

Monitoring and Compliance



Introduction

Students will understand:

- Why monitor for compliance,
- Elements of a monitoring plan,
- Examples to consider when developing a monitoring strategy.

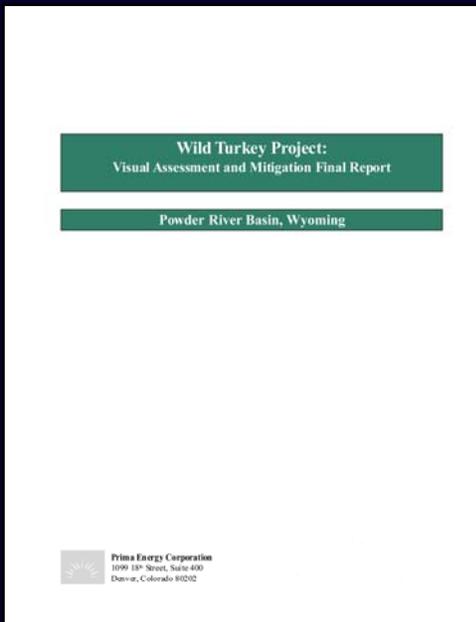
Introduction

Monitor? Why? What for?

- Compliance Monitoring – Did they do what was required?
- Effectiveness Monitoring - Did it work?
- Validation Monitoring – Did we ask them to do the right thing?
- Adaptive Management – If it did not work, what changes should we make now or in the future?

Introduction

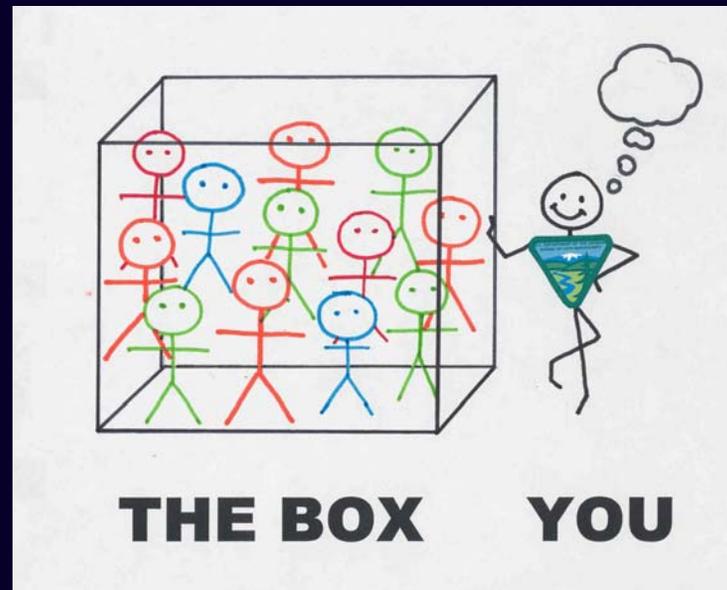
Mitigation Plans should include a monitoring section



- Sets conditions and monitoring methods
- Clarifies performance standards
- How compliance will be quantified/measured
- Outlines corrective actions
- Establishes a clear understanding of expectations during implementation – a road map to success

Responsibilities

There is no standard template for monitoring and compliance strategy



Responsibilities

BLM proposed activity –

- BLM is responsible for development of the plan
- Coordinate among the resource specialists
- Document procedures agreed to and document finding during progress site visits

Responsibilities

Industry Proposed Activity – Proponent's responsibility

- Industry proponent develops monitoring plan
- Compliance/ monitoring strategy should be a chapter in the project's VRM plan
- As with the VRM plan, the C/M strategy needs to be based on sound design and mitigation planning principles.
- Critical review ensuring implementation
- Incorporate into the Conditions of Approval
- Document procedures during project implementation

Responsibilities

Industry proposed activity – BLM responsibilities

- Assess the plan – is it credible?
- Have the tools necessary to monitor been provided in the plan? – If not?
- Make sure the C/M strategy is a part of the COA
- Making sure the proponent is implementing the monitoring strategy
- A regularly schedule report should be a part of the plan – has it been submitted?

