

Draft Interim Reclamation ICR Report 03-26-2010

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

Environmental Best Management Practices
Interim Reclamation
Internal Control Review



Division of Fluid Minerals (WO-310)
2009

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Executive Summary

The Bureau of Land Management (BLM) Division of Fluid Minerals (WO-310), located in the Washington Office (WO), conducted a focused Internal Control Review (ICR) of the Fluid Minerals program implementation of the Interim Reclamation, Best Management Practice in Fiscal Year 2009. Interim reclamation is one of the most important Best Management Practices (BMP) for minimizing the environmental impact of oil, gas, geothermal, and associated rights-of-way (ROW) development.

It is the basic premise of interim reclamation that, *“During the life of the development, all disturbed areas not needed for active support of production operations should undergo ‘interim’ reclamation in order to minimize the environmental impacts of development on other resources and use”* (Gold Book).

The findings of this ICR are mixed. While interim reclamation practices appear to have generally improved across much of the BLM, there is much more to be done. The oil and gas surface management specialists hired during the recent energy boom are actively seeking training and are motivated to implement national interim reclamation policy. These specialists will help reduce the environmental effects of oil and gas development relative to past practices. Adequate interim reclamation of oil and gas surface disturbances has not yet been attained in most locations, but the BLM field offices are moving in a positive direction. With strengthened national, state, and local management support, and increased technical policy direction and oversight, the BLM will remain the leader in environmentally responsible oil, gas, geothermal, and associated rights-of-way development.

Background

In 2004, the BLM began a major initiative to improve environmental practices related to oil and gas development operations with the issuance of WO Instruction Memorandum (IM) WO-IM-2004-194, Integration of Best Management Practices into Application for Permit to Drill Approvals and Associated Rights-of-Way, dated June 22, 2004. The 2004 IM was followed in 2007 with a similar BMP policy, WO-IM-2007-021. In 2005, the Government Accountability Office (GAO) issued “OIL AND GAS DEVELOPMENT – Increased Permitting Activity Has Lessened BLM’s Ability to Meet Its Environmental Protection Responsibilities” (GAO-05-418). The report directed the BLM to improve reclamation inspection tracking. Interim Reclamation inspections were first identified as “High Priority” inspections in the BLM’s 2006 Inspection and Enforcement Strategy WO-IM-2006-033. In Fiscal Year (FY) 2008, the BLM WO conducted a self-assessment program review of the BLM’s Fluid Minerals Environmental BMP policy. The self-assessment identified some offices as making more progress than others in implementing interim reclamation as a BMP. Additional general and technical information on BMPs can be found at the BLM’s BMP website: www.blm.gov/bmp.

Evaluation Objective and Scope

Objectives of the ICR:

The objectives of the Interim Reclamation ICR are to:

1. Assess the adequacy of interim reclamation practices in a representative sample of BLM field offices.
2. Identify successful on-the-ground interim reclamation practices and share this information among the BLM's field offices and other Federal and state agencies through the BMP website, possible brochure development, training courses, and conference presentations.
3. Ensure interim reclamation inspections are being documented in the case files and tracked in the Automated Fluid Minerals Support System (AFMSS).

An additional objective of the ICR is to:

Engage with the local field office staff and managers in an open discussion of interim reclamation policies, standards, practices, and perceived roadblocks to BMP implementation.

Scope of the ICR:

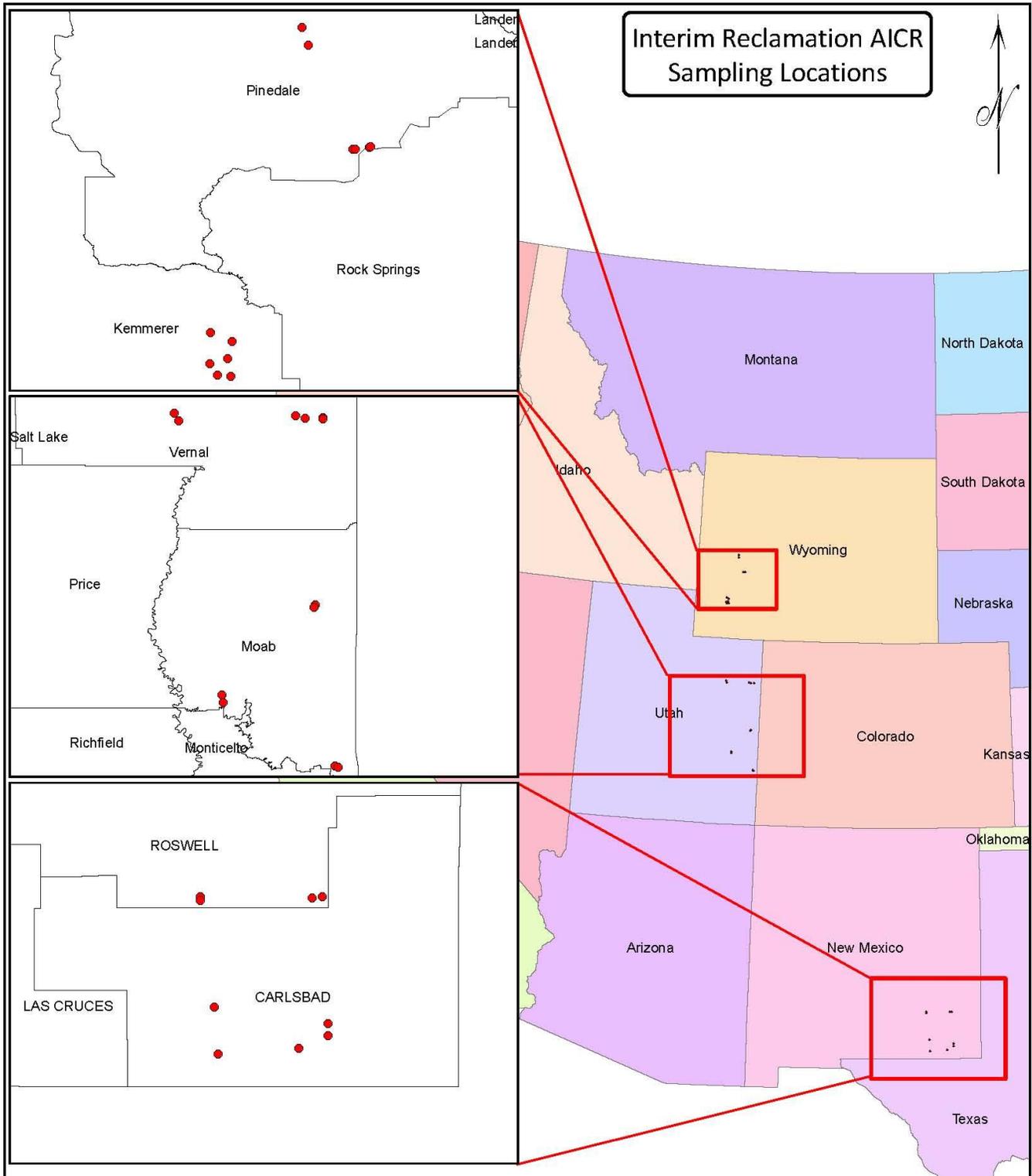
The ICR evaluated interim reclamation practices in 6 field offices with oil and gas programs out of the approximately 50 BLM field offices that approve Applications for Permit to Drill (APD).

The Interim Reclamation - Reclamation Performance Standards used as the basis for this ICR can be found in **Appendix I**. The performance standards were taken directly from Chapter 6 of the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (Gold Book), Revised 2006 and 2007.

