Visualizing the Project

Visual Simulations Overview

- **Definition…**
- **Uses…Why do we ask for them?**
- **Types….examples…pros/cons**
  - *Traditional vs. Computer-Generated*
  - 2d Image Editing
    - Adobe Photoshop
  - 3d Spatial Rendering
    - World Construction Set
    - Others
- **Summary**

Visual Simulation…. What is it?

FEDERAL LAND MANAGEMENT AGENCIES:

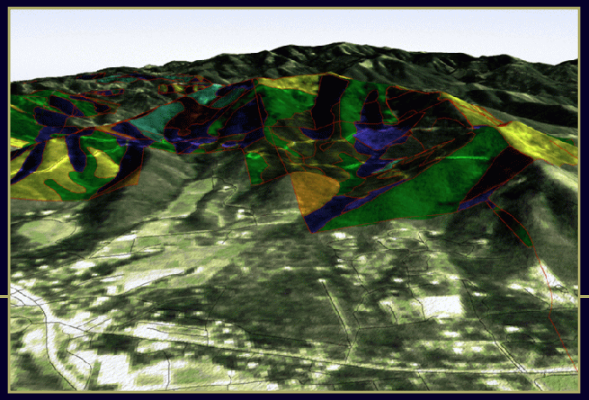
For This Class: *The use of illustrations, photographs, and computer-generated images designed to communicate the visible changes to the environment as a result of management activities or decisions.*

Before

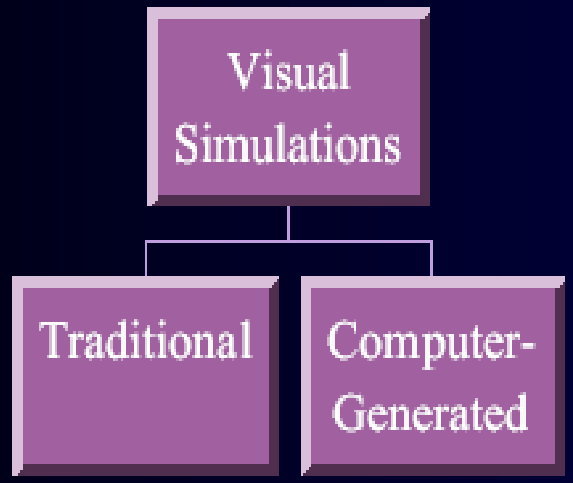
After

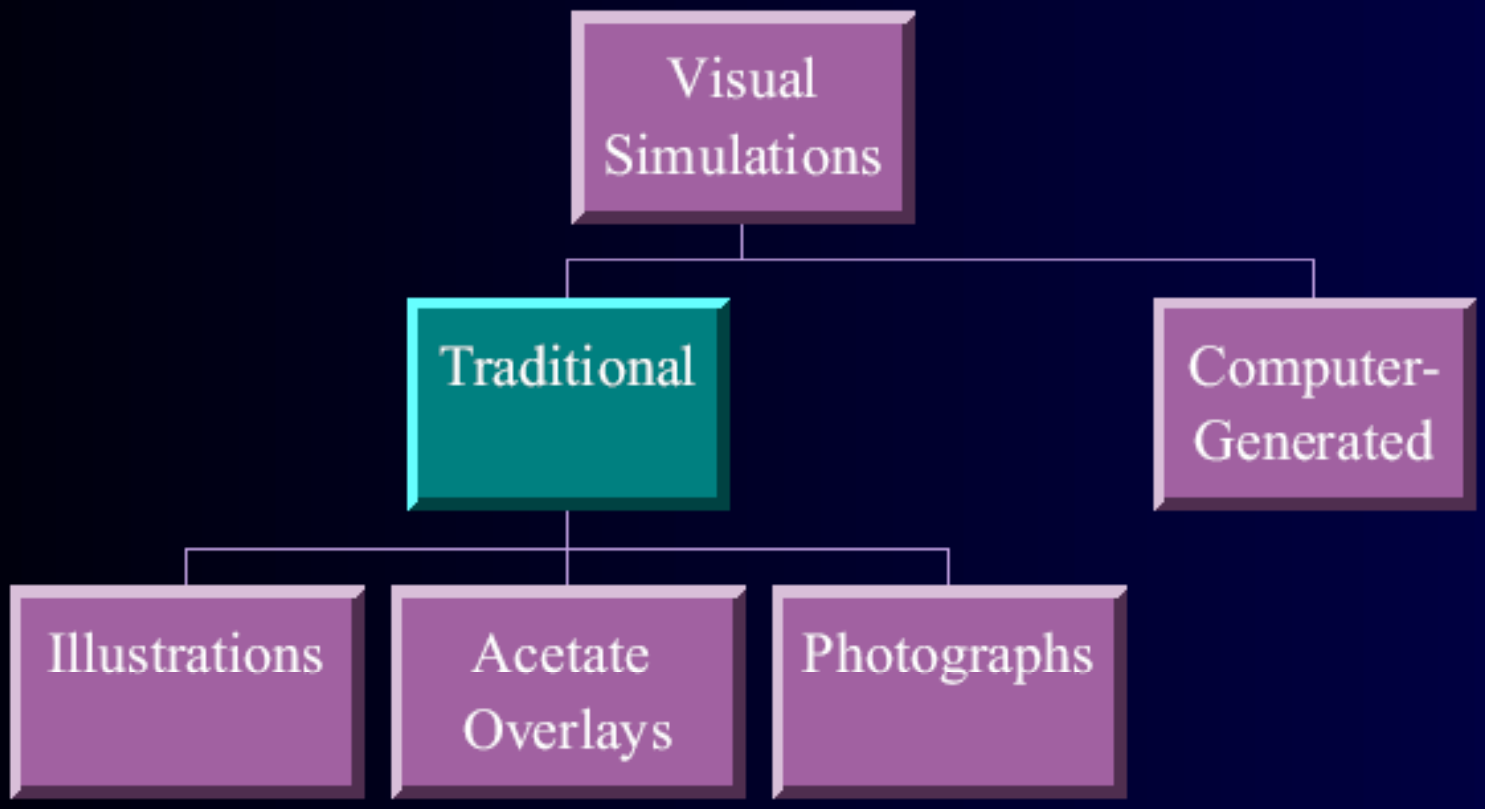
What are the uses?

- Environmental consequences
  - Visual Resource Management (Contrast-ratings) See notebook
- Alternative studies / Project design
- Negotiations with project proponent
- Engage the public
- Internal communication
- Landscape level planning
  - Land Use Plan and Activity



Types of Simulations

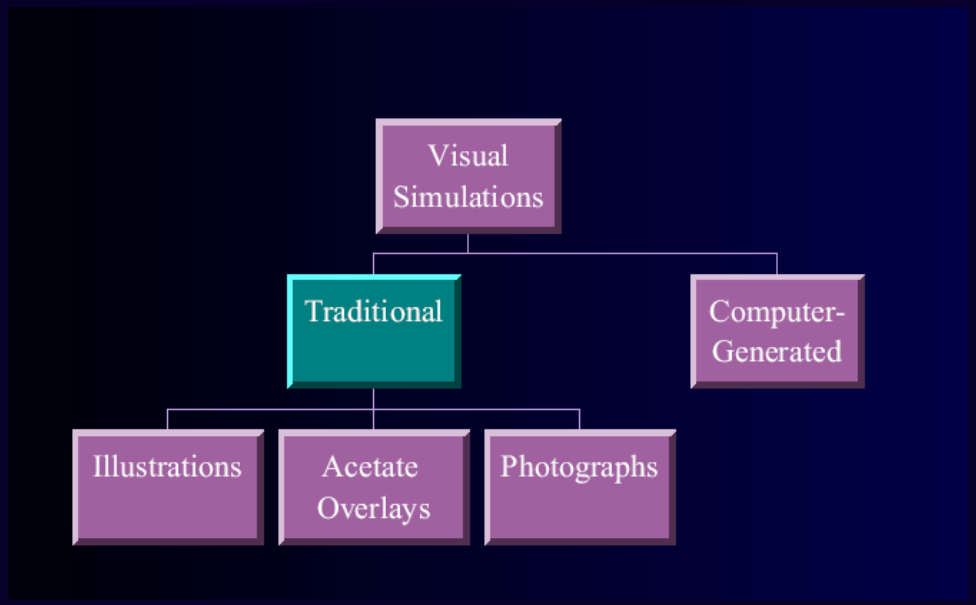



Visual Simulations
Traditional
Computer-Generated
Illustrations
Acetate Overlays
Photographs

