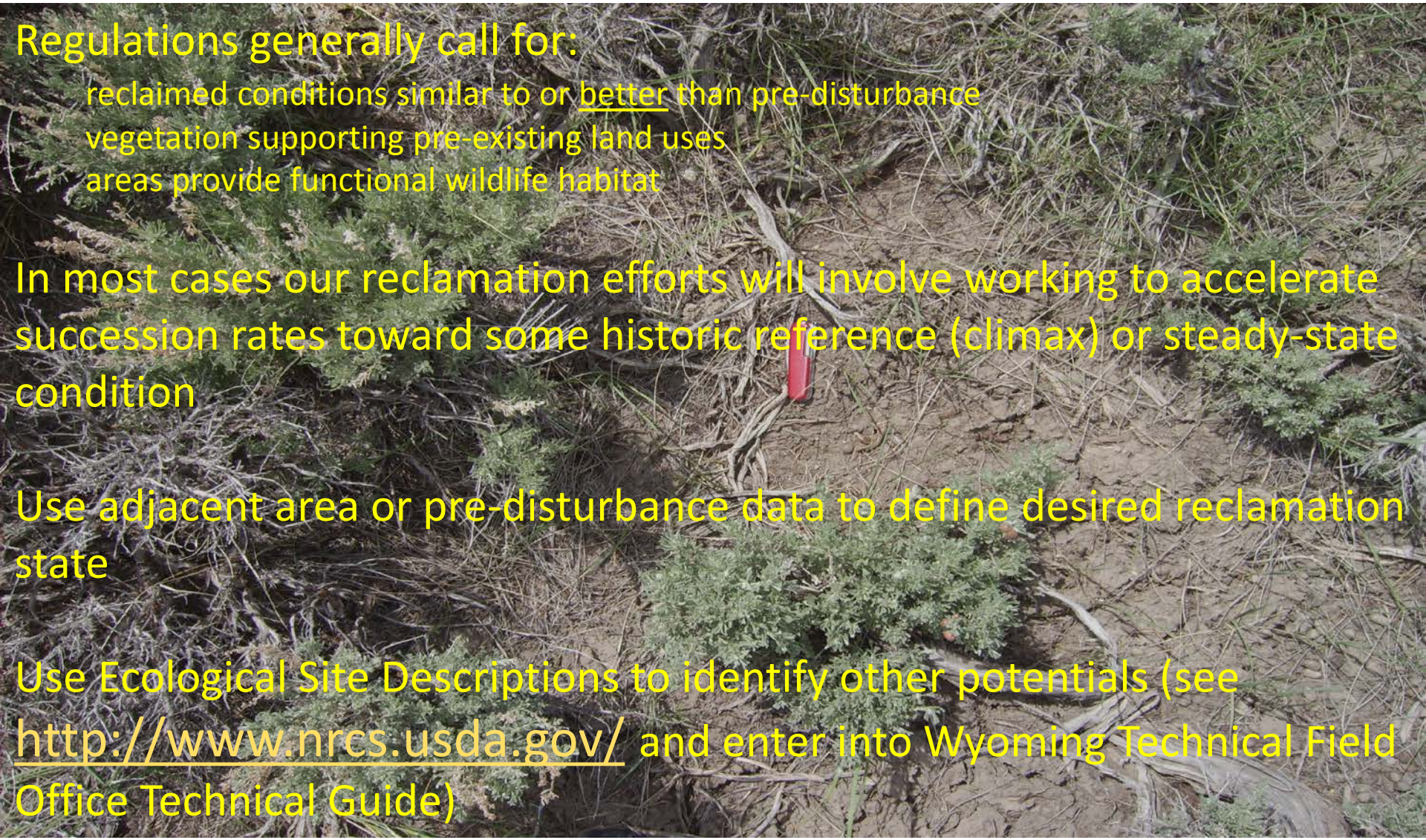
What is Succession and Why is it Important

Why is Post-reclamation Land Use Important

Grazing to Manage Reclaim Succession

Monitoring Reclamation Trend

Desired Post-Reclamation Plant Community



Regulations generally call for:

- reclaimed conditions similar to or better than pre-disturbance
- vegetation supporting pre-existing land uses
- areas provide functional wildlife habitat

