SLIDES: BMPs for Reclamation: Do We Know What Is Effective?

Peter Stahl

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BMPs FOR RECLAMATION:
DO WE KNOW WHAT IS EFFECTIVE?

Pete Stahl
Wyoming Reclamation and Restoration Center
Department of Renewable Resources
College of Agriculture and Natural Resources
University of Wyoming
WRRC MISSION:

to develop, collect, and disseminate impartial scientifically based information related to the reclamation, restoration and remediation of disturbed lands in Wyoming and the western United States.

and

train students and practitioners in land reclamation and restoration ecology, offering an undergraduate minor in Land Reclamation and certification for graduate students.

EDUCATION, OUTREACH, RESEARCH
Outline of Talk

What do we know about reclamation practices effective in Remediation of Oil and Gas well pads?

How is effectiveness measured?

What are the difficulties/problems in measuring effectiveness of reclamation practices?

What is the value of monitoring/measuring?
WHAT DO WE KNOW?

Reestablishment of native vegetation under particularly stressful environmental conditions.

Seed of native plants

Problematic soils

Invasive species

Habitat restoration

Respread topsoil on a Gas Well Pad in the Wamsutter Field; photo by A. Mason
HOW IS EFFECTIVENESS MEASURED?

- Revegetation
- Soil Stability
- Wildlife Habitat

ECOSYSTEM FUNCTION and RESILIENCE

DOCUMENTATION and MONITORING!!

Energy Companies, Regulatory Agencies, Reclamation Contractors
DIFFICULTIES/PROBLEMS IN MEASURING EFFECTIVENESS OF RECLAMATION PRACTICES?

Costs/Time

Standardized analytical methods

Site to Site Variability/Year to Year Variability
(lack of controlled, replicated experiments)

Database establishment, maintenance, QA/QC, accessibility
WHAT IS THE VALUE OF QUANTITATIVE MONITORING?

PRICELESS!

Reclaimed Surface Coal Mine Pit, Seminoe Mine near Hanna, WY. Photo by J. Anderson
WRRC’s APPROACH TO DEVELOPMENT OF RECLAMATION BMPs

Informed Basic Research

Monitoring and Evaluation of Documented Practices

Database Examination and Field Monitoring
CURRENT RECLAMATION RELATED RESEARCH AT THE UNIVERSITY WYOMING


- Reclaiming Halogeton Invasions of Salt-Desert Shrublands in the Wyoming Basin, Ann Hild, PI. Funded (in part) by the Wyoming Reclamation and Restoration Center

- Identification of Elk Disturbance Risk and Driving Mechanisms in a Natural Gas Development Field, Jeff Beck, PI. Conducted in the Fortification Creek area. Funded by Wyoming Reclamation and Restoration Center.

- Coalbed Natural Gas Co-produced Water Impacts on Soils, George Vance, PI.

- Innovative Remediation Strategies for Radium Ponds, Pete Stahl and Lisa Cox, PIs. Funded by the Wyoming Mining Association and UW School of Energy Resources.
CURRENT RECLAMATION RELATED RESEARCH AT THE UNIVERSITY OF WYOMING

- Economics of Native Seed Production for Reclamation and Restoration Activities, Roger Coupal, Kristiana Hansen and Kristina Hufford, PIs. Funded by Wyoming Reclamation and Restoration Center.


- Improving Reclamation Methods in Southern Wyoming, Pete Stahl and Steve Williams, PIs. Funded by the Bureau of Land Management.

- Improving Sagebrush Reclamation Technologies in Bentonite Minelands of the Bighorn Basin, Pete Stahl and Lyle King, PIs. Funded by the Bureau of Land Management.
INDUSTRY SUGGESTIONS FOR RESEARCH

1. Document successful reclamation in steep topographic areas and areas considered to have low reclamation potential.

2. Definition of areas of No Reclamation Potential.

3. Clear definition of Low Reclamation Potential sites (LRP criteria and the practices and measures that can be implemented to successfully reclaim these areas.

4. Establish a variety of monitoring protocols acceptable to both regulatory agencies and industry operators.

5. Reestablishment of native grasses; methods for control of cheatgrass.

7. Reclamation strategies for produced water reservoirs.

8. Ozone formation chemistry; driving forces in Upper Green River Basin vs. Powder River Basin


10. Particulate Emissions; improved methods for reduction of dust associated with traffic on dirt roads.
REESTABLISHMENT OF NATIVE GRASSES;
CONTROL OF CHEATGRASS

Successful restoration of severely disturbed lands:
Seeding essentials for reclaiming disturbed lands

http://ces.uwyo.edu/PUBS/B1204.pdf

Publication Author(s): Calvin Strom, Jay Norton, Todd Loubsky
Hard Copy Price: 5.00

HANDBOOK OF WESTERN RECLAMATION TECHNIQUES

RECLAIMING/ENHANCING SAGE-GROUSE HABITAT

Energy development and wildlife habitat database organization. Pete Stahl and John Tanaka, PIs. Funded by Wyoming Department of Game and Fish.

Improving sagebrush reclamation in bentonite mining areas of the Bighorn Basin. Pete Stahl and Lyle King, PIs. Funded by the U.S. Bureau of Land Management.
OZONE

Dr. Derek Montague, Associate Professor of Atmospheric Science and Dr. Robert Field, Lecturer, Environment and Natural Resources

Air Quality Studies in the Upper Green River Basin, Wyoming. Funded by WYDEQ and the University of Wyoming School of Energy Resources.
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