Simulation Examples

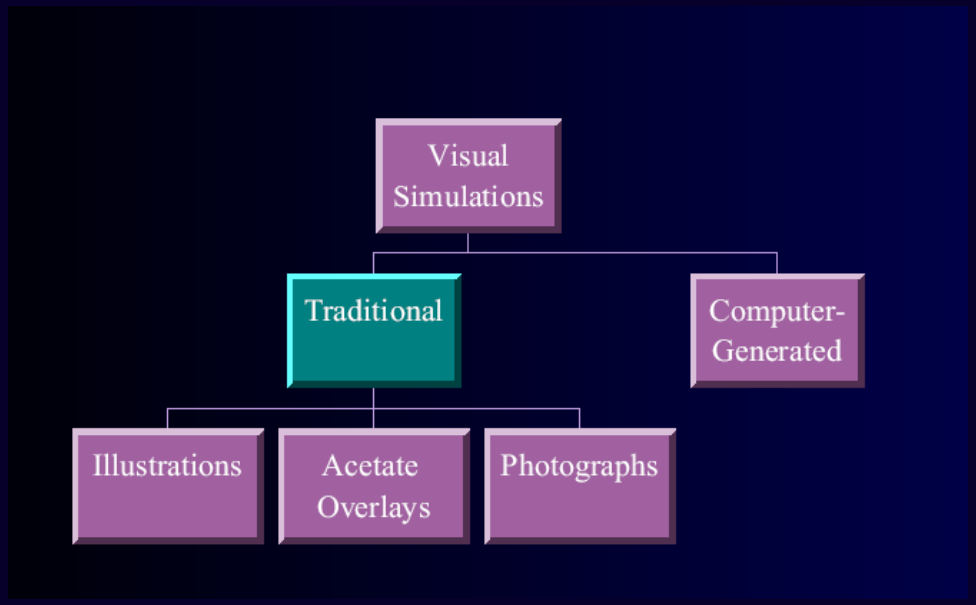
Traditional/ Photographs

Similar activities or actual site photos



Simulation Examples

Traditional/ Photographs



Simulation Types

Photographs- Changes over Time

Simulation Types

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Photographs- Changes over Time

Simulation Types

Photographs- Changes over Time

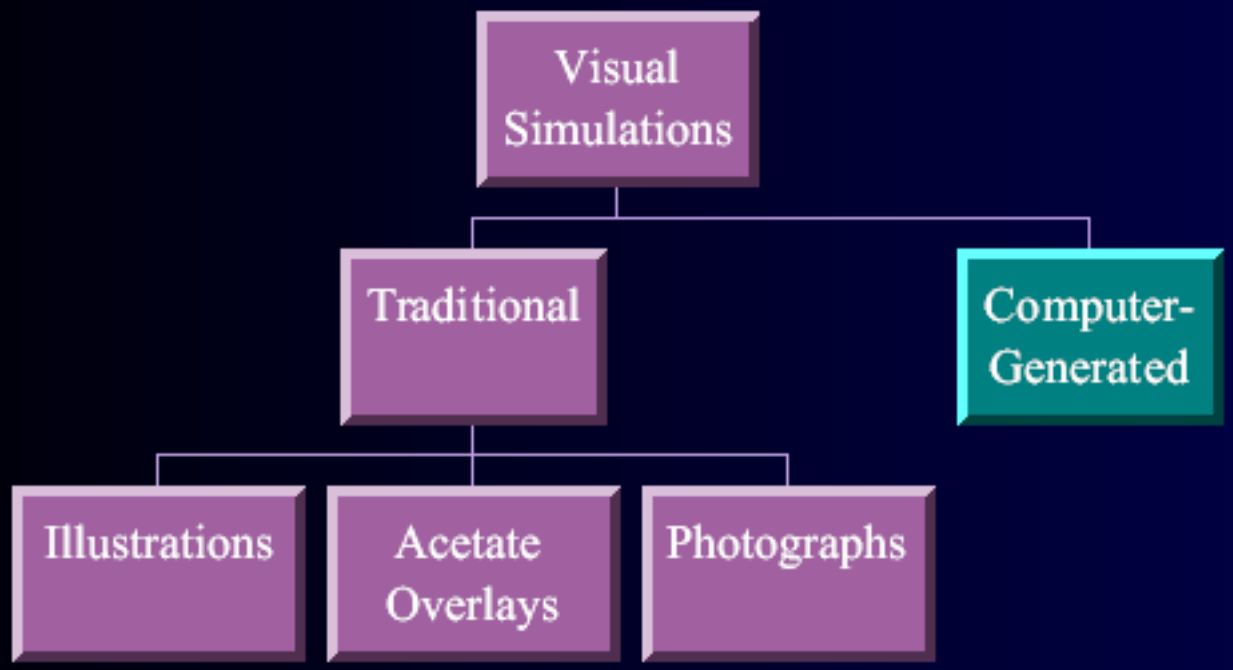
Traditional Simulations

Using Photographs: Summary

- References proven successes
- Connects loop w/monitoring
- No graphic expertise necessary; IN-House
- May be best “bang for buck”
- Requires time commitment and follow-up

Simulations

What are the types?



Simulations

What are the types?

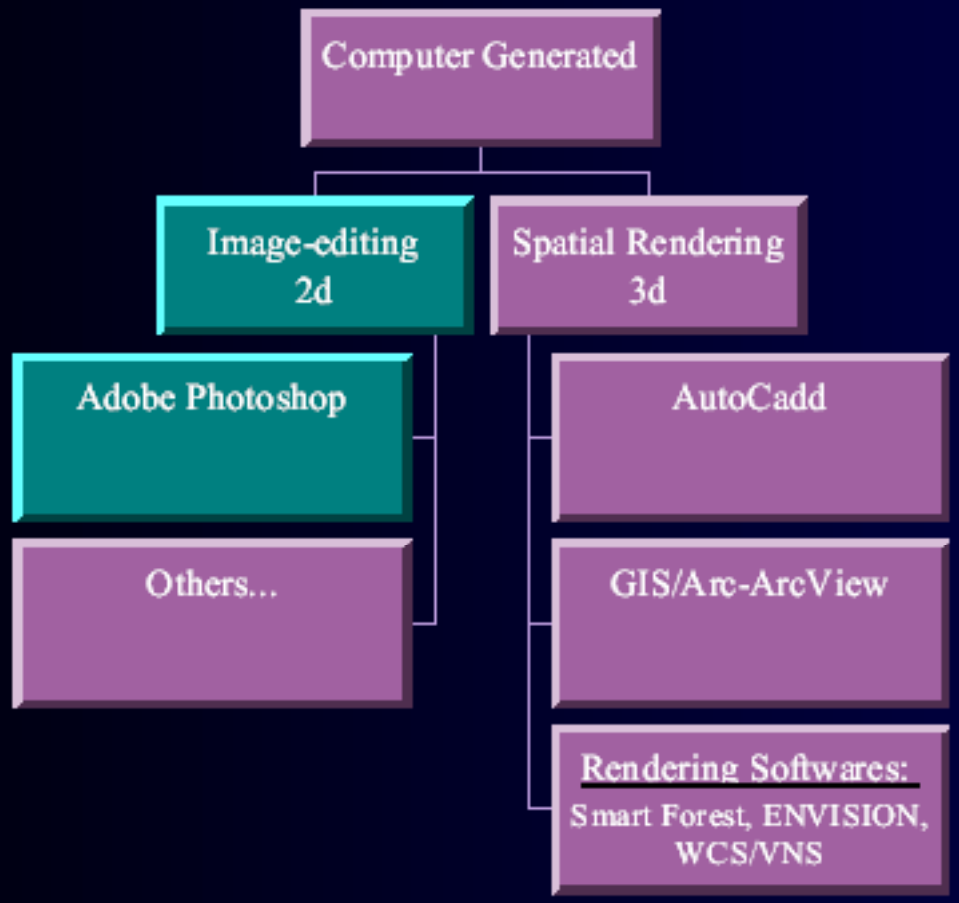


Image Editing

Photoshop Basics

- Process:
  - INPUT: (Photographs, Scan, Digital...)
  - EDIT: (Software)
  - OUTPUT: (Print, video...)
- System Requirements…
- Considerations:
  - Source Imagery
  - Editing Guides- G.I.S.
  - Ultimate Application