Methodology

Review teams headed by WO personnel visited two field offices per state in New Mexico (NM), Utah (UT), and Wyoming (WY), the three BLM states with the highest fluid minerals-related permitting workload. The field offices visited by the ICR teams were selected by the state offices, and the well locations were selected by the field offices. Each individual field office identified two different well locations, where the drilling permits were approved after 2004, for three different operators, and the drilling must have occurred in at least two different oil and gas fields for a total of six well locations per field office. In total, the ICR teams evaluated interim reclamation and related surface and environmental inspection practices at a total of 36 well locations (Figure 1). The teams held extensive interim reclamation discussions with the field office staff before, during, and after the well location visits. In addition, the team reviewed case files for each of the wells, associated National Environmental Policy Act (NEPA) documents, and field office Resource Management Plans (RMP). State Directors were offered the opportunity for an entrance and a closeout interview. A closeout conference call was held with the Wyoming State Director.

The Case File Review and Site Visit Documentation Form used as a guide by the ICR teams are found in **Appendix II**.



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Legend

- Sampled Locations

Figure 1

Drafted By; TDB 08/20/2009

Areas of Positive Performance

General:

- Most, but not all of the field offices, have been incorporating at least some interim reclamation requirements into their approved APDs. As shown in this report, many past and current interim reclamation practices have not kept pace with interim reclamation standards developed when the BLM's BMP policy was first issued in 2004 and the oil and gas Gold Book was first revised in 2006. However, it was evident from discussions with field staff that the new employees being hired are generally enthusiastic and willing to pursue improved environmental practices, including interim reclamation.

Specific:

- Of the six field offices reviewed, four had new RMPs (UT and WY) and all of the new RMPs included some interim reclamation BMPs or at least referenced the national BMP website.
- Pinedale has the most advanced environmental impact statements addressing interim reclamation practices.
- Pinedale and Vernal are working on more comprehensive operator-submitted standardized reclamation plans.
- Carlsbad is the only field office of the six to have completed interim reclamation inspections for each of the well locations prior to the announcement of this ICR.
- Carlsbad conducts inspections using the more comprehensive draft Production and Interim Reclamation Inspection/Monitoring - Environmental format recommended by the Washington Office.

Opportunities for Improvement

National Policy Development:

- It is evident from the field review documented in this report that interim reclamation practices vary substantially across the six offices and the various operators. During oil and gas surface management training courses, workshops, and the ICR team visits, field staff would occasionally request additional support or backing from the WO. Field staff generally expressed a desire for the WO to ensure increased support of BMPs by the local management. To help meet this need, the WO should develop strengthened policy guidance sufficient to provide clear management direction requiring implementation of the interim reclamation BMPs found in the BMP IM (WO-IM-2007-021), the Gold Book, and lessons learned during this ICR and the oil and gas training sessions.

Land Use Plan:

- It is the BLM's policy, (Planning Handbook (H-1601-1) (Appendix C (H)), that all new land use plans include "...general/typical... best management practices that will be employed to accomplish [RMP] objectives in areas open to leasing." By definition, BMPs are state-of-the-art mitigation measures, and as such, change frequently as practices improve over time. To ensure land use plans are kept current with state-of-the-art interim reclamation BMPs, the newer RMPs, identified in the Field Office Findings and Recommendations below, should be updated through plan maintenance to include the more recent interim reclamation BMPs derived from the national BMP policy, the Oil and Gas Gold Book, other local, state, and national BMP policies, and lessons learned. BMPs should include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation, such as salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, resspreading topsoil close to the production facilities, disking resspread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation:

- Environmental documentation of proposed interim reclamation requirements varied from no documentation to relatively detailed documentation. In cases where the operator's reclamation plan inadequately addresses interim reclamation actions, the NEPA document should briefly identify the impacts that could result from inadequate interim reclamation. The final decision document should include the more detailed requirements necessary to ensure adequate interim reclamation will be conducted and will be successful. Field offices also need to ensure that mitigation identified in the NEPA decision document is incorporated into the approved permit and is actually implemented on the ground.

APD and Conditions of Approval:

- Documentation of interim reclamation requirements in the approved APDs varied from nonexistent to weak documentation. However, some operators have been developing more detailed reclamation plans to cover their future surface disturbing actions.
- All new APDs and associated ROWs should include, or reference, a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, the field offices should adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.

Field Office Interim Reclamation Inspections:

- The Interim Reclamation Inspection and Enforcement policy was established with WO-IM-2006-033, Policy and Attachment 4, Item #11, effective October 1, 2005. Interim Reclamation inspections are identified as “High Priority” inspections in the BLM’s Inspection and Enforcement Strategy and must be documented in the case file and in AFMSS. Of the 36 well locations reviewed by the ICR team, interim reclamation inspections have been conducted and documented in the case file for only 7 of the wells (19 percent). Six of the seven inspections were conducted by one field office.
 - At a minimum, the initial interim reclamation inspection should occur within 6 months to 1 year after well completion to ensure earthwork for reclamation was completed. If reseeding has not occurred at the time when earthwork activities are completed, a follow-up inspection should take place to ensure seeding had occurred during the first planting season. Interim reclamation monitoring should be conducted periodically until successful interim reclamation has been achieved. To ensure this occurs, it may be necessary to reprioritize workload, cross-train other field office staff, or transfer some of the monitoring responsibilities to the companies themselves.
 - It is recommended that field offices require operators to submit notification 48 hours prior to conducting reclamation earthwork activities.
 - The field office should witness a sampling of those activities to ensure reclamation practices identified in the approved permit are being implemented correctly and the possible reasons for reclamation failure, if it occurs.
 - All inspections are required to be documented in AFMSS. Six of the seven inspections were documented in AFMSS prior to announcement of the ICR.

ICR Team Field Inspections

- The long-term disturbance area (that area left un-reclaimed for the duration of production operations) at most of the well locations could have been further reduced, in some cases substantially, by recontouring more of the well location and respreading topsoil closer to the well facilities (Table 1). On average, long-term disturbance at visited well locations was reduced through interim reclamation by 62%. Without considering how the well location may have been sited elsewhere to further reduce long-term disturbance, the team found that, on average, long-term disturbance could have been reduced by 87% percent. On some of the well locations, facilities (including the on-location access road) could have been better sited or consolidated to increase the amount of the well pad that underwent interim reclamation. In areas where interim reclamation failed, it will be difficult to determine why, because interim reclamation inspections were not conducted while reclamation activities were taking place, or the operators provided little information about what reclamation practices were used, and when those activities took place.

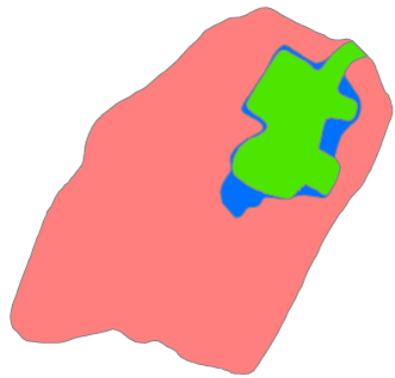
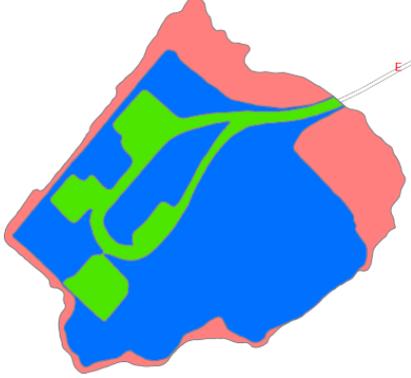
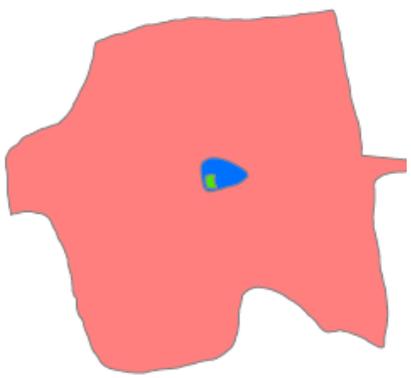
Well Pad Area	Average	Minimum	Maximum
Short-Term Disturbance (acre)- Actual	3.62	0.92	8.15
Long-Term Disturbance (acre)- Actual	1.29	0.01	4.24
Long-Term Disturbance (acre)- Ideal	0.46	0.01	1.01
Actual Percent Reclaimed for Interim	62%	0%	100%
Ideal Percent Reclaimed for Interim	87%	72%	100%

Table 1

The following examples show the typical range of interim reclamation the ICR team observed.