Responsibilities

Follow up monitoring and compliance takes time and costs.

But a failed plan is more costly to correct.

Qualifications

Should there be qualifications required for VRM designer/ planner?

How much monitoring?

Keep the level of effort in scale with the project.

- small
- simple
- easy access



How much monitoring?

Keep the level of effort in scale with the project.

- large scale
- long term presence



How much monitoring?

Keep the level of effort in scale with the project.

- Cumulative impacts
- Special sensitivities



How much monitoring?

Keep the level of effort in scale with the project.

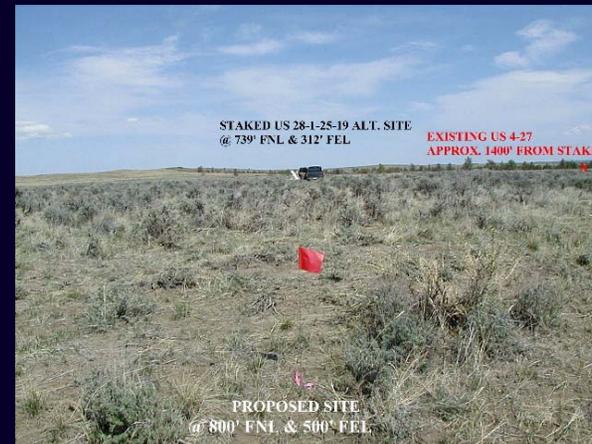
- large scale
- linear extension over many miles
- complex
- many jurisdictions



Tracking progress

Site visits with comprehensive image library of project at various stages:

- Pre-application site visit
- Site improvement survey
- Construction
- Post construction
- Reclamation
- Post reclamation



Measuring for compliance

There should be a nexus between the construction plans and the monitoring strategy:

Delineating and fencing disturbance limits:

Monitor fence condition

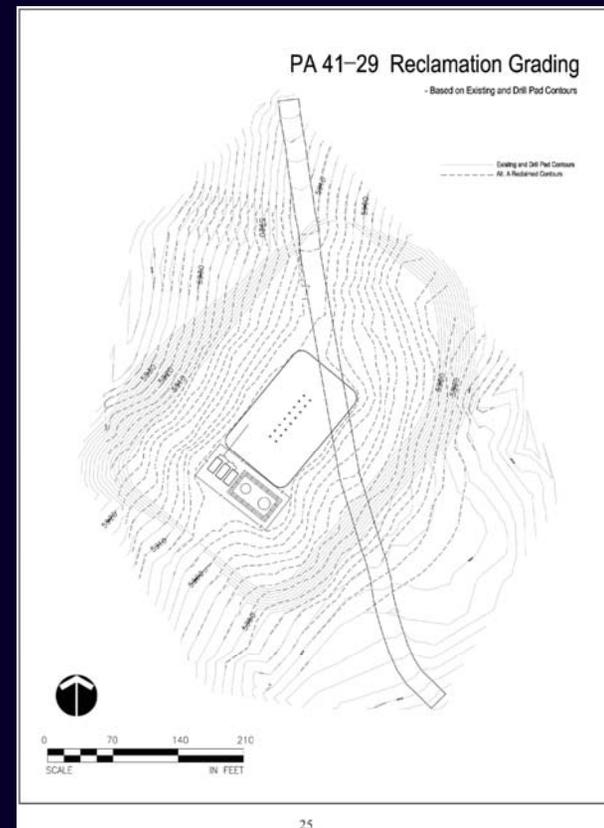
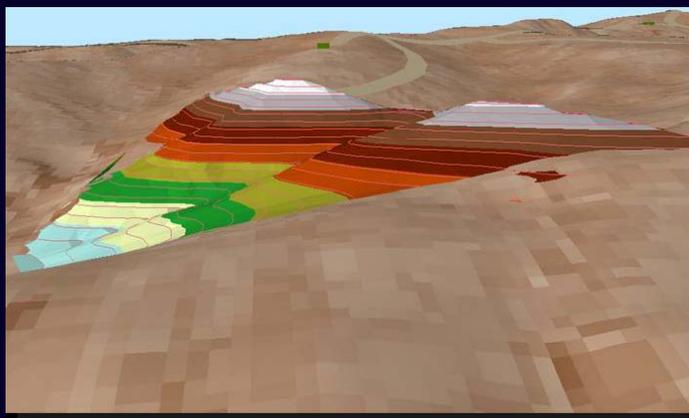