2d: Photoshop Basics

2d: Photoshop Basics

2d: Photoshop Basics

2d: Photoshop Basics

2d: Photoshop Examples

Existing Situation

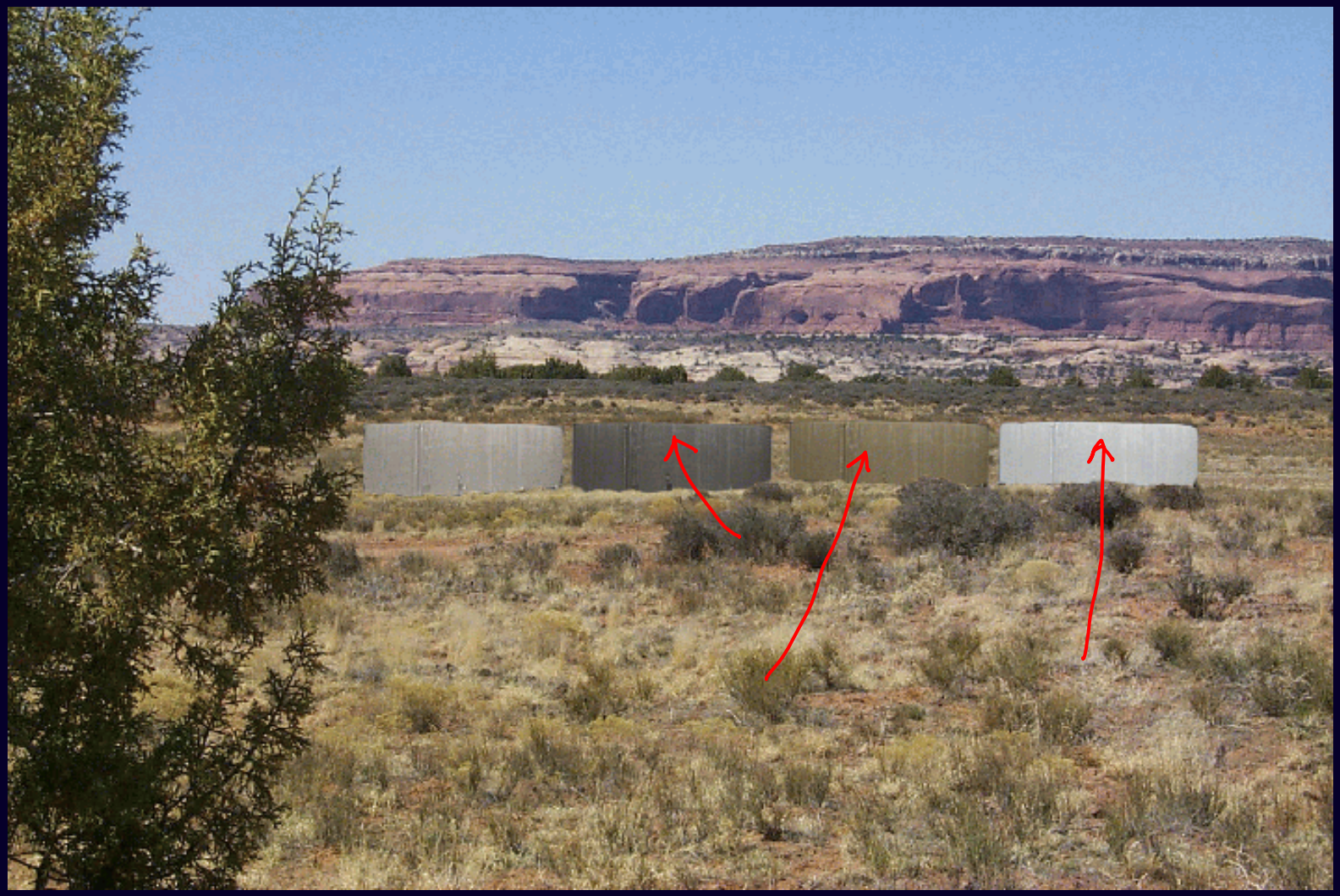
Expanded Pipeline

2d: Photoshop Examples

Existing Situation

Buried Pipeline

2d: Photoshop Examples



2d: Photoshop Examples

2d: Photoshop Examples

Existing Situation

2d: Photoshop Examples

Simulation: Short-term

2d: Photoshop Examples

Simulation: Long-term

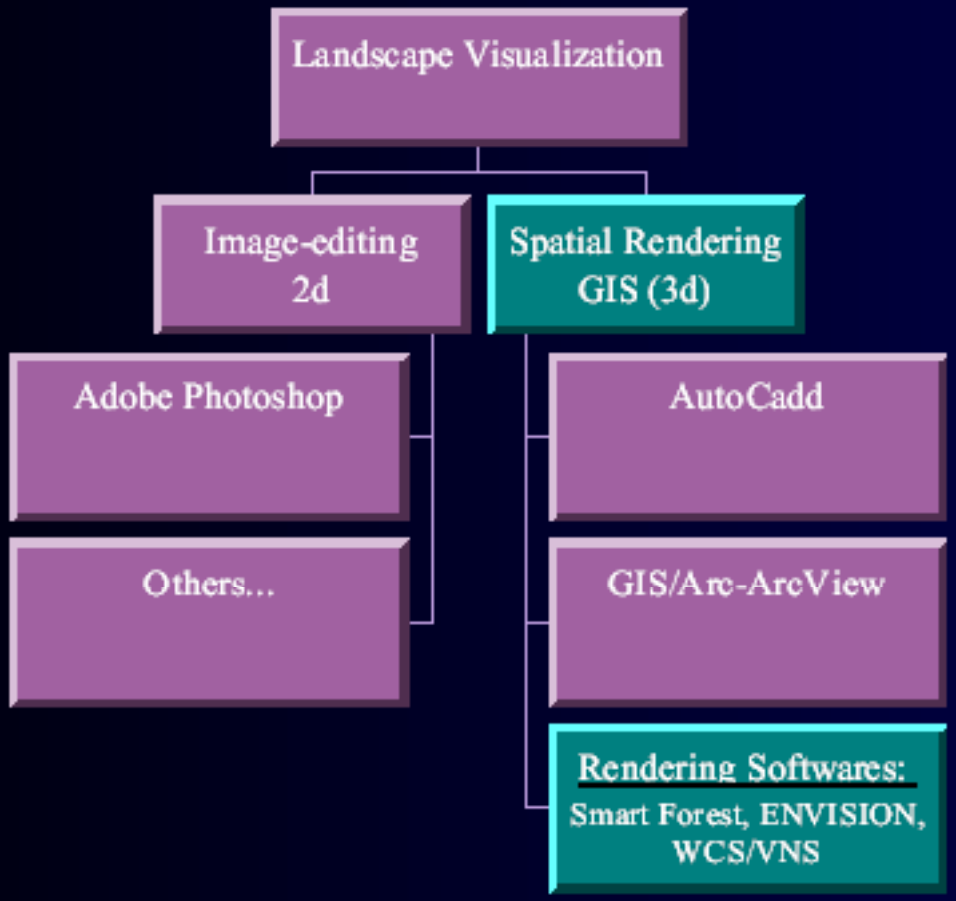
Image Editing

2d: Photoshop Summary

- Most realistic visualization
- Artistically-generated
- Can use G.I.S. to guide
- Public skepticism- "Powder Project ex."
- Labor Intensive
- 2-dimensional- static

