



U.S. Department of the Interior
Bureau of Land Management



Visual Resource Management

Final Reclamation

Part 5

Best Management Practices for Fluid Minerals

VRM BMP Principles

- The VRM system provides us with many basic principles and techniques to help reduce contrast. As they relate to Fluid Minerals and similar development, the 4 most critical are:
 1. Proper Site Selection (Part 2)
 2. Reduce Unnecessary Disturbance (Part 3)
 3. Choice of Color (Part 4)
 - 4. Final Reclamation (In this Slideshow)**

Final Reclamation

- What will be the long-term impacts of oil and gas production? What will the former road and well location look like 3 years or even 300 years from abandonment? Will there be a permanent scar?
- Oil and gas development is a temporary use of the land and its impacts should be temporary as well.



These unreclaimed and abandoned road scars are permanent. Even though they are partially vegetated, the long-term solution is to recontour these scars back to the original contour and re-establish native vegetation.

Goal: Seamless Natural Landscape

The goal of final reclamation is to return all disturbed areas to a condition where, over time, the disturbed areas will be absorbed back into the seamless, natural landscape. There are steps we can take to accelerate this process.....



Photo of a reclaimed well location. The landform and vegetation is reestablished. The site is stable.

If seeded with native species, over time, local natives will re-establish themselves on the site, restoring proper species composition and structure.

A. Drilling & Reclaiming the Well: A Series

- The actual drilling of a well can result in a very high but, short-term visual contrast.
- Wells going into production should undergo **interim reclamation** to reduce visual contrast and to benefit other resources values. If the well is a “dry hole” **final reclamation** should begin as soon as practical to restore the land to its previous productive use.



Drilling a well.

B. Restore the landform:

- Restrip topsoil and vegetation from all areas to be recontoured. Do not hesitate to restrip healthy vegetation and topsoil if the landform is not correct. You can always regrow vegetation, but a damaged landform is noticeable forever.
- Recontour the well location back to the original contour or a natural looking contour that blends with the surrounding topography.



Returning the abandoned well location to the original contour.

C. Site Preparation:

- Respread topsoil that had been salvaged.
- Roughen the surface to trap moisture and seed.
- Consider the use of a high phosphorous/low nitrogen fertilizer and a mulch for those sites subject to wind or water erosion



Well location and road fully recontoured (reshaped) back to the original contour or a contour which blends with the surrounding topography.

D. Revegetate with native species:

Revegetation may result in a color contrast over the short-term, but if you used native seed, the local native plants can be expected to recolonize over time.

A good job of recontouring, site preparation, and seeding, will greatly reduce the visibility of the well site 20 years from abandonment.



Reclaimed well location two or more years after seeding.

If native species were planted and if topsoil was reused, the vegetation color contrast will disappear over time.

Reclaiming Roads

Nearly **all** oil and gas roads should be reclaimed following abandonment of the producing wells.

Ripping and seeding roads is usually not sufficient. Most roads need be recontoured back to the original contour so that they absorb back into the seamless landscape.



Photo of a road recontoured back to the original contour. Next step; broadcast seeding into the dozer track marks.

Over time, the native grasses and trees will reestablish on the site.

Site Preparation: Leaving a Rough Texture

Recontouring to a rough texture helps trap **broadcast seed** and moisture, deters off-road travel, and helps to match the “texture” of the surrounding landscape.



This rough site will quickly revegetate.

Topsoil has been restored.
Randomly placed rock prevents use and compaction from vehicles.
The rough texture traps seed, rain, and snow and prevents water erosion.

Areas to be drill seeded must have a somewhat smoother texture.

BEFORE:

Recontoured 20' wide pipeline right-of-way.

Note: Due to the outward slope of this right-of-way, surface runoff would naturally drain to the side and the waterbars are, therefore, unnecessary except as a means of deterring vehicles.



AFTER:

The result, reclamation to be proud of!



BOTTOM LINE:

Work with the affected parties to plan, design, implement, and monitor final reclamation to minimize adverse visual impacts in the long term.