Measuring for compliance

There should be a nexus between the construction plans and the monitoring strategy:

Earthwork:

- Visual review
- Survey grading/quantities
- Topsoil spec, depth, testing

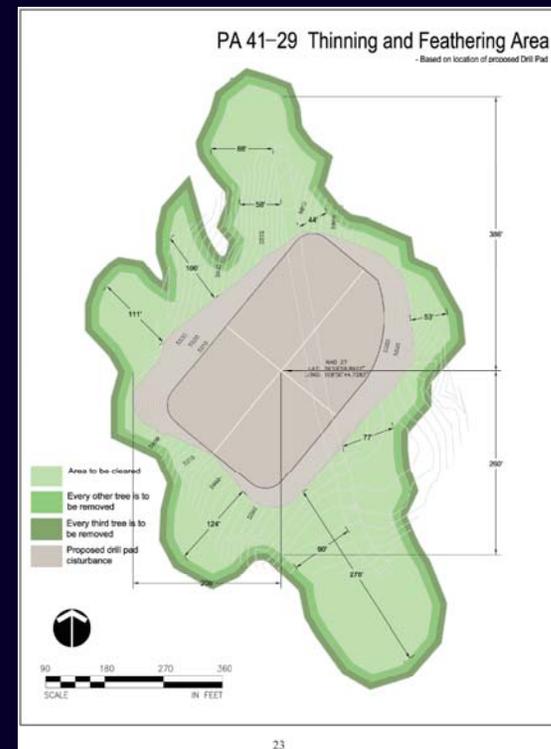


Measuring for compliance

There should be a nexus between the construction plans and the monitoring strategy:

Vegetation Management:

- field stake, flag veg removals
- survey finished grading
- tree counts
- acres cleared/stems per acre



Measuring for compliance

There should be a nexus between the construction plans and the monitoring strategy:

Revegetation:

- Topsoil spec/sampling/testing
- Seedmix list/seed tags/purity/germination test – PLS
- Seeding application – drill/broadcast/ hydro-seed
- Plantings – proper installation/ proper count
- Maintenance schedule – weeds/ watering/ replacement
- Vegetation survey – % composition - cover

Appendix C

SEED MIX			
COMMON NAME	SCIENTIFIC NAME	VARIETY	POUNDS of PLS/ACRE
Indian ricegrass	<i>Achnatherum hymenoides</i>	Paloma	1.5
Fringed Sage	<i>Artemisia frigida</i>		0.25
Prairie Sage	<i>Artemisia ludoviciana</i>		0.25
Wyoming big sagebrush	<i>Artemisia tridentata ssp. wyomingensis</i>		1
Fourwing saltbrush	<i>Atriplex canescens</i>	Rincon	1.5
Shadscale saltbrush	<i>Atriplex confertifolia</i>		1.5
Sideoats Grama	<i>Bouteloua curtipendula</i>	Vaughn or Niner	1.5
Winterfat	<i>Ceratoides lanata</i>		0.5
Thickspike Wheatgrass	<i>Elymus lanceolatus</i>	Critana	1.5
Galleta grass	<i>Hilaria jamesii</i>	Viva	1
Western wheatgrass	<i>Pascopyrum smithii</i>	Ariba	2
Sandberg bluegrass	<i>Poa secunda</i>		0.5
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	P-7	1.5
Scarlet globemallow	<i>Sphaeralcea coccinea</i>		0.25
Alkali Sacaton	<i>Sporobolus airoides</i>	Salado	0.25