Simulations

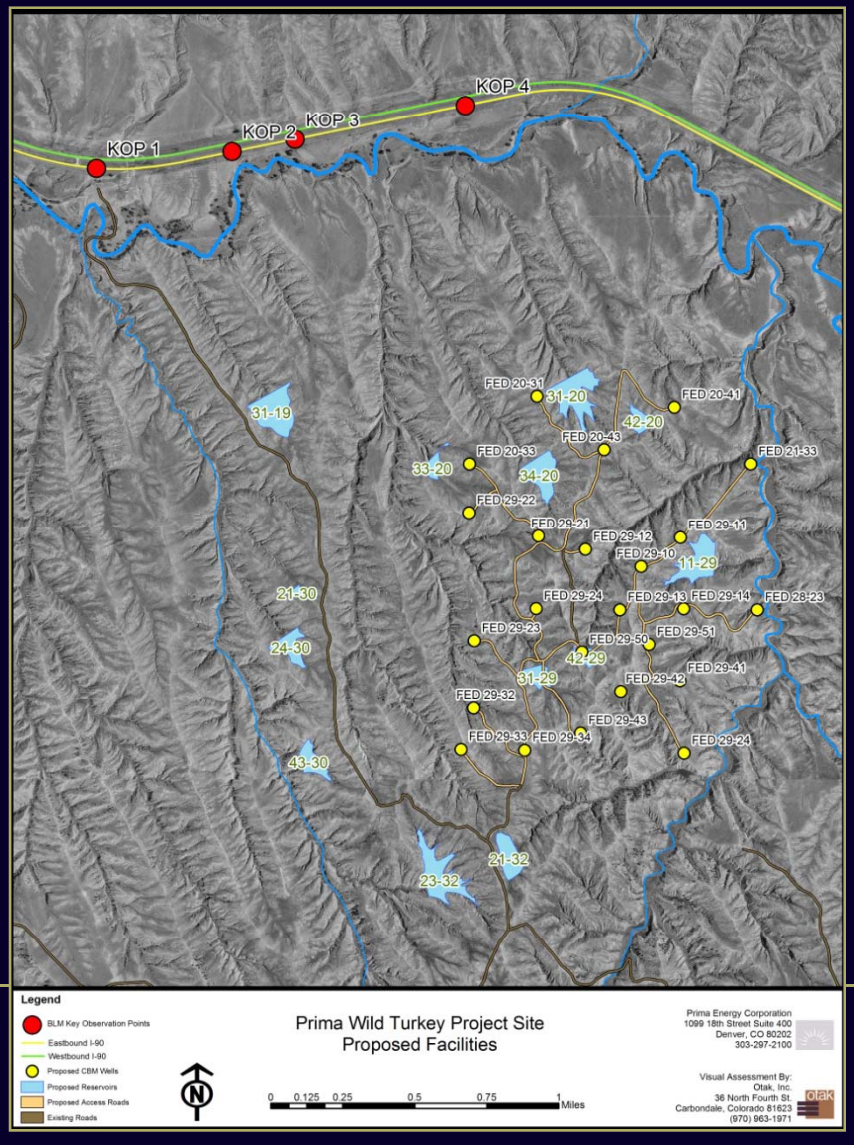
What are the types?



Integrated Software Design & Analysis

Comprehensive project visualization - tools

- GPS
- Photographic documentation
- GIS 3-D Modeling
- Cadd - project design
- Cadd Design to GIS model
- Photo rendering
- Quantities & cost
- Informed decisions
- Data quality



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Proposed reservoir dam – coal bed methane

Existing nearby dam

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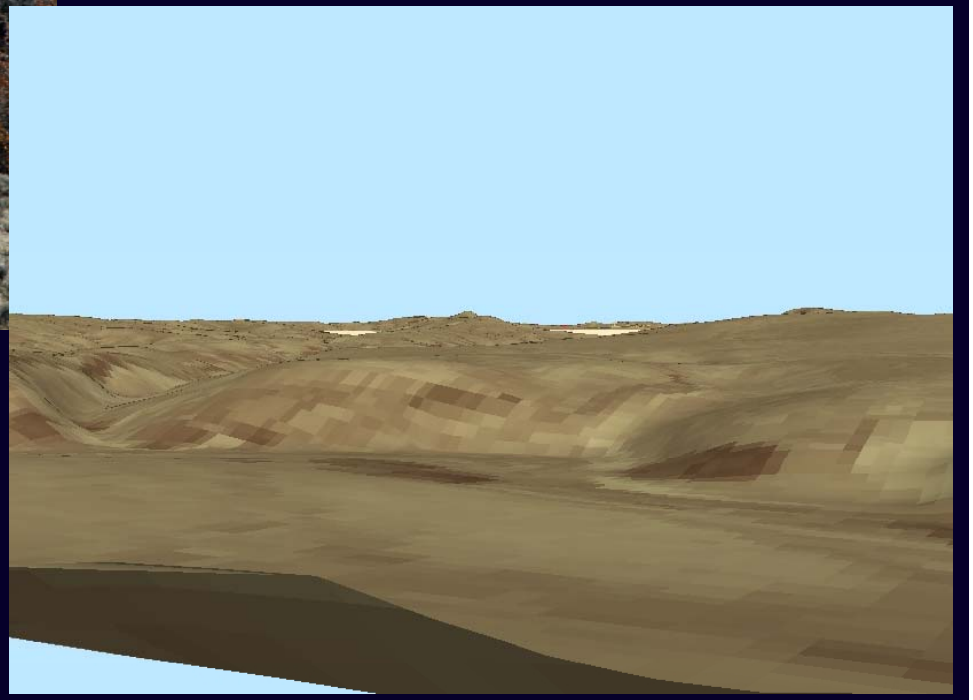
GPSed KOP – orange panel depicts dam location

GIS model



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Documenting:

- viewing distance
- angle of view
- viewing duration
- how much of the feature is seen

Proposed Feature	Distance to Feature (feet)	Distance to Feature (miles)	Length of Time Visible at 75 mph	Approx. Percent of Feature Visible
Well 29-33	11,957	2.26	12 seconds	50%
Well 29-34	15,372	2.91	10 seconds	25%
Reservoir 31-19	6,048	1.15	23 seconds	25%
Reservoir 21-30	9,212	1.74	25 seconds	50%
Reservoir 24-30	9,904	1.88	11 seconds	25%
Well 29-34	12,343	2.34	20 seconds	50%
Well 20-33	8,261	1.56	11 seconds	50%
Well 29-21	10,056	1.90	10 seconds	50%
Reservoir 31-19	4,844	.92	23 seconds	75%
Well 29-22	8,229	1.56	4 seconds	50%
Well 20-33	8,261	1.56	4 seconds	50%
Access roads for Wells 29-22 and 20-33	8,261	1.56	4 seconds	25%

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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

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Prima Wild Turkey Project Site
Key Observation Point #1

Photo of existing project site from KOP #1

Computer model of proposed reservoir 31-19 from KOP #1

Compare model to field photo

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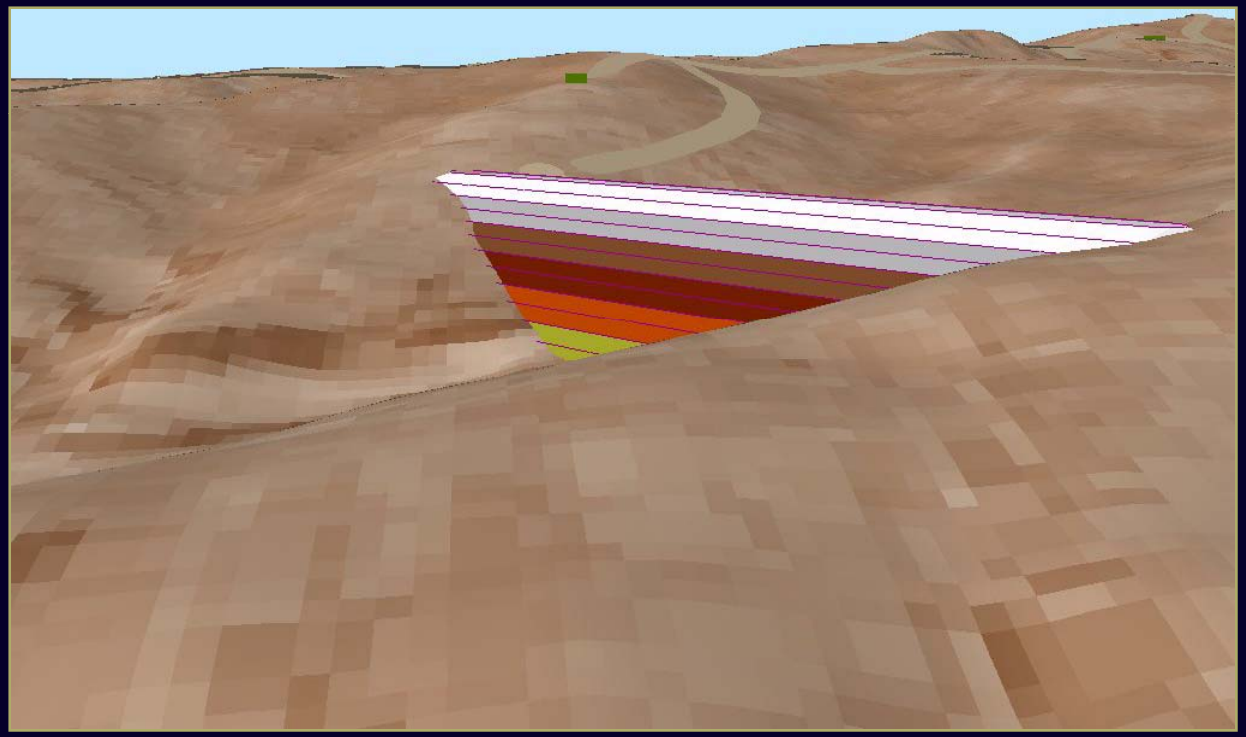
- Cadd grading plan of proposed dam
- Placed into GIS model