Key

- Pink = The initial area disturbed to create the well location and now interim reclaimed.
- Blue = Barren area remaining after interim reclamation.
- Green = Amount of barren area remaining if optimal interim reclamation was completed.

Adequate Interim Reclamation on a Site with Production Facilities	Very Little Interim Reclamation	Maximum Interim Reclamation Close to the Well Head (No Production Facilities on Pad other than the Well Head)
		

Findings and Recommendations by Field Office

1. Moab, UT

Summary

The Moab Field Office has two, well-trained, experienced and motivated oil and gas surface management specialists that are relatively new to the office. This new team has made efforts to substantially improve past oil and gas development practices in the Moab Field Office. Most of the areas needing improvement, identified below, are attributable to past operator and office practices and a lack of oversight, including a lack of drilling, production, and interim reclamation inspections and regulatory enforcement. The new oil and gas surface staff seem intent on making positive changes and improving office practices and standards. To ensure the field office completes its interim reclamation inspections for active well locations, it is recommended the field office consider practices such as hiring and training a temporary or seasonal oil and gas surface inspector to assist in identifying and resolving the substantial interim (and final) reclamation noncompliance workload.

The current RMP contains a good, but limited set of interim reclamation BMPs; however, some key BMPs are missing. Interim reclamation mitigation measures addressed in the NEPA documents varied from partially sufficient to extremely limited measures. All of the approved APDs lacked sufficient requirements to ensure successful interim reclamation. No interim reclamation inspections had been conducted for any of the six wells prior to the announcement of the ICR. No active interim reclamation practices had occurred at four of the six well locations. At the remaining two well locations, comparatively speaking, the operator made a substantial attempt to achieve interim reclamation under difficult circumstances; however, additional practices, such as not placing production facilities against the cut slope or on the fill slope would have allowed for greater recontouring, revegetation, and reduction of the resulting well location size and visual footprint.

Land Use Plan

Findings:

- The new RMP contains a good, but limited, set of BMPs necessary for achieving successful interim reclamation. Missing, however, are BMPs related to erosion control and the recontouring and revegetation of much of the well location during interim reclamation.
- Appendix A of the October 2008, Record of Decision (ROD) and Approved RMP, addresses interim reclamation BMPs including:
 - “Facilities will be grouped on pads to allow for maximum interim Reclamation.

- Interim reclamation will include road cuts and fills and will extend to within close proximity of the wellhead and production facilities.
- Above ground facilities including power boxes, building doors, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.
- All powerlines to individual well locations (excluding major power source lines to operating oil or gas field) and flow lines will be buried in or immediately adjacent to the access roads.
- In developing oil and gas fields, all production facilities will be centralized to avoid tanks and associated facilities on each well pad.
- Use of submersible pumps will be strongly encouraged.
- Multiple wells will be drilled from a single well pad whenever feasible.
- Noise reduction techniques and designs will be used.
- Placement of production facilities on hilltops and ridgelines will be prohibited where they are highly visible.
- Facilities will be screened from view.
- Oil field wastes will be bio-remediated.
- Common utility or right-of-way corridors containing roads, power lines, and pipelines, will be used.

Recommendations:

- The field office should consider incorporating updated BMPs into the RMP through plan maintenance to include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation. For example, typical BMP practices that should be added to the RMP would include: salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, respreading topsoil close to the production facilities, disking respread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - Three of the NEPA documents only addressed “weed control” as a recommended mitigation measure, even though the reclamation plans in the APDs submitted by the operators were insufficient.
 - Two of the NEPA documents identified the need for the operator to submit a site-specific reclamation plan; however, there is no evidence the field office ever officially requested or received a plan from the operator. The same two NEPA documents established a requirement for low profile tanks due to high visibility along an access road to a national park and a state park. This

requirement, however, was not included in the approved APD as a condition of approval and was not, therefore, implemented by the operator.

Recommendations:

- Conduct a crosswalk on all future APD approvals to ensure mitigation measures identified in the NEPA document are always attached to the approved APD as conditions of approval.

APD and Conditions of Approval

Findings:

- Provisions for Adequate Topsoil Salvage and Reuse:
 - All six approved APDs referred to the general need to salvage topsoil.
- Provisions for Adequate Interim Recontouring:
 - Five of the six approved APDs did not refer to any interim reclamation activities, including the recontouring, topsoiling, and revegetation of areas not needed for active production operations.
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:
 - None of the approved APDs addressed methods for maximizing interim reclamation through proper placement of facilities away from cut or fill slopes, placement near the entrance of the well pad, or consolidating facilities.
- Provisions for Successful Revegetation Practices and Standards:
 - Five of the six approved APDs addressed at least some provisions for reclamation, although none adequately addressed interim reclamation or established reclamation standards.
- Provisions for Erosion Control:
 - None of the approved APDs addressed erosion control.
- Provisions for Weed Management:
 - Four of the six approved APDs referred to weed management.

Recommendations:

- All new APDs and associated ROWs should include or reference a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, the field office should adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.

Field Office Interim Reclamation Inspections

Findings:

- Only well 2 was inspected for surface and environmental conditions and recorded by the field office in the case file; however, an interim reclamation inspection, required under the BLM's Inspection and Enforcement Strategy, was not conducted for any of the six wells.

Recommendations:

- In conformance with the national Inspection and Enforcement Strategy and to ensure conformance with the APD and the new RMP, the field office should conduct an interim reclamation inspection of all new wells.
- The field office should require operators to submit notification 48 hours prior to conducting reclamation activities. The office should witness a variable sampling of those activities, depending on operator conformance with the terms of their permits, to ensure proper reclamation practices are being used and the reasons for reclamation failure.
- The field office should place a priority on completing interim reclamation inspections of producing wells drilled after the BLM Inspection and Enforcement Strategy (WO-IM-2006-033, Policy and Attachment 4, #11) mandated such inspections (spud or completed dates on or after 10/1/2005) and document the inspections in the case file and AFMSS. After these wells are inspected, priorities and a timeframe should be developed to complete interim reclamation inspections for all the remaining producing wells. It is recommended the field office consider hiring temporary or seasonal inspectors to assist in the inspection workload.
- The field office should use the draft national "Production & Interim Reclamation Inspection/Monitoring – Environmental" inspection format, or a similar format that prompts the inspector to look for standard interim reclamation inspection items.
- The field office should take necessary steps to ensure operator compliance with BLM policy and regulations, the field office RMP, and approved APD.

ICR Team Field Inspections

Findings:

- General: Only one of the three operators attempted interim reclamation.
- Optimum Siting:
 - All well locations were adequately sited to minimize cut and fill and allow for maximum interim reclamation recontouring.