In most cases our reclamation efforts will involve working to accelerate succession rates toward some historic reference (climax) or steady-state condition

Use adjacent area or pre-disturbance data to define desired reclamation state

Use Ecological Site Descriptions to identify other potentials (see http://www.nrcs.usda.gov/ and enter into Wyoming Technical Field Office Technical Guide)

Desired Post-Reclamation Plant Community

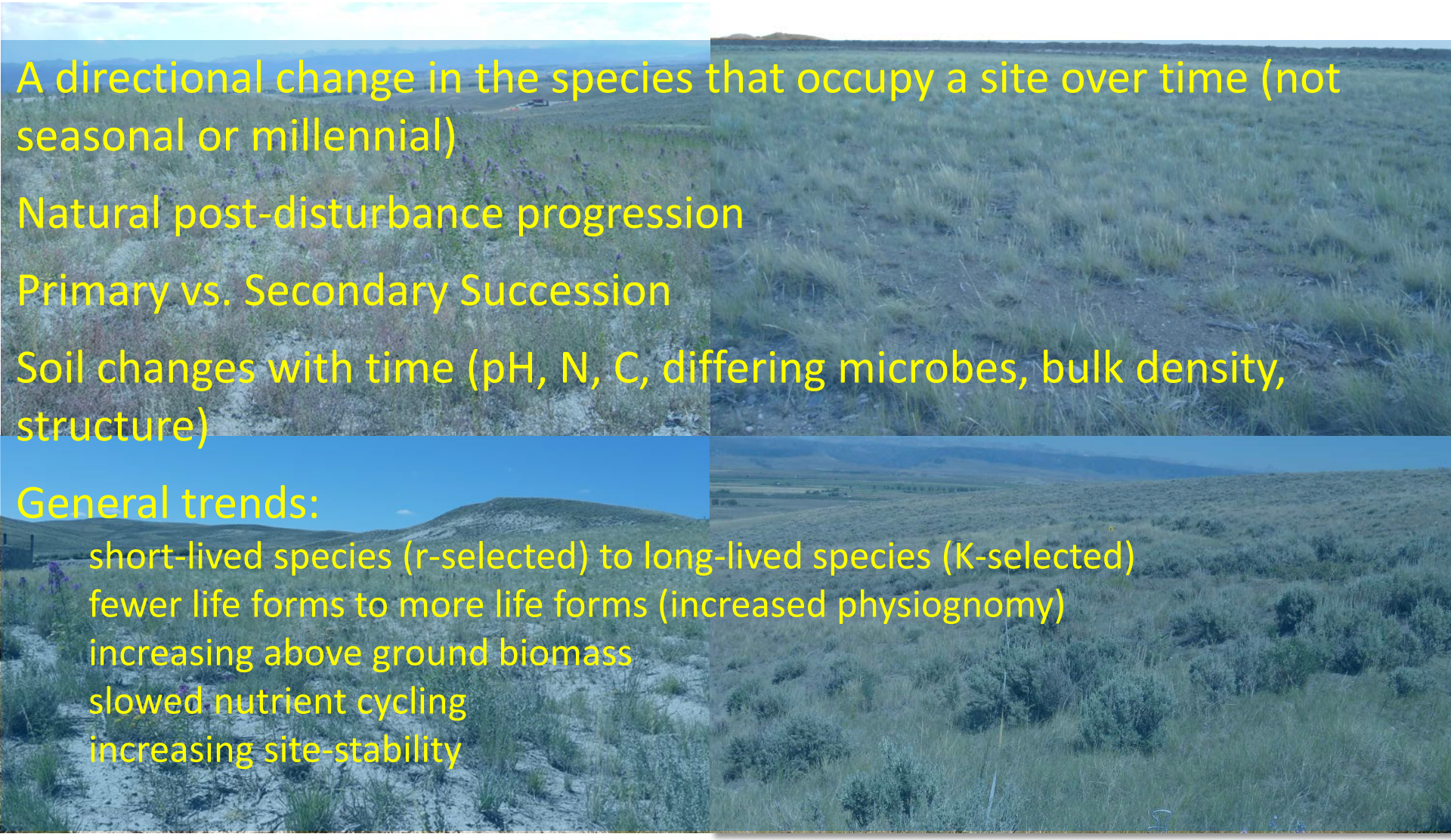
Consider:

- Ease of establishment
- Time (years) to desired outcome
- Availability of site-appropriate seed
- Maintenance of site-stability
- Capability to control/modify land uses
- Likely/potential community-affecting soil characteristics
- Potential for noxious/invasive species

The pre-disturbance condition may not be the most desirable

Alternate reclamation communities at interim vs. final reclamation sites?