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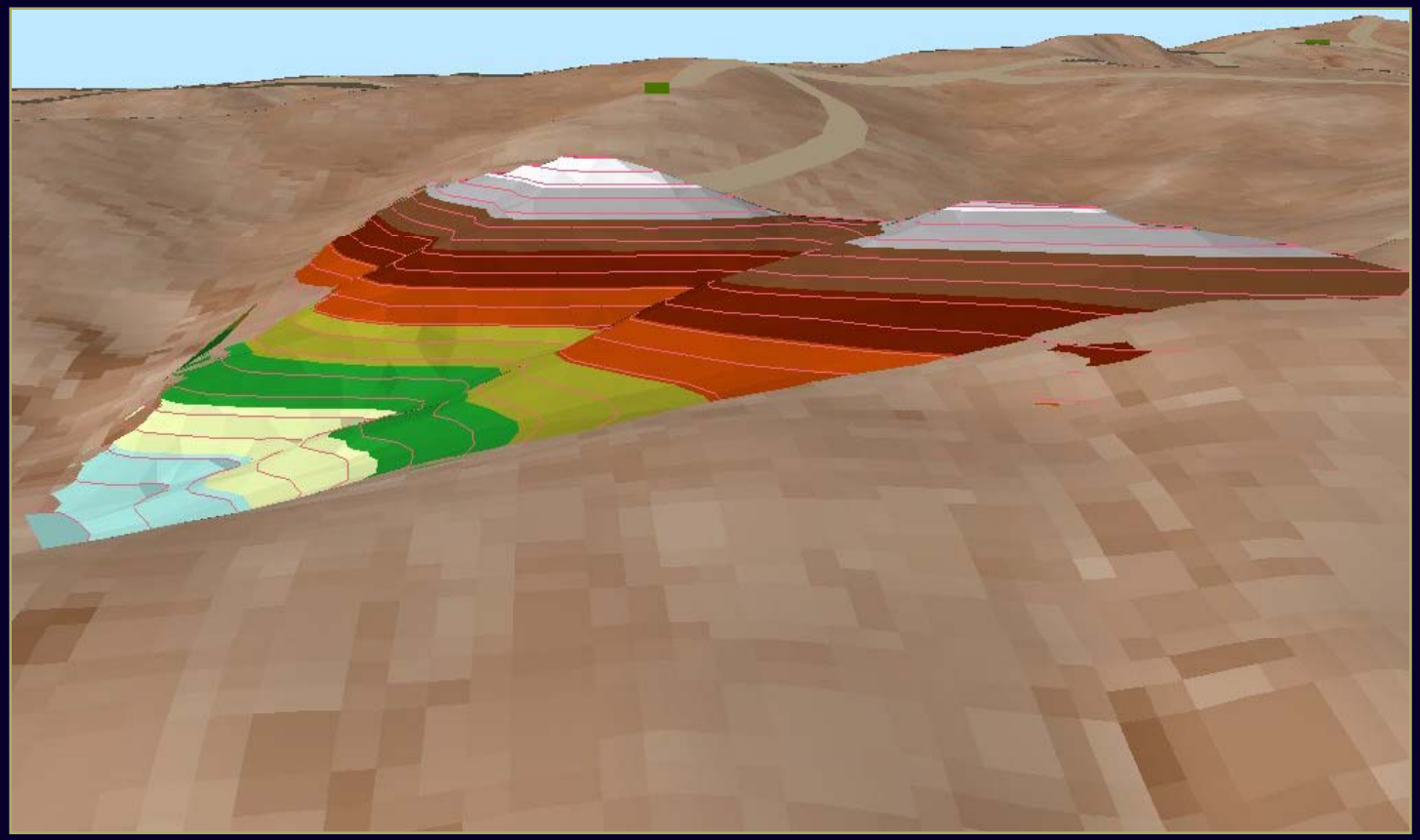
Create Alternatives



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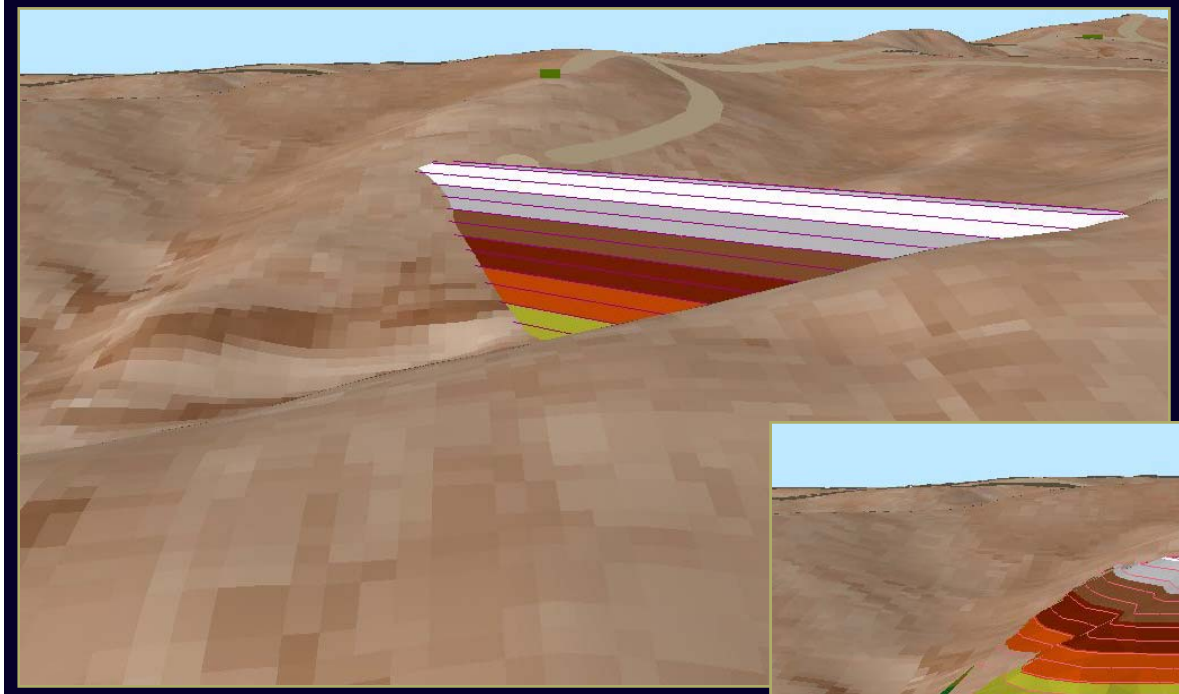