- Adequate Topsoil Salvage and Reuse:
 - At four locations, either inadequate topsoil or no topsoil was salvaged. At two locations there was not adequate topsoil to salvage due to exposed bedrock.
- Adequate Interim Recontouring:
 - Four locations had no interim reclamation recontouring. One location had very little recontouring. One site had adequate recontouring; however, it would be possible to tighten up the pad even further.
- Placement and Consolidation of Facilities to Maximize Reclamation:
 - One well location had no facilities or they were located offsite. Opportunities for maximizing interim reclamation were substantially reduced at four well locations due to placement of facilities against the cut slope or on fill slopes. At two well locations, facilities were not consolidated, therefore reducing opportunities for interim reclamation.
- Successful Revegetation Practices:
 - No revegetation was attempted at four of the well locations. The company was unable to salvage sufficient topsoil at two of the well locations that did undergo an attempt at revegetation; therefore, additional cultural practices (soil amendments, fertilizers, mulch, etc.) may be necessary to ensure successful revegetation of the available subsoils.
- Erosion Control:
 - Erosion control was not an issue at two well locations. No erosion control was implemented at two additional well locations, both of which experience some erosion. At two other locations, the spreading of pinion-juniper limbs and stems provided adequate erosion control. At one of those two locations, a large and unnecessary interception trench was placed across the mid-slope of a recontoured cut slope.
- Weed Management:
 - Weeds were an issue at only two locations, and there was no evidence that weeds at those locations had been treated.

Recommendations:

- The field office should ensure that interim reclamation practices are initiated at the first four well locations within 6 months of the date of this report as per the requirements under Onshore Order Number 1.
- The field office should discuss opportunities for improving interim reclamation practices at this site and future sites with the operator of the last two well locations, including not placing facilities against the cut slope or on fill slopes, maximizing recontouring, and testing and treating soils to ensure adequate reclamation of subsoils in areas where inadequate topsoil exists.

2. Vernal, UT

Summary

The Vernal Field Office has a fairly large team of oil and gas surface management specialists and a substantial permitting workload. All of the surface specialists are relatively new to the oil and gas program. This team is fairly inexperienced, yet has a positive attitude, actively seeks out necessary training, and represents an opportunity for substantially improving oil and gas development practices in the Vernal Field Office. Reclamation practices are changing. For example, the Green River District has developed a set of reclamation guidelines and a tool for determining whether adequate topsoil was salvaged. Two of the three operators have submitted Standard Operating Practice (SOP) reclamation plans to the field office with substantially increased reclamation commitments. Most of the areas needing improvement, identified below, are attributable to past office practices predating the current Natural Resource Specialist (NRS) staff. These include a lack of company oversight, lack of appropriate permit requirements, and insufficient drilling, production, and interim reclamation surface inspections and enforcement. The new oil and gas surface staff seem intent on working with the operators to bring about positive change and to improve office practices and standards. To help eliminate the inspection backlog, it is recommended the field office consider hiring and training temporary or seasonal oil and gas surface inspectors to assist in identifying and resolving the substantial interim reclamation noncompliance workload.

The current RMP contains a good, but limited set of interim reclamation BMPs; however, some key BMPs are missing. Only one interim reclamation inspection had been conducted prior to the announcement of the ICR. Past reclamation plans and approved APDs have lacked adequate reclamation requirements and standards, but that is slowly improving. Newer, more comprehensive reclamation plans are being developed by some operators; however, they lack adequate requirements for interim reclamation recontouring, a key aspect of interim reclamation. All operators attempted to reclaim the pit area; however, only one operator went beyond pit reclamation and attempted additional interim reclamation to reduce the size of the well location. Opportunities for maximizing interim reclamation were substantially reduced at four well locations due to placement of facilities at the far end of the well pad and the use of surface pipelines on the well pad. All well locations could have been tightened up to reduce the amount of barren area.

Land Use Plan

Findings:

- The new RMP contains a good set of BMPs necessary for achieving successful interim reclamation. Missing, however, are BMPs related to recontouring much of the well location during interim reclamation, revegetation, and erosion control.

- Appendix R – Fluid Minerals Best Management Practices (BMPs) contained in the October 2008, Record of Decision and Approved RMP, addresses interim reclamation BMPs including:
 - Facilities will be grouped on pads to allow for maximum interim reclamation.
 - Interim reclamation will include road cuts and fills and will extend to within close proximity of the wellhead and production facilities.
 - Above ground facilities including power boxes, building doors, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.
 - All powerlines to individual well locations (excluding major power source lines to operating oil or gas field) and flow lines will be buried in or immediately adjacent to the access roads.
 - In developing oil and gas fields, all production facilities will be centralized to avoid tanks and associated facilities on each well pad.
 - Use of submersible pumps will be strongly encouraged.
 - Multiple wells will be drilled from a single well pad whenever feasible.
 - Noise reduction techniques and designs will be used.
 - Placement of production facilities on hilltops and ridgelines will be prohibited where they are highly visible.
 - Facilities will be screened from view.
 - Oil field wastes will be bio-remediated.
 - Common utility or right-of-way corridors containing roads, power lines, and pipelines will be used.

Recommendations:

- The field office should consider incorporating updated BMPs into the RMP through plan maintenance to include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation. For example, typical BMP practices that should be added to the RMP would include: salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, respreading topsoil close to the production facilities, disking respread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - NEPA compliance was documented through an Environmental Assessment (EA) for one well, Determination of NEPA Adequacy (DNA) for three wells, and a Section 390 Categorical Exclusion (CX) for the remaining two wells. The NEPA documents cited in the DNAs and CX were not reviewed by the ICR team.

Recommendations:

- None.

APD and Conditions of ApprovalFindings:

- General: The operator for wells 1 and 2 has submitted a SOP agreement that contains a very general, very short reference to interim reclamation. The operator of wells 3 and 4 has a newer, far more detailed SOP reclamation plan that even includes reclamation standards for its future wells, but does not adequately address recontouring at interim or final reclamation. The operator for wells 5 and 6 has submitted a draft SOP reclamation and weed management plan that is still being developed, but it does not address interim recontouring. The Green River District has issued reclamation guidelines covering many aspects of reclamation; however, those too do not address recontouring requirements for interim reclamation.
- Provisions for Adequate Topsoil Salvage and Reuse:
 - All six approved APDs referred to the general need to salvage topsoil; however, two do not indicate how much topsoil will be salvaged.
- Provisions for Adequate Interim Recontouring:
 - Two approved APDs did not refer to any interim reclamation recontouring, two referred only to recontouring the pits, and two stated, “The well pad will not be recontoured as part of interim reclamation.”
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:
 - None of the approved APDs addressed methods for maximizing interim reclamation through proper placement of facilities away from cut or fill slopes, placement near the entrance of the well pad, or consolidating facilities.
- Provisions for Successful Revegetation Practices and Standards:
 - Four of the six approved APDs addressed at least some provisions for revegetation, even if only for the pit. One operator included significantly more revegetation detail and included standards in their Reclamation Plan SOP.
- Provisions for Erosion Control:
 - None of the approved APDs addressed erosion control for the pad; two referred to erosion control for the road.
- Provisions for Weed Management:
 - Four of the six approved APDs did not address weed management.

Recommendations:

All new APDs and associated ROWs should include or reference a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, the field office should adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.

Field Office Interim Reclamation Inspections

Findings:

- Only well 1 was inspected for interim reclamation and recorded by the field office in the case file; however, the inspection was not entered into AFMSS until the ICR was announced. Interim reclamation inspections, required under the BLM Inspection and Enforcement Strategy, were not conducted for any of the remaining five wells until after the ICR was announced.

Recommendations:

- In conformance with the national Inspection and Enforcement Strategy and to ensure conformance with the APD and RMP, the field office should conduct an interim reclamation inspection of all new wells.
- The field office should require operators to submit notification 48 hours prior to conducting reclamation activities. The office should witness a variable sampling of those activities, depending on operator conformance with the terms of their permits, to ensure proper reclamation practices are being used and the reasons for reclamation failure.
- The field office should place a priority on completing interim reclamation inspections of producing and shut-in wells drilled after the BLM Inspection and Enforcement Strategy (WO-IM-2006-033, Policy and Attachment 4, #11) mandated such inspections (spud or completed dates on or after 10/1/2005) and document the inspections in the case file and AFMSS. After these wells are inspected, priorities and a timeframe should be developed to complete interim reclamation inspections for all the remaining producing wells.
- The field office should use the draft national “Production & Interim Reclamation Inspection/Monitoring – Environmental” inspection format, or a similar format that prompts the inspector to look for standard interim reclamation inspection items.
- The field office should take necessary steps to ensure operator compliance with BLM policy and regulations, the field office RMP, and approved APD.