Measuring for compliance

There should be a nexus between the construction plans and the monitoring strategy:

Appendix C

SEED MIX			
COMMON NAME	SCIENTIFIC NAME	VARIETY	POUNDS of PLS/ACRE
Indian ricegrass	<i>Achnatherum hymenoides</i>	<i>Paloma</i>	1.5
Fringed Sage	<i>Artemisia frigida</i>		0.25
Prairie Sage	<i>Artemisia ludoviciana</i>		0.25
Wyoming big sagebrush	<i>Artemisia tridentata ssp. wyomingensis</i>		1
Fourwing saltbrush	<i>Atriplex canescens</i>	<i>Rincon</i>	1.5
Shadscale saltbrush	<i>Atriplex confertifolia</i>		1.5
Sideoats Grama	<i>Bouteloua curtipendula</i>	<i>Vaughn or Niner</i>	1.5
Winterfat	<i>Ceratoides lanata</i>		0.5
Thickspike Wheatgrass	<i>Elymus lanceolatus</i>	<i>Critana</i>	1.5
Galleta grass	<i>Hilaria jamesii</i>	<i>Viva</i>	1
Western wheatgrass	<i>Pascopyrum smithii</i>	<i>Arriba</i>	2
Sandberg bluegrass	<i>Poa secunda</i>		0.5
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	<i>P-7</i>	1.5
Scarlet globemallow	<i>Sphaeralcea coccinea</i>		0.25
Alkali Sacaton	<i>Sporobolus airoides</i>	<i>Salado</i>	0.25

Measuring for compliance

How long?

Defined in plan:

- Will vary from project to project and mitigation actions:
 - Seeded revegetation – 1 to 2 years
 - Planted revegetation – maybe up to 5 years
- If compliant before monitoring duration is complete
- If non-compliant at monitoring completion

Measuring for compliance

Tools:

- Quantify the VRM mitigation implementation using the design plans, rather than simple qualification of anticipated results.

Measuring for compliance

Tools:

- Use the information produced during design/planning phase during monitoring period
 - GPS/GIS/ AutoCadd/ Photoshop interface
 - Photo simulations
 - 3-D terrain models of proposed grading
 - Construction plans
 - **As-built plans**

Measuring for compliance

Tools:

- The dangers of relying solely on photos. Just because it looks good - does this mean that the design elements and mitigation measures were adequate? If not, explain why.

- Create mitigation monitoring points
- Same as Key Observation Points (KOP)
- Different than KOPs.
- Photo documentation points - should be taken from same location and established before construction begins. Should be identified in monitoring plan.

Measuring for compliance

Who Can Help

- Consult with others in your office or area that have monitoring experience, such as
 - natural resource specialist,
 - fluid minerals experts,
 - range conservationist,
 - biologist
 - Lands and realty staff



Measuring for compliance

Other Tips

- Work with proponents early on and throughout the monitoring process. Avoid surprises.
- Hold a preconstruction meeting
- Tips on documentation – photos, GIS, others?
- Develop a listing of best management practices that fit the soils, geology, vegetation in the area

Level of Mitigation Effort Rating Chart	Low	Medium	High
VMP-1A: Topsoil stripping and replacement		X	
VMP-1B: Surface texture		X	
VMP-2: Facility Color	X		
VMP-3A: Cuts and Fills - Top/Toe of Slope Rounding and Contouring			X
VMP-3B: Road Edge Contouring		X	
VMP-3C: Bedrock Excavation			X
VMP-4A: Vegetation Preservation – Preservation and facility placement relative to existing vegetation	X		
VMP-4B: Vegetative Screening – Medium Level of Effort		X	
VMP-4C: Vegetation Feathering	X		
VMP-4D: Revegetation		X	
VMP-5A: Minor Relocation	X		
VMP-5B: Major Relocation			X