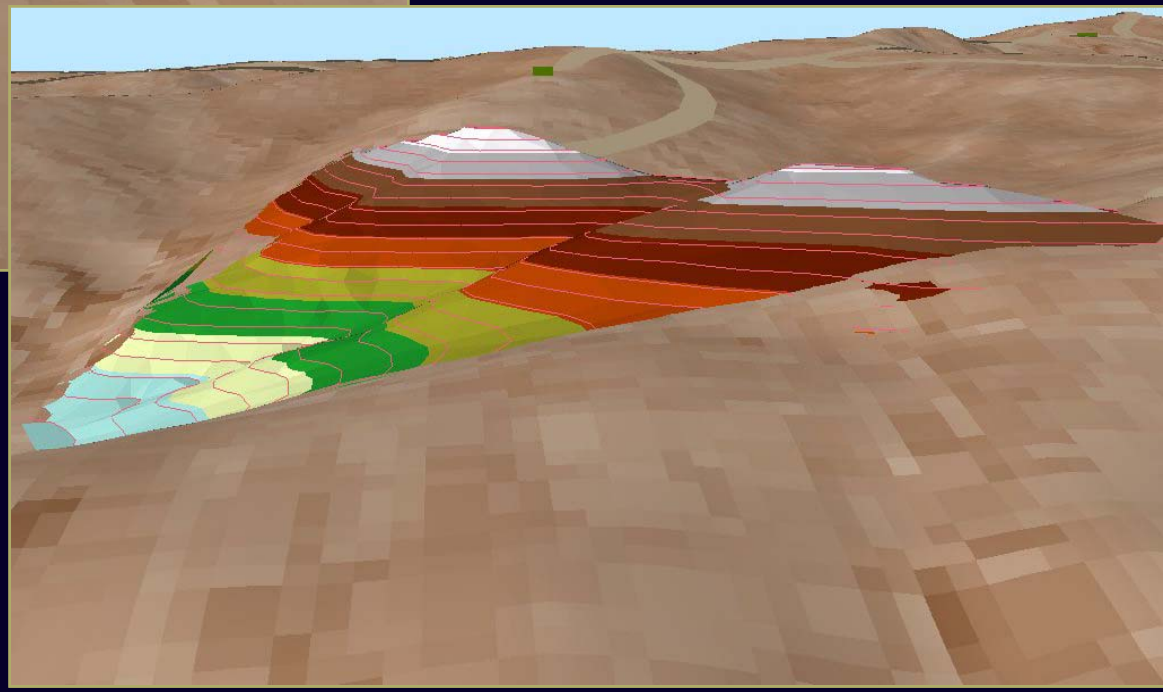

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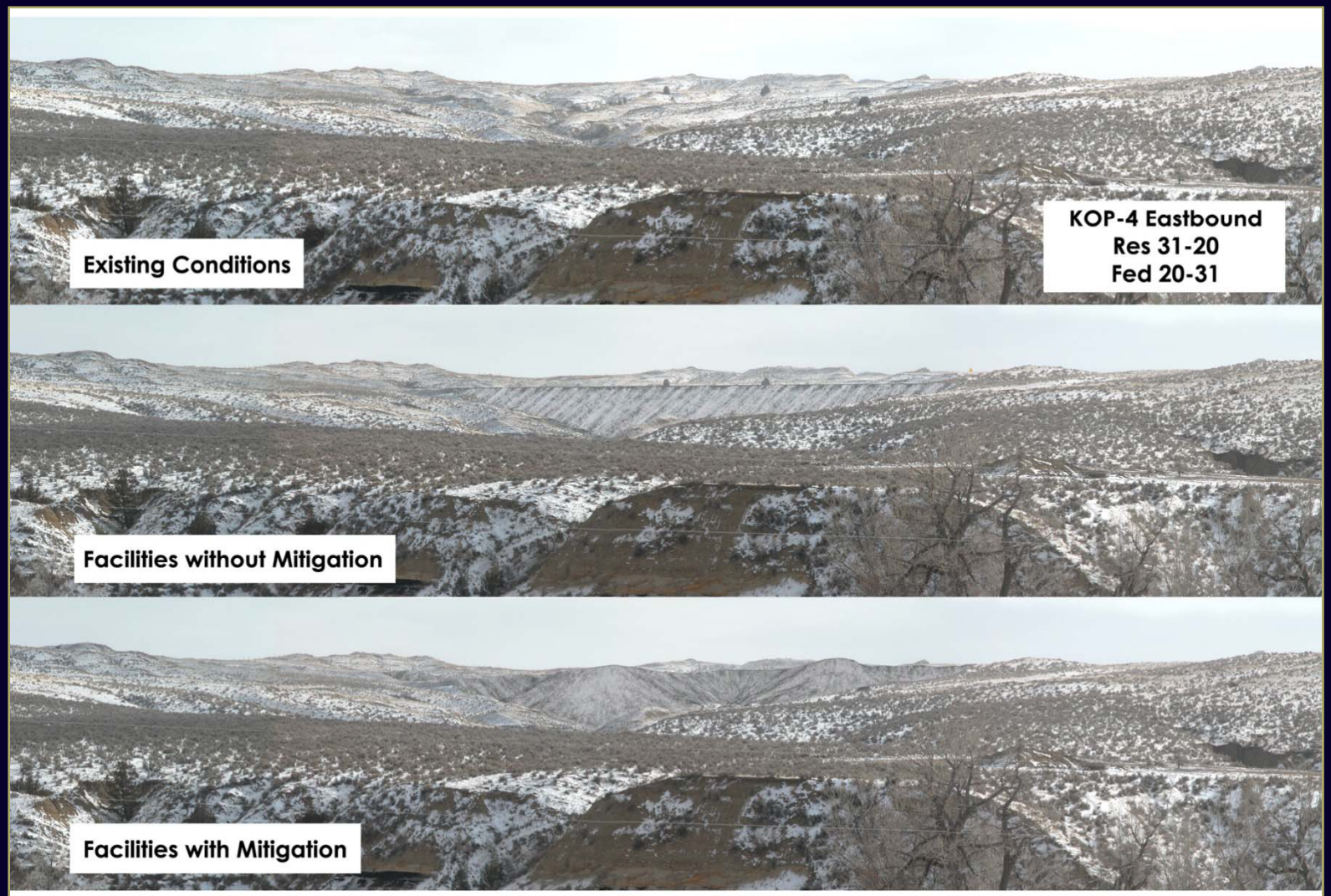

Mitigation Strategies: VMP-1A, VMP-1B, VMP-3A, VMP-4D, VMP-5A.

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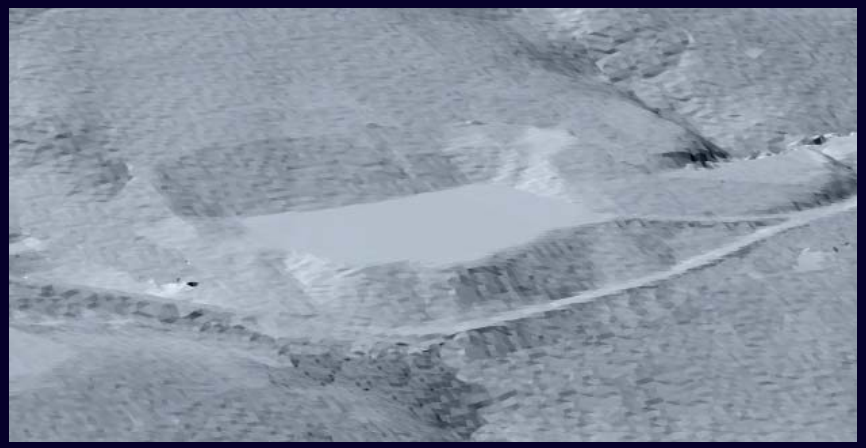