ICR Team Field Inspections

Findings:

- General: All operators attempted to reclaim the pit area; however, only one operator went beyond pit reclamation and attempted additional interim reclamation to reduce the size of the well location. All well locations could have been tightened up, one significantly.
- Optimum Siting:
 - Four well locations were adequately sited to minimize cut and fill and allow for maximum interim reclamation recontouring.
- Adequate Topsoil Salvage and Reuse:
 - Adequate topsoil was likely salvaged at two locations.
- Adequate Interim Recontouring:
 - Two locations had adequate interim reclamation recontouring; however, interim recontouring for all locations was constrained by improper facility and surface pipeline placement on the pad. All pits were properly placed in the cut.
- Placement and Consolidation of Facilities to Maximize Reclamation:
 - Opportunities for maximizing interim reclamation were substantially reduced at four well locations due to placement of facilities at the far end of the well pad and the use of surface pipelines on the well pad. All well facilities were reasonably consolidated.
- Successful Revegetation Practices:
 - Revegetation was attempted at all but one location. Revegetation was (or will be) confined primarily to the pits at four locations. One location is unlikely to have successful revegetation unless additional reclamation practices are implemented because the pit was placed in steep, highly erosive, clay soils.
- Erosion Control:
 - The Reclamation Demonstration well location was the only location to be mulched. One location had an excessive interception berm. Erosion was only an issue at the location with steep, highly erosive, clay soils.
- Weed Management:
 - Weeds were a relatively minor issue, being worse at the reclamation demonstration project.

Recommendations:

- Require operators to switch to the Covert Green paint color for all new facilities and when routinely repainting older facilities. Covert Green blends better with the vegetated background. Limit the use of Carlsbad Canyon paint to those areas where the background consists solely of barren, clay soils.
- Discuss with the operators opportunities for further improving interim reclamation practices at future sites, such as not placing facilities at the far end of the well location, not using surface pipelines on the well location, maximizing interim recontouring and topsoiling of the well location, and testing and treating soils to ensure adequate reclamation of subsoils in areas where inadequate topsoil exists or was salvaged.

3. Kemmerer, WY

Summary

The Kemmerer Field Office has only one oil and gas surface management specialist who is also new to the oil and gas surface program. The office is in the process of hiring a second surface specialist. What was impressive to see, was the participation in this ICR review by the two field office realty specialists and the Assistant Field Manager for Lands and Minerals, and the positive attitude of all four. They represent an opportunity for substantially improving oil and gas development practices in the Kemmerer Field Office. The areas needing improvement are primarily attributable to a lack of company oversight, including a lack of appropriate permit requirements and a lack of drilling, production, and interim reclamation surface inspections and enforcement. The new oil and gas surface and realty staff seem intent on working with the operators to bring about positive change and to improve office practices and standards. To help eliminate the inspection backlog, it is recommended the field office consider hiring and training temporary or seasonal oil and gas surface inspectors to assist in identifying and resolving the substantial interim reclamation noncompliance workload. With increased inspections, especially during reclamation activities, it should be possible to identify the cause of reclamation failures and identify improved practices. Additional recommended reclamation practices have been identified in the Finding sections below.

The field office staff selected both successful and unsuccessful sites to show the ICR team. The intent of showing unsuccessful sites to the team, rather than only their best sites, was to encourage discussion and seek solutions to improving interim reclamation success.

The new RMP does not identify individual BMPs, but instead references four websites containing BMPs. The selected alternative in the RMP identified fairly specific requirements for interim reclamation. All five of the NEPA EAs referred to interim reclamation requirements. No interim reclamation inspections had been conducted prior to the announcement of the ICR. The reclamation provisions contained in the approved APDs are reasonably detailed. The amount of the pad area that companies are attempting to reclaim in

Kemmerer is better than most. However, because reclamation success has been hit or miss, additional interim reclamation requirements should be included in the approved APD reclamation plan, as required in the new Wyoming Reclamation Policy (WY-IM-2009-022).

Land Use Plan

Findings:

- The new RMP does not identify individual BMPs, but instead references four websites containing BMPs.
- The selected alternative in the RMP identified fairly specific requirements for interim reclamation. Requirements included development of a reclamation plan, performance standards based on site-specific objectives, monitoring starting the first growing season, and successful reestablishment of native plant communities.

Recommendations:

- The field office should consider incorporating updated BMPs into the RMP through plan maintenance to include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation. For example, typical BMP practices that should be added to the RMP would include: salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, respreading topsoil close to the production facilities, disking respread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - NEPA compliance was documented through five EAs and one Section 390 CX. All EAs referred to interim reclamation requirements.
 - Mitigation contained in the EA identified a requirement for low profile tanks; this was attached to the APD as conditions of approval, but was not implemented by the operator.

Recommendations:

- None.

APD and Conditions of Approval

Findings:

General: The reclamation provisions contained in the approved APDs are reasonably detailed. Because reclamation success has been irregular, additional requirements should be included in the approved APD reclamation plan. Requirements should be based on an evaluation by a reclamation specialist and should consider what has been learned from the required reclamation monitoring. Success may be improved by increasing topsoil salvage from 6 inches to 8 inches or 12 inches, fencing grazed locations, changing the seed mix, or ensuring that the sites are ripped and the topsoil is disked (not compacted and smoothed by a motorgrader) prior to seeding. The approved APDs identify Carlsbad Canyon as the color of choice for production facilities. In this environment, the newer and darker Covert Green would be a better choice for blending facilities into the vegetated environment, and the field office staff have indicated that they are transitioning to this color.

- Provisions for Adequate Topsoil Salvage and Reuse:
 - All six approved APDs referred to salvaging and respreading 6 inches of topsoil.
- Provisions for Adequate Interim Recontouring:
 - All six approved APDs referred to recontouring during interim reclamation.
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:
 - The approved APDs lack any detail on consolidation of facilities, but do allude to this practice to some degree. Five of the APDs included standard facility layout diagrams that were nearly identical, and did not accurately represent the true final layout of the facilities or interim reclamation.
- Provisions for Successful Revegetation Practices and Standards:
 - All approved APDs addressed some provisions for revegetation. For some of the well locations, it is not certain they were followed. Additional requirements such as disking, deeper topsoil salvage, soils testing and amendments, and mulching may be necessary. Only two approved APDs included reclamation standards.
- Provisions for Erosion Control:
 - All of the approved APDs addressed erosion control.
- Provisions for Weed Management:
 - All of the approved APDs addressed weed management.

Recommendations:

- All new APDs and associated ROWs should include or reference a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, it is recommended the field office adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.
- Continue the transition to Covert Green for all new facilities and older facilities painted during routine maintenance.

Field Office Interim Reclamation InspectionsFindings:

- Interim reclamation inspections, required under the BLM Inspection and Enforcement Strategy, were not conducted for any of the six wells locations. Because no early surface inspections were conducted, it is difficult to determine why some of the revegetation is failing. The tank on site one is taller than allowed in the permit. This could have been detected earlier and more easily resolved.