Plant Succession



A directional change in the species that occupy a site over time (not seasonal or millennial)

Natural post-disturbance progression

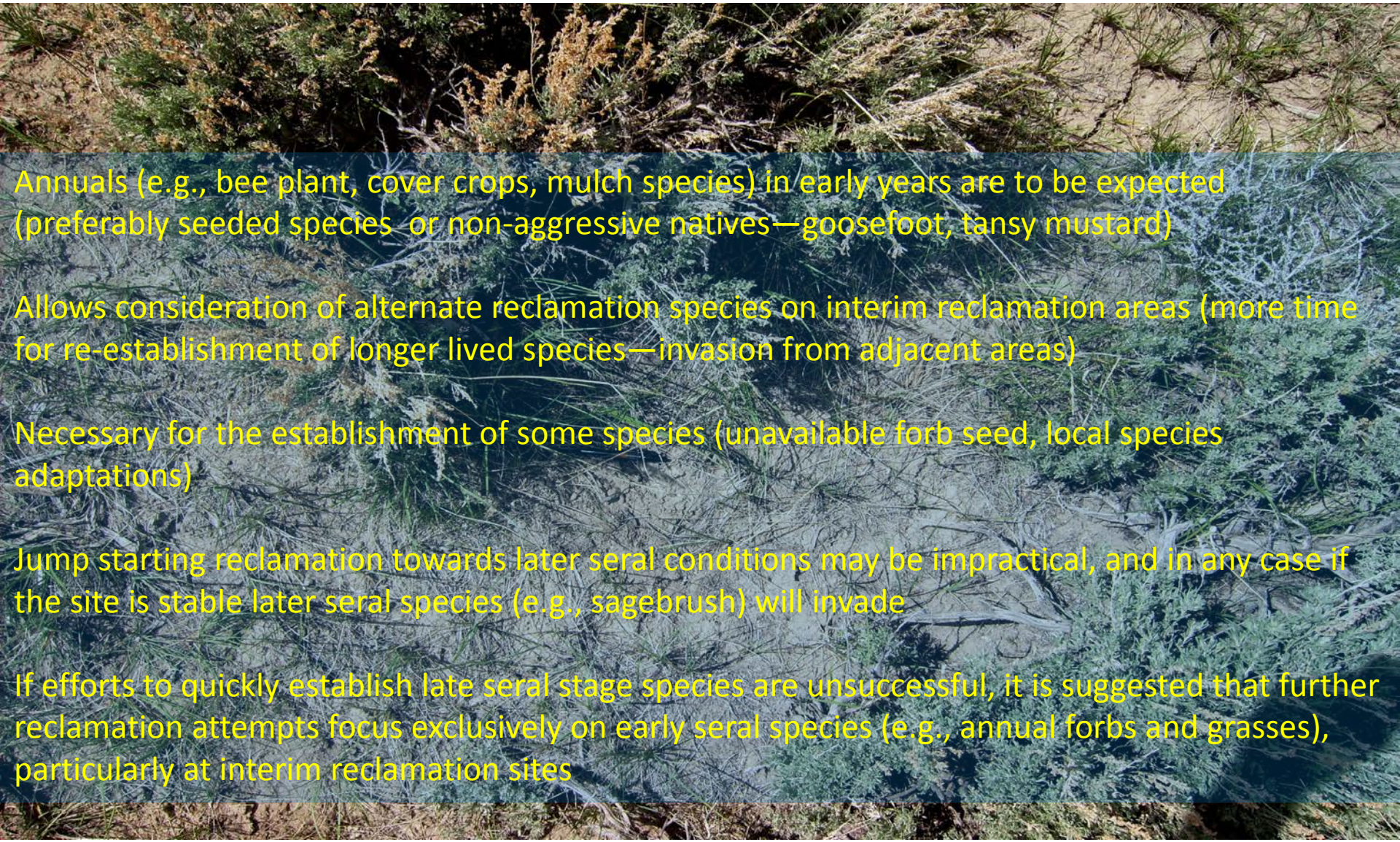
Primary vs. Secondary Succession

Soil changes with time (pH, N, C, differing microbes, bulk density, structure)