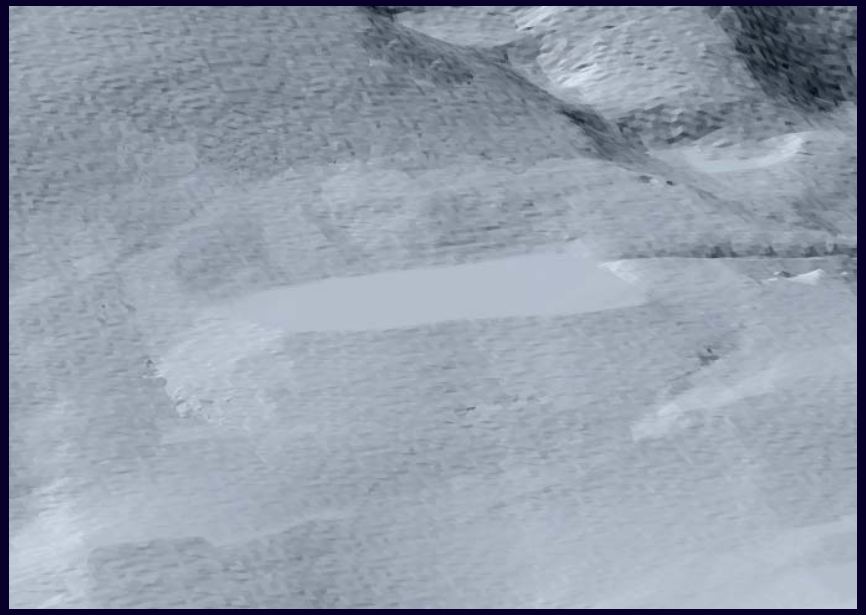

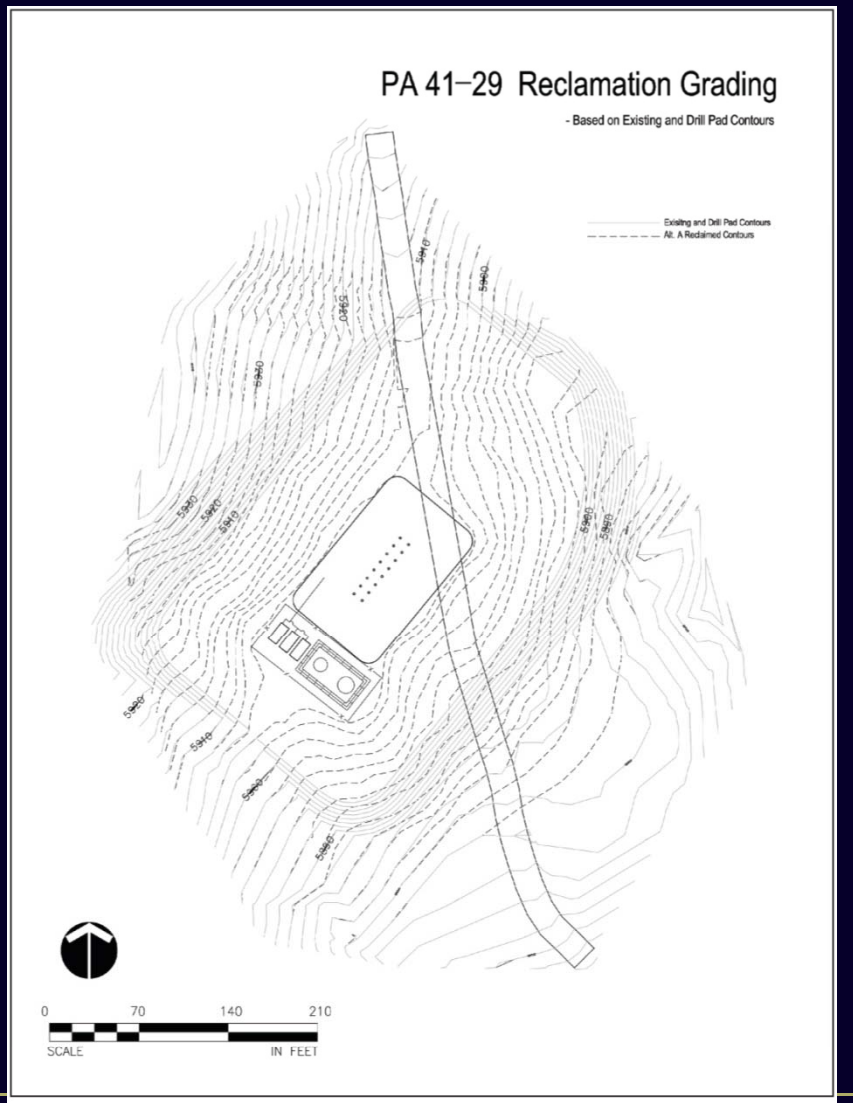

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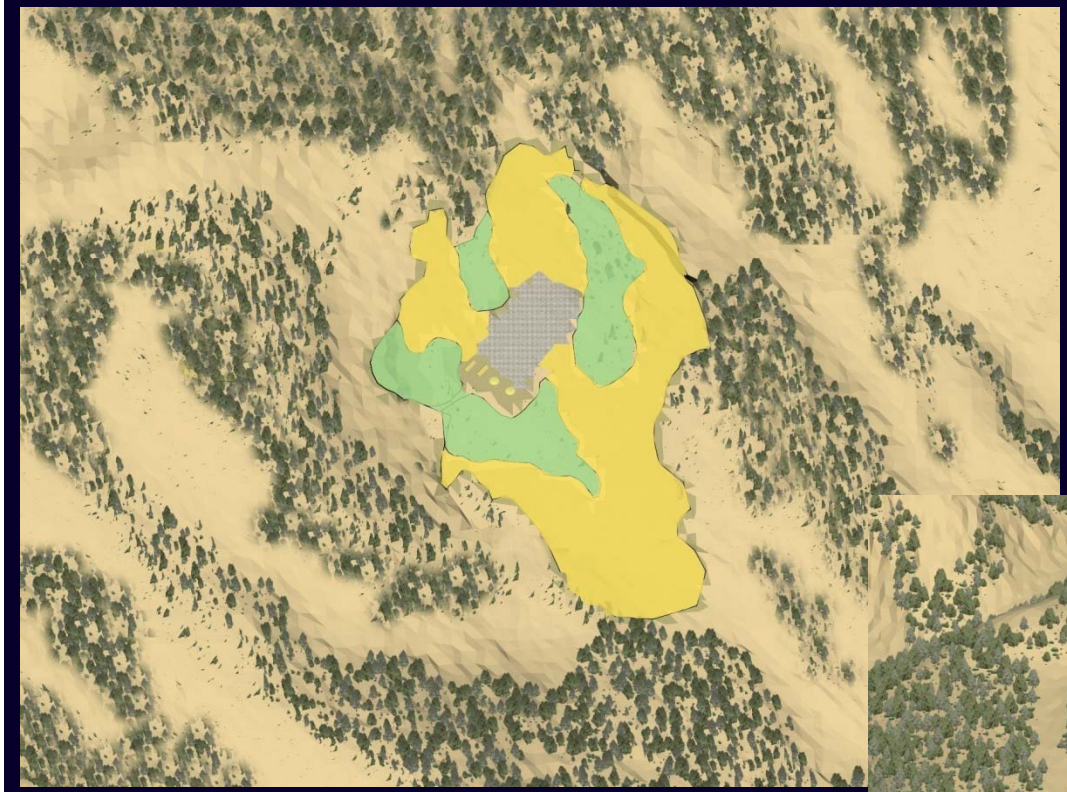

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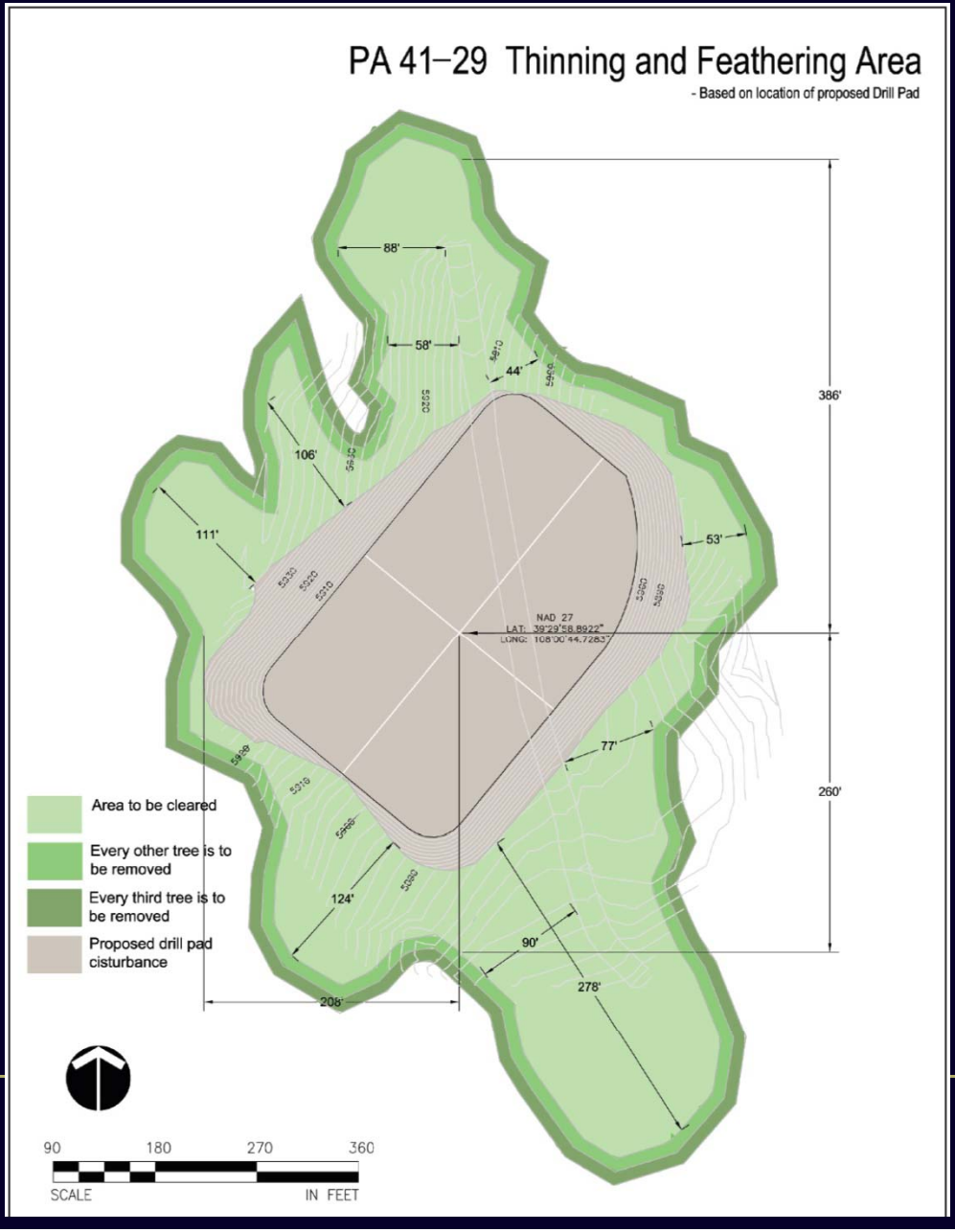