Recommendations:

- In conformance with the national BLM Inspection and Enforcement Strategy and to ensure conformance with the APD and RMP, the field office should conduct an interim reclamation inspection of all new wells. Monitoring reports, as required under the RMP, should be submitted to the BLM and filed in the case file.
- The field office should require operators to submit notification 48 hours prior to conducting reclamation activities. The office should witness a variable sampling of those activities, depending on operator conformance with the terms of their permits, to ensure proper reclamation practices are being used and the reasons for reclamation failure.
- The field office should place a priority on completing interim reclamation inspections of producing and shut-in wells drilled after the BLM Inspection and Enforcement Strategy (WO-IM-2006-033, Policy and Attachment 4, #11) mandated such inspections (spud or completed dates on or after 10/1/2005) and document the inspections in the case file and AFMSS. After these wells are inspected, priorities and a timeframe should be developed to complete interim reclamation inspections for all the remaining producing wells. It is recommended the field office consider hiring seasonal or temporary interim reclamation inspectors.
- The field office should use the draft national “Production & Interim Reclamation Inspection/Monitoring – Environmental” inspection format, or a similar format that prompts the inspector to look for standard interim reclamation inspection items.
- The field office should take necessary steps to ensure operator compliance with BLM policy and regulations, the field office RMP, and approved APD.

ICR Team Field Inspections

Findings:

- General: All operators attempted interim reclamation to reduce the size of the well location. All well locations could have been tightened up slightly, typically by reducing the size of the teardrop access road and by topsoiling and seeding more closely to the pad road and facilities. The office staff showed the ICR team some sites where reclamation was very successful and other sites where they recognized reclamation was not successful. This resulted in a good discussion of possible actions that could be taken to achieve better interim reclamation success.
- Optimum Siting:
 - All locations were adequately sited to allow for maximum interim reclamation.
- Adequate Topsoil Salvage and Reuse:
 - It was not clear whether adequate topsoil had been salvaged. Some topsoil may have been mishandled during the respreading process by blading it with a motorgrader and not disking the topsoil prior to drill seeding. A shovel test may be necessary for determining whether adequate topsoil was respread and whether the soil is too compacted to adequately support plant growth.
- Adequate Interim Recontouring:
 - Three of the six locations had adequate interim reclamation recontouring. All pits were properly placed in the cut.
- Placement and Consolidation of Facilities to Maximize Reclamation:
 - All facilities were adequately consolidated to allow for interim reclamation. One set of facilities was placed near the cut, and at another location, one oversized teardrop access road was placed on fill. Those actions reduced the opportunity for recontouring. On one site, facilities were properly placed to allow maximum recontouring; however, the site was not adequately recontoured by the operator.
- Successful Revegetation Practices:
 - Revegetation was attempted at all but one location. Some sites were successful or even very successful, and some were not. The unknown factors preventing successful revegetation need to be identified and addressed.
- Erosion Control:
 - Erosion was only a problem at one site due to the improper rerouting and restoration of an existing drainage.

- Weed Management:
 - Weeds were substantial at several of the well locations. There was no evidence weeds had been treated in accordance with the requirements of the approved APDs.

Recommendations:

- The field office should work with a reclamation specialist to identify additional reclamation practices that may be necessary, such as removing the native vegetation together with the salvaged topsoil and respreading them together, salvaging a thicker layer of topsoil, ripping the subsoils, disking the respread topsoil prior to seeding (and not smoothing and compacting it with a motorgrader), testing and amending the soil, mulching, controlling weeds, and fencing of the interim reclamation (when necessary).
- The field office should require operators to provide more details about the proposed facilities in their APDs or subsequent Sundry Notices.
- The field office should require operators to increase interim reclamation at future sites by placing facilities and roads away from cut or fill slopes, maximizing the amount of interim recontouring, and topsoiling the well location closer to the roads and facilities.
- The field office should require operators to phase in to the Covert Green paint color for all new facilities and when routinely repainting older facilities. Covert Green blends better with the vegetated background.
- The field office should enforce the weed control provisions contained in the approved APDs.

4. Pinedale, WY

Summary

The Pinedale Field Office has a fairly large team of oil and gas surface management specialists with varying degrees of experience and a substantial permitting workload. The field office staff selected both successful and unsuccessful sites to show the ICR team. The intent of showing unsuccessful sites to the team, rather than only their best sites, was to encourage discussion and seek solutions to improve interim reclamation success in the Pinedale Anticline and Jonah fields.

Of the six offices visited, the Pinedale Field Office has the most advanced RMP and field development EIS requirements for interim reclamation, including identification of reclamation practices and standards, operator submitted reclamation plans, reclamation monitoring, and reclamation research. In addition, each operator has hired reclamation specialists to help ensure the Pinedale Field Office standards are met.

No interim reclamation inspections had been conducted for any of the six wells prior to the announcement of the ICR. Interim reclamation had been attempted at all of the sites except the mat pad site (where it is not necessary). Five pad locations could be further tightened up by applying topsoil more closely to the production facilities. Two of the sloped locations have tanks placed near the cut or fill slopes, a practice that precludes adequate interim recontouring. Only one site may need additional reclamation work to ensure the revegetation will be successful.

Land Use Plan

Findings:

- The new RMP contains extensive interim reclamation requirements including recontouring and a minimum 75 percent of pre-disturbance cover standard for interim reclamation.

Recommendations:

- None.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - NEPA compliance was documented through three EAs and three Section 390 CXs. All EAs and CXs tiered back to field development EISs which included interim reclamation requirements.

Recommendations:

- None.

APD and Conditions of Approval

Findings:

General: The reclamation provisions contained in the approved APDs are reasonably detailed; however, some companies have submitted project-specific or field-specific reclamation, erosion control, and monitoring plans containing much more detail. Additional detail is also provided in the field development EISs and the new RMP. The field office is in the process of switching operators from the lighter Carlsbad Canyon facility color to the darker Shale Green. Covert Green would be a better choice for

blending facilities into the vegetated environment; however, Shale Green is a dramatic improvement over the former Carlsbad Canyon.

- Provisions for Adequate Topsoil Salvage and Reuse:
 - Four approved APDs referred to salvaging and respreading 6 inches of topsoil, one APD called for site specific topsoil measurements to identify the proper amount to be salvaged, and one site utilized mat pads; therefore, it was unnecessary to salvage topsoil.
- Provisions for Adequate Interim Recontouring:
 - Four APDs referred to recontouring during interim reclamation. Recontouring was not an issue for the remaining two because one location was flat and the other location utilized a mat pad.
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:
 - Facility consolidation and placement to maximize interim reclamation was not addressed in the individual permits. However, facility placement and consolidation is covered in field development EISs with requirements for eventual installation of liquids gathering systems serving centralized production facilities.
- Provisions for Successful Revegetation Practices and Standards:
 - Provisions for revegetation are addressed in the approved APDs and/or the field development EISs and are working their way into company reclamation plans.
- Provisions for Erosion Control:
 - One APD included a stormwater and erosion control plan. Erosion control measures were sparse or missing in the other APDs. Stormwater BMPs are addressed in the Pinedale Anticline Appendix A and the Jonah Field development EIS Appendix A and B.
- Provisions for Weed Management:
 - None of the approved APDs had a sufficient discussion of weed control.

Recommendations:

- The field development EIS/RODs and the new RMP contain substantial interim reclamation requirements. The field office should ensure ROD requirements are incorporated into the approved APD with sufficient site-specific detail, contained within operator-submitted reclamation plans, or referenced in the approved APD. In reviewing the operator reclamation plans, the field office must ensure the EIS/ROD and RMP reclamation requirements are adequately addressed. For example, one operator's reclamation plan does not address the BLM's interim reclamation standards, and instead confuses interim reclamation with "temporary" reclamation by establishing its own set of insufficient temporary reclamation standards. The

operator's plan should instead address: 1) Temporary Reclamation for those locations where wells will be drilled in the near future, 2) Interim Reclamation where the final well has been completed, and 3) Final Reclamation where the last well has been plugged.