General trends:

- short-lived species (r-selected) to long-lived species (K-selected)
- fewer life forms to more life forms (increased physiognomy)
- increasing above ground biomass
- slowed nutrient cycling
- increasing site-stability

Why Succession Matters



Annuals (e.g., bee plant, cover crops, mulch species) in early years are to be expected (preferably seeded species or non-aggressive natives—goosefoot, tansy mustard)

Allows consideration of alternate reclamation species on interim reclamation areas (more time for re-establishment of longer lived species—invasion from adjacent areas)

Necessary for the establishment of some species (unavailable forb seed, local species adaptations)

Jump starting reclamation towards later seral conditions may be impractical, and in any case if the site is stable later seral species (e.g., sagebrush) will invade

If efforts to quickly establish late seral stage species are unsuccessful, it is suggested that further reclamation attempts focus exclusively on early seral species (e.g., annual forbs and grasses), particularly at interim reclamation sites

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Grazing to Direct Successional Trend

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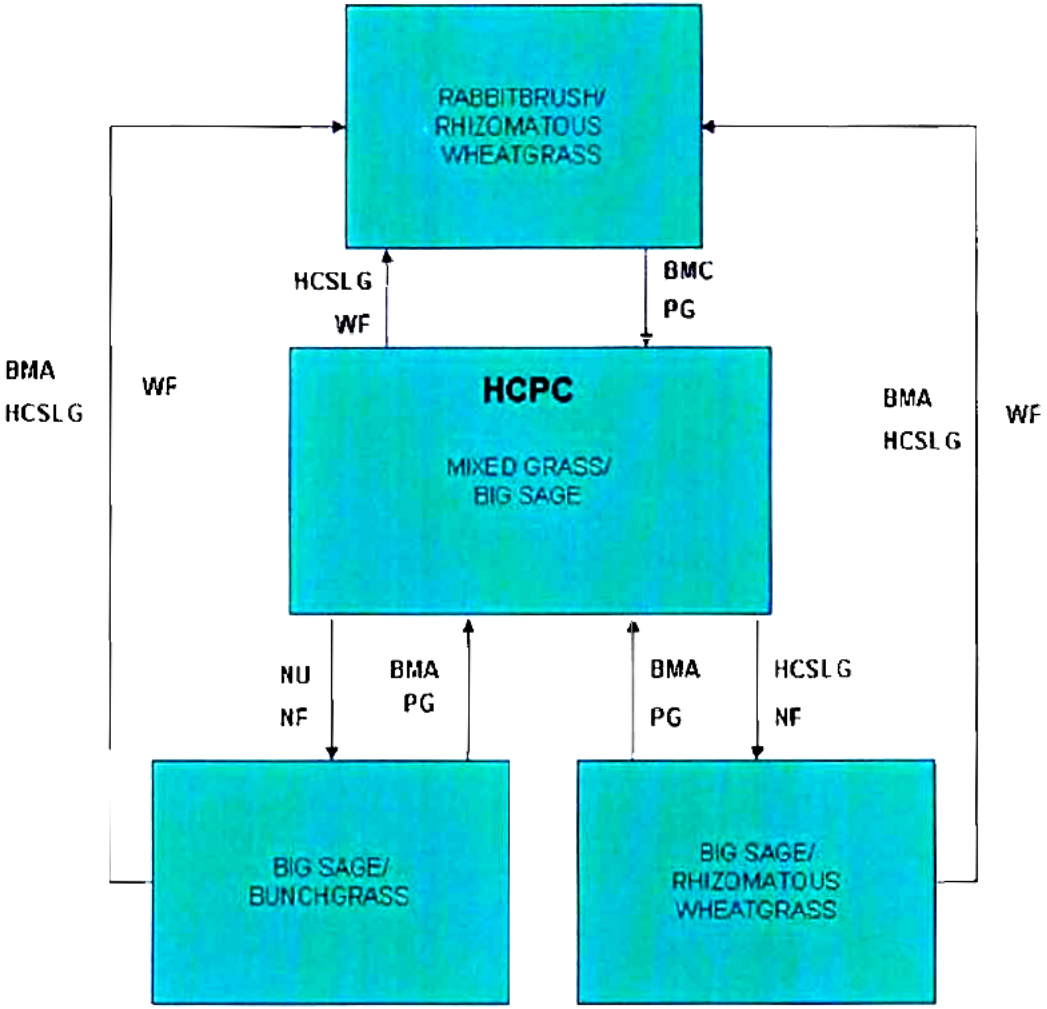
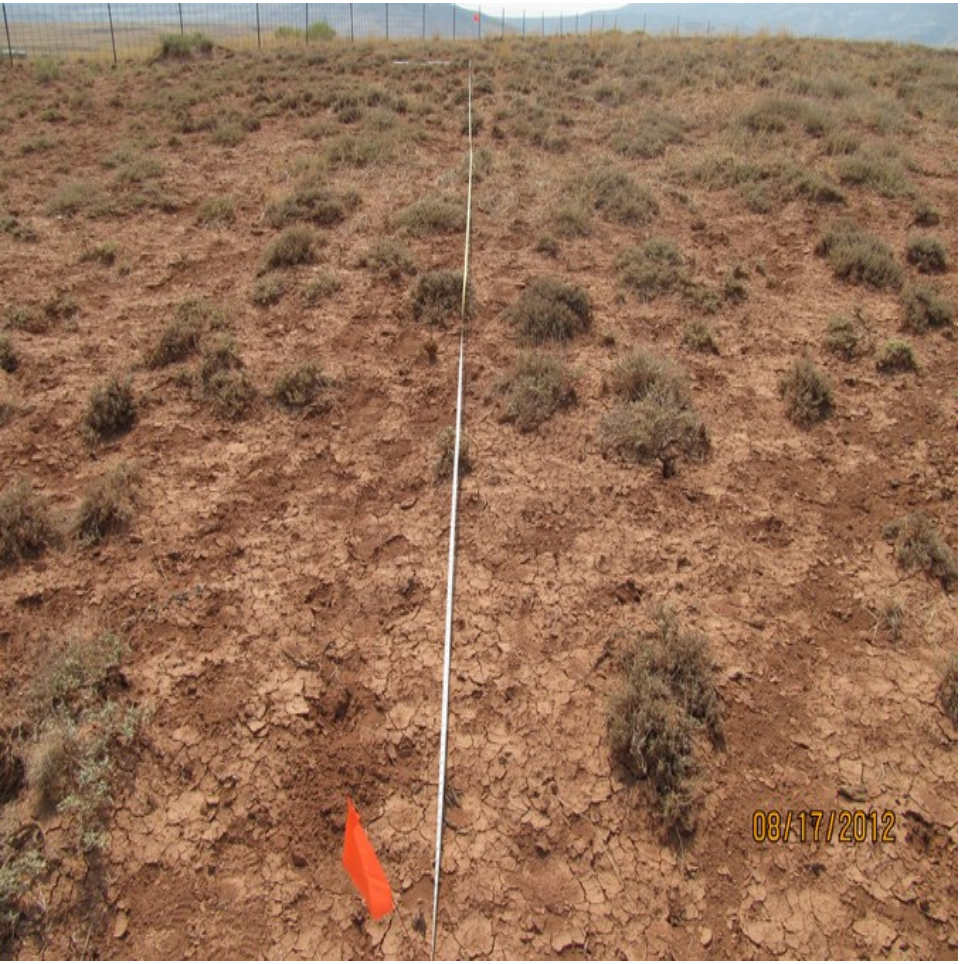
Site Type: Rangeland
MLRA: 34A-Cool Central Desertic Basins and Plateaus