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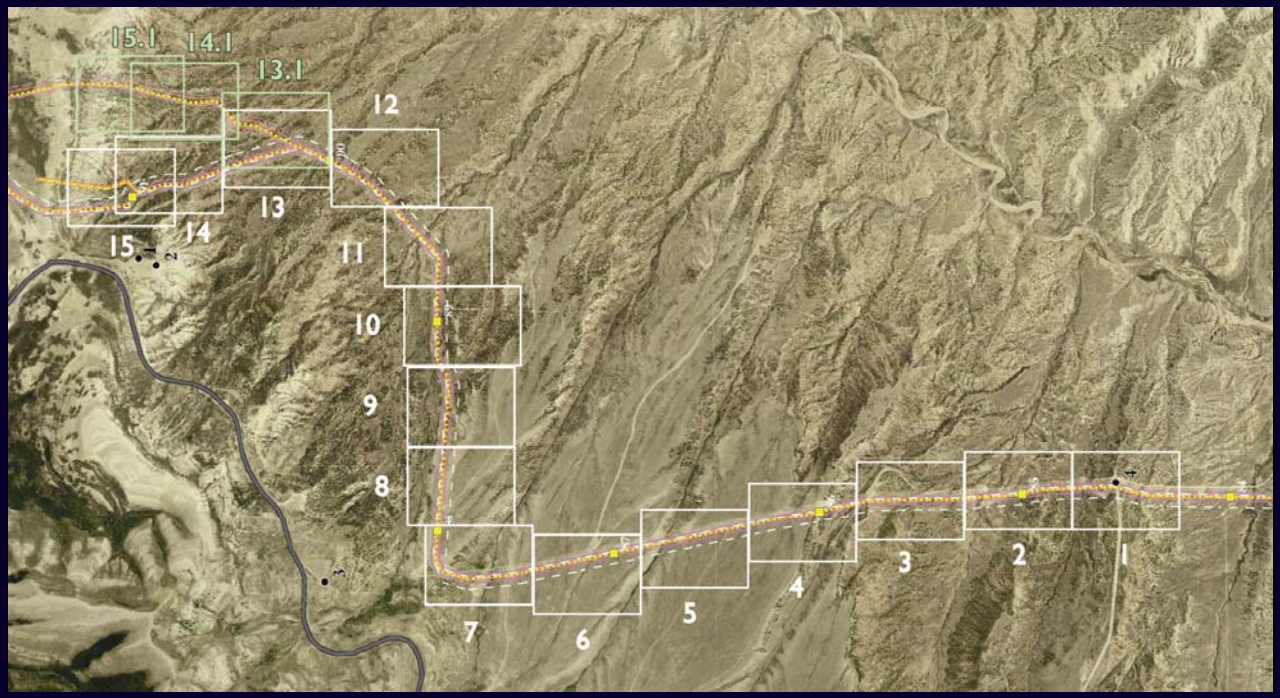
Kanda Pipeline

Lateral and Mainline Expansion Project

- Crosses two states (Utah and Wyoming)
- Involves multiple BLM field offices
- Focus area is Greater Red Creek Area of Critical Environmental Concern



Mitigating Impacts

Two primary concerns:

- Mitigating visual impacts
  - Efforts to minimize impacts were made during planning process
- Supplementing revegetation efforts
  - Provide additional plant diversity and wildlife habitat

Mitigation Plan

Mitigation techniques used:

- Organic Clearings
- Thinning and Feathering
- Preservation of Existing Vegetation
- Transplants
- Roughened Slope and Mountain Mahogany
- Escarpment Reconstruction
- Planting Native Vegetation

View of current site characteristics

Preservation of Existing Vegetation

Islands of existing vegetation shall be preserved in the pipeline right-of-way. These islands shall have organic forms and mimic the appearance of naturally occurring vegetation islands. The general location of flagged vegetation to be preserved is indicated by a green dot.

Portions of the project area contain steep slopes. Depending on work space available and safety requirements, preservation areas may need to shift.

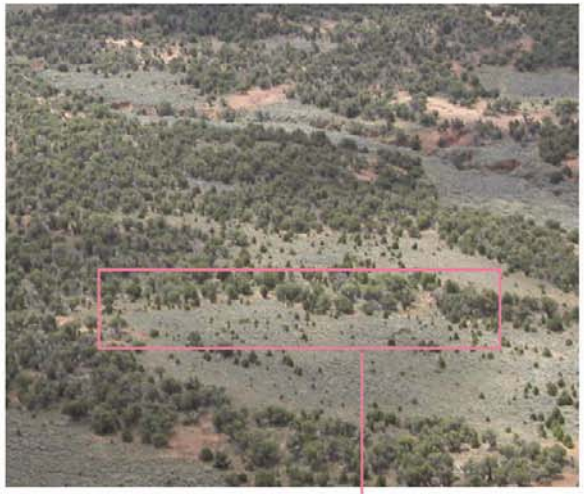
In addition, preserved vegetation may not be within 35 feet of the pipeline trench.

Thin and feather the edges of preserved vegetation islands to mimic the edge texture of the surrounding natural environment.

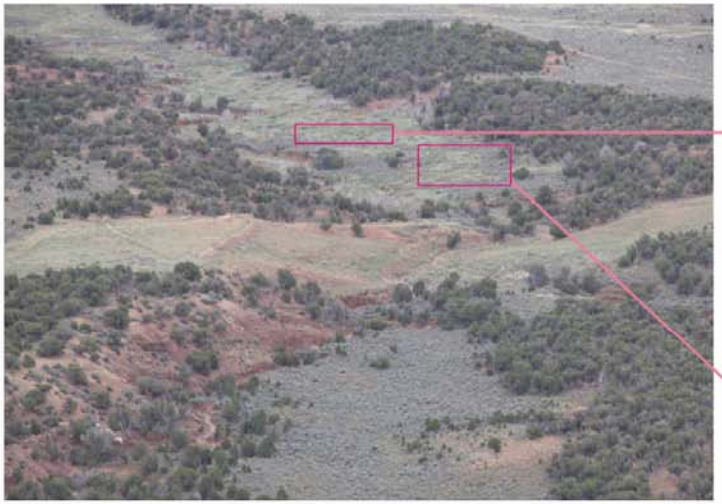
Existing islands of vegetation to emulate in visual mitigation

Mitigation Plan

View of current site characteristics



Natural edge pattern of pinyon/juniper stands to emulate in visual mitigation



Natural pattern of sage meadow edges to emulate in visual mitigation

Thinning and Feathering

Thin and feather existing trees and/or shrubs that remain adjacent to areas where vegetation has been cleared. Thinning and feathering will open up the linear edge of the existing stand and emulate the undulating, less-dense edge texture found in nature, as illustrated in these examples.

To achieve a natural-looking edge, remove every other tree or shrub adjacent to the edge of construction disturbance, transitioning to the removal of every third tree or shrub while moving outward from the edge of disturbance.

Heavy equipment such as a hydro-ax may be used when conditions allow; hand-clearing with chain saws may be required in some areas.

Trees and shrubs to be removed during thinning and feathering may be used for transplanting (see page 11).

Use of thinning and feathering will be limited on steep side slopes due to field conditions.

Summary

- Use in combination
- Contract vs. In-house
- Spatial Relationships
- Disclose environmental consequences …VRM
- Graphically illustrate land use allocations/ decisions
- Establish dialogue
- Better informed decisions
- Build credibility