- Plans and APDs generally call for salvaging a standard 6 inches of topsoil. This may be inadequate for long-term revegetation success. Field offices should determine the appropriate depth of topsoil to be salvaged based on multiple topsoil shovel pits at each site.

Field Office Interim Reclamation Inspections

Findings:

- Interim reclamation inspections, required under the BLM Inspection and Enforcement Strategy, were not conducted for any of the six wells locations.

Recommendations:

- In conformance with the national Inspection and Enforcement Strategy and to ensure conformance with the APD and RMP, the field office should conduct an interim reclamation inspection of all new wells. Monitoring reports, as required under the RMP and field development EISs, should be submitted to the BLM and filed in the case file.
- The field office should require operators to submit notification 48 hours prior to conducting reclamation activities. The office should witness a variable sampling of those activities, depending on operator conformance with the terms of their permits, to ensure proper reclamation practices are being used and the reasons for reclamation failure.
- The field office should place a priority on completing interim reclamation inspections of producing and shut-in wells drilled after the BLM Inspection and Enforcement Strategy (WO-IM-2006-033, Policy and Attachment 4, #11) mandated such inspections (spud or completed dates on or after 10/1/2005) and document the inspections in the case file and AFMSS. After these wells are inspected, priorities and a timeframe should be developed to complete interim reclamation inspections for all the remaining producing wells.
- The field office should use the draft national "Production & Interim Reclamation Inspection/Monitoring – Environmental" inspection format, or a similar format that prompts the inspector to look for standard interim reclamation inspection items.
- The field office should take necessary steps to ensure operator compliance with BLM policy and regulations, the field office RMP, and approved APD.

ICR Team Field Inspections

Findings:

- General: All operators attempted interim reclamation to reduce the size of the well location. All well locations except for one pad location could have been tightened up slightly by topsoiling and seeding more closely to the pad road and facilities. The office staff showed the ICR team some sites where reclamation was very successful and other sites where they recognized reclamation was not successful. This resulted in a good discussion of possible actions that could be taken to achieve better interim reclamation success.
- Optimum Siting:
 - All well locations were adequately sited to allow maxim interim reclamation.
- Adequate Topsoil Salvage and Reuse:
 - It was not clear whether adequate topsoil had been salvaged. Reclamation success may improve if more than 6 inches of topsoil is salvaged in some locations. Consider more detailed shovel testing and soil mapping to determine the optimal topsoil salvage depths across the proposed well location.
 - Topsoil could have been respread more closely to the production facilities at five of the locations.
- Adequate Interim Recontouring:
 - Interim recontouring was generally satisfactory; however, additional recontouring could have been accomplished if tanks at two locations had not been placed near the cut or fill slopes.
- Placement and Consolidation of Facilities to Maximize Reclamation:
 - All of the facilities were well consolidated. Two well locations were constructed on side slopes and contained tanks that were placed near the cut or fill slopes. This practice precluded adequate interim recontouring.
- Successful Revegetation Practices:
 - Revegetation was attempted at all well locations. Grazing impeded, but did not prevent, revegetation at two locations. Only one location could be considered a failure. The mat pad location had the most successful establishment of native vegetation.
- Erosion Control:
 - Three locations were constructed on side slopes. Erosion was not evident at any of the locations.

- Weed Management:
 - Weeds were substantial at two well locations. There was no evidence weeds had been treated.

Recommendations:

- The field office should work with the operator's reclamation specialist at the fifth well location to identify additional reclamation practices that may be necessary, such as removing the native vegetation together with the salvaged topsoil and respreading them together, salvaging a thicker layer of topsoil, disking the respread topsoil prior to seeding (and not smoothing and compacting it), testing and amending the soil, mulching, controlling weeds, and possibly fencing of the interim reclamation on the well location to preclude pronghorn grazing.
- The field office should require operators to increase interim reclamation at future sites by placing facilities and roads away from cut or fill slopes, maximizing the amount of interim recontouring, and topsoiling the well location closer to the roads and facilities.
- The field office should enforce the weed control provisions at the last two well locations.

5. Carlsbad, NM

Summary

In the past 5 years, the Carlsbad Field Office has shifted priorities by making interim reclamation compliance a high priority. The Carlsbad Field Office has:

- Increased the number of surface compliance specialists dedicated to the inspection and enforcement, especially interim reclamation. The field office now has six or seven surface management specialists with varying degrees of experience.
- Conducted workshops and outreach meetings for operators addressing the agency's goals for interim reclamation.
- Provided notification letters to all operators within the basin notifying them of the priority the field office has placed on reclamation and operator compliance.

Of the six offices the ICR teams evaluated, Carlsbad is the only office to have conducted interim reclamation inspections for all of the six wells. All interim reclamation inspections were completed within the timeframes identified in the BLM Inspection and Enforcement Strategy. In addition, the field office's outreach efforts are beginning to increase the industry's focus on interim reclamation.

All operators made a limited attempt at interim reclamation. Success varied significantly from one well location to the next. Opportunities for maximizing interim reclamation were substantially reduced at all well locations due to placement of facilities at the far end of the well pad or at the edge of the fill slope, the use of surface pipelines on the well pad, not

removing more caliche, not maximizing the respreading of topsoil, and not seeding the areas where topsoil was respread.

To achieve consistency and improve reclamation standards for new APD approvals, the field office should develop a new set of reclamation Conditions of Approval (COA) highlighting specific requirements for interim reclamation. The recently approved RMP amendment covers a limited portion of the field office, yet contains a very detailed explanation of the reclamation goals, objectives, and the practices that are necessary to achieve successful reclamation. This plan amendment along with the Gold Book and national reclamation plan template could serve as examples for developing field office-wide reclamation COAs.

Land Use Plan

Findings:

- In April 2008, the Carlsbad RMP was amended to establish specific management prescriptions for ensuring the continued habitat protection of the lesser prairie-chicken and the sand dune lizard, while allowing other resource uses and activities to continue (including oil and gas leasing and development). The RMP contains an appendix of detailed BMPs and reclamation requirements that apply to fluid mineral activities within a portion of the field office area. The appendix is extensive and serves as the foundation for environmentally responsible permitting in lesser prairie-chicken and sand dune lizard habitat.

Recommendations:

- The field office should incorporate into future land use plans updated BMPs to include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation. For example, typical BMP practices that should be added to a new RMP would include: salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, respreading topsoil close to the production facilities, disking respread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - NEPA compliance for all six APDs was documented through an EA/Finding of No Significant Impact (FONSI). Of the six NEPA documents reviewed, two contained a discussion of interim reclamation as a form of mitigation.

- All of the NEPA documents conclude vegetation will be removed for well pad and road construction and the impact will be permanent as long as the well is in producing status. The documents do not identify the need for interim reclamation and revegetation of areas no longer needed for production activities.

Recommendations:

- The field office should consider including interim reclamation as a required mitigation measure in all their NEPA compliance documents. This documentation further supports the field office's ability to mitigate the impacts of long-term development.

APD and Conditions of Approval

Findings:

- Provisions for Adequate Topsoil Salvage and Reuse:
 - All six APDs referred to the general need to respread topsoil on all areas of the pad not necessary for production purposes; however, four APDs did not identify the need to initially salvage the topsoil that would be respread on those areas.
- Provisions for Adequate Interim Recontouring:
 - All six APDs contained a requirement to recontour all areas of the pad not necessary for production purposes so that the recontoured areas resemble the original contours of the surrounding terrain.
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:
 - Three APDs contained a general requirement to place production facilities in an area on the location that would allow for maximum interim recontouring and revegetation of the well location, but lacked detail on how that would be accomplished (i.e., placement away from cut/fill slopes, placement near the entrance of the well pad, or consolidating facilities).
- Provisions for Successful Revegetation Practices and Standards:
 - All six APDs contained provisions for successful revegetation practices, including removal of surfacing material on well pads (caliche), resspreading of topsoil, and identification of a seed mixture and method to be used. Two of the APDs required the submittal of a Sundry Notice prior to starting any reclamation effort; however, there is no evidence the office was notified by the operator. None of the APDs included a revegetation success standard.
- Provisions for Erosion Control:
 - For all six APDs, provisions for erosion control pertained only to road design and construction.