Test Question:

Applying what we have learned, what visual resource BMPs would you use to minimize the visual impacts of this site?

- 1.
- 2.
- 3.
- 4.
- 5.



Possible Solutions:

1. Housekeeping: Remove unused equipment.
2. Use shorter tank.
3. Select a color that blend with the background.
4. Bury powerlines.
5. Interim reclamation.

Bonus answer: How about locating facilities in a swale or farther away?

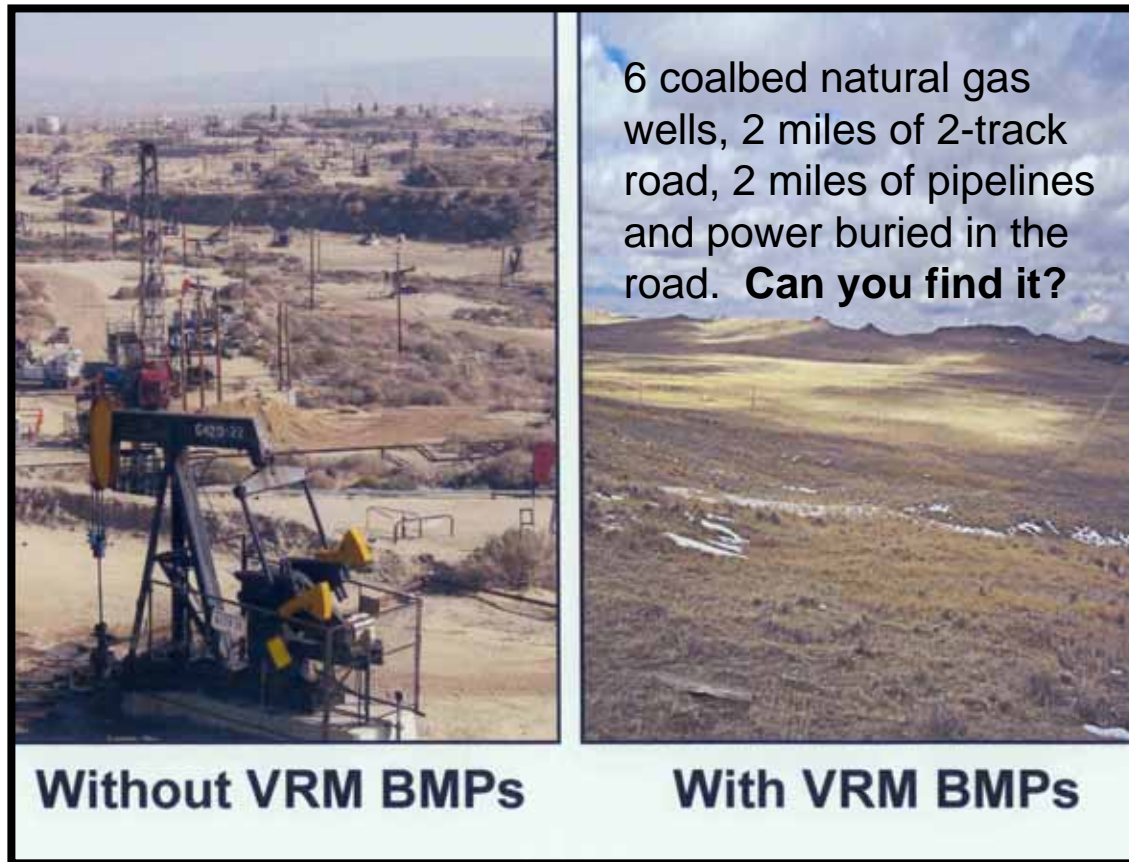


(Photo Simulation)

Visual Resource Management Best Management Practices do make the difference.

Both Photos Represent Extremes –
Yet we can learn much from the photo on the right.

Intensive oil
field
development
without VRM-
BMPs.



Coalbed
methane
development
using VRM-
BMPs.

For more information, visit the **BLM VRM website:** www.blm.gov/nstc/VRM