Loamy (Ly) 10-14W
R034AY222WY



Fencing to Exclude Grazing



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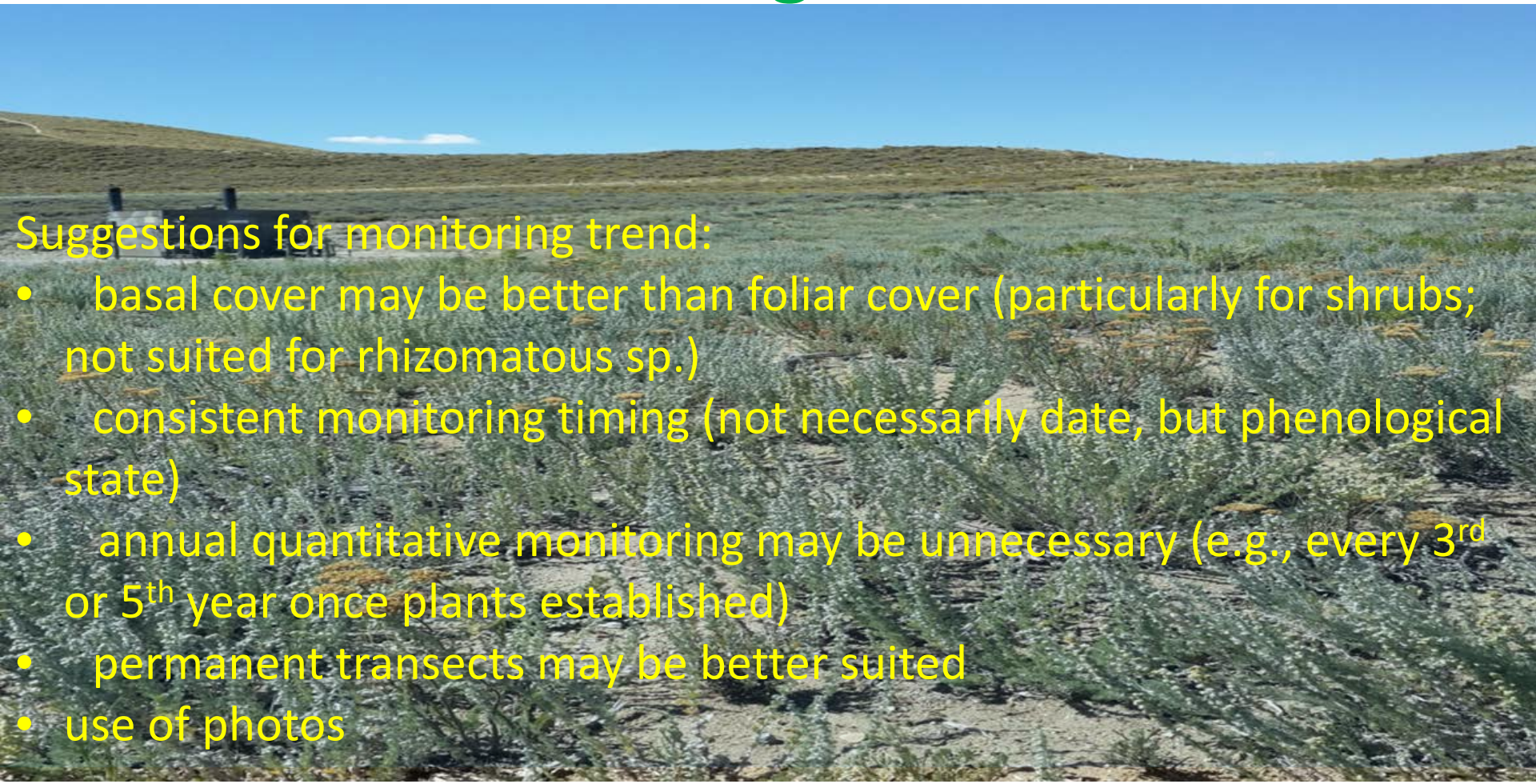
Monitoring for Trend



Suggestions for monitoring trend:

- basal cover may be better than foliar cover (particularly for shrubs; not suited for rhizomatous sp.)
- consistent monitoring timing (not necessarily date, but phenological state)
- annual quantitative monitoring may be unnecessary (e.g., every 3rd or 5th year once plants established)
- permanent transects may be better suited
- use of photos

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Questions

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