- Provisions for Weed Management:
 - All APDs contained a provision requiring seed mixes to be free of noxious weed seed. Only one APD held the operator responsible for controlling weeds on all disturbed areas.

Recommendations:

- All new APDs and associated ROWs should include or reference a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, it is recommended the field office adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.

Field Office Interim Reclamation Inspection

Findings:

General: Carlsbad is the only field office of the six to have completed interim reclamation inspections for each of the well locations prior to the announcement of this ICR.

- The field office has conducted interim reclamation inspections for all six wells within a timeframe that was consistent with the requirements of the BLM's Inspection and Enforcement Strategy. The field office has also started using the more complete draft national Production and Interim Reclamation Inspection/Monitoring – Environmental format recommended by the Washington Office.
- This active interim reclamation inspection strategy has resulted in enforcement actions on five of the six well locations. Compliance has been achieved on two of those locations, and enforcement actions are still ongoing for the other three.
- The field office has been unable to verify whether seeding took place on three of the locations where a desired stand of vegetation is not growing.

Recommendations:

- The field office should continue to follow up on outstanding enforcement actions to ensure compliance.
- The field office should require operators to submit notification prior to conducting reclamation activities. The office should also witness a sampling of those activities to ensure proper reclamation practices are being used and to determine the reasons for reclamation failure.

ICR Team Field Inspection

Findings:

General: All operators have made a concerted effort to reduce the size of their well locations. Their efforts are a major shift from local industry practices that were in place only 5 years ago. All well locations could have been tightened significantly, typically by consolidating facilities away from cut and fill slopes, reducing the size of the well pad to those areas needed just for the teardrop access road, and spreading topsoil and seeding closer to the pad road and facilities. The field office staff showed the ICR team sites in various states of interim reclamation (i.e., sites with and without vegetation, sites with and without erosional issues, sites that have been adequately and inadequately recontoured, etc.). This resulted in a good discussion of possible actions that could be taken to achieve better interim reclamation success.

- Optimum Siting:
 - All six well locations were sited in areas that did not present an impediment to achieving interim reclamation.
- Adequate Topsoil Salvage and Reuse:
 - An adequate depth of topsoil was salvaged from all well locations sufficient to cover the areas where caliche had been removed. One location had a small pile of topsoil along the pipeline right-of-way that had not been respread.
 - At all well locations, more topsoil could have been respread if more caliche had been removed from the well pad.
- Adequate Interim Recontouring:
 - Adequate recontouring was completed on two of the six well locations; however, the fill slopes were too steep on four of the locations (1:1 or 2:1) and were eroding. Recontouring was constrained by improper facility and surface pipeline placement on the pad.
- Placement and Consolidation of Facilities to Maximize Reclamation:
 - Opportunities for maximizing interim reclamation were substantially reduced at four well locations due to placement of facilities at the far end of the well pad, at the edge of the fill slope, and the use of surface pipelines on the well pad.
- Successful Revegetation Practices:
 - A desired stand of grasses was re-established on two locations. Seeded vegetation was starting to grow on one location and some natural regeneration was occurring on one location.
 - Two well locations did not have any vegetation growing on them at all. The interim reclamation well file inspection comments for these locations indicated that reseeding efforts were not witnessed. It was uncertain whether seeding took place.

- The final working size of the producing well pads at all six locations could have been further reduced in order to maximize interim reclamation.
- Erosion Control:
 - Four well locations were eroding due to steep fill slopes that could not be recontoured because of improper facility placement.
 - One of those four locations was also receiving large amounts of water from the watershed above the well pad. As a result, a large gully formed in the middle of the well pad.
 - Three of those four locations were located in areas that have sandy soils and are highly susceptible to wind and water erosion. These locations would have benefited from crimped mulch and windrows of disked soil.
 - Two well locations did not have any erosion issues.
- Weed Management:
 - Weeds were not a major issue on any of the well locations.

Recommendations:

- For future APDs, the field office should include a COA that requires the operator to submit the seed tags and seeding location information for all areas that have undergone interim reclamation.
- The field office should discuss with the operator opportunities for further improving on interim reclamation practices at these and future sites, such as not placing facilities against the cut slope or on fill slopes, maximizing recontouring of slopes on well pads, further reducing the size of the well pad, and installing erosion control devices such as mulch, disking, and windrows for areas with highly erosive sandy soils.

6. Roswell, NM

Summary

In the past 5 years, the Roswell Field Office has shifted priorities by making interim reclamation a higher priority. The field office provided notification letters to all operators notifying them of the priority the field office has placed on reclamation and operator compliance.

The field office has two positions dedicated to permitting and surface compliance. The office recently hired a new employee with a background in the BLM as a Petroleum Engineering Technician; the other surface specialist position is vacant.

All operators made attempts at interim reclamation; however, opportunities for maximizing interim reclamation were missed at all well locations. Reasons for failure included a lack of seeding, improper placement of facilities and surface pipelines on these locations, and an excessive amount of barren area. Vegetation was not re-established at any of the six well

locations visited. Failure to re-establish vegetation on the well locations may have been attributed to the operators not reseeding those areas of the well pad where topsoil was respread. None of the six well locations had been inspected by the field office for interim reclamation and documented in the file prior to the announcement of the ICR. The field office should develop a requirement that all operators notify the field office prior to initiating any interim reclamation so that the BLM staff can witness the work and ensure reclamation efforts are completed appropriately. The field office should also place a priority on interim reclamation inspections for all new wells and existing wells to ensure the operators are complying with the interim reclamation requirements of their approved APDs.

To achieve consistency and improve reclamation standards for new APD approvals, the field office should develop a new set of reclamation COAs highlighting specific requirements for interim reclamation. The recently approved RMP amendment covers a limited portion of the field office, yet contains a very detailed explanation of the reclamation goals, objectives, and the practices that are necessary to achieve successful reclamation. This plan amendment along with the Gold Book and national reclamation plan template could serve as examples for developing field office-wide reclamation COAs.

Land Use Plan

Findings:

- In April 2008, the Roswell RMP was amended to establish specific management prescriptions for ensuring the continued habitat protection of the lesser prairie-chicken and the sand dune lizard, while allowing other resource uses and activities to continue (including oil and gas leasing and development). The RMP contains an appendix of detailed BMPs and reclamation requirements that apply to fluid mineral activities within the resource area. This appendix was very extensive and serves as a great source for field staff to use in the permitting process.

Recommendations:

The field office should incorporate updated BMPs into future RMPs to include those practices necessary for minimizing the footprint of disturbance and maximizing successful interim reclamation. For example, typical BMP practices that should be added to a new RMP would include: salvaging adequate topsoil for temporary storage, placing facilities near the entrance to the well pad and away from cut and fill slopes, recontouring portions of the well pad not needed for active well operations, ripping compacted areas, resspreading topsoil close to the production facilities, disking respread topsoil, applying temporary erosion control, and revegetating the site with native species.

NEPA Documentation

Findings:

- Interim Reclamation Mitigation:
 - NEPA compliance for all six APDs was documented through an EA/FONSI. None of the NEPA documents addressed interim reclamation as a mitigation measure. Two of the NEPA documents did mention the control of weeds, if present on site.
 - All of the NEPA documents concluded that vegetation will be removed during well pad and road construction and the impact will last as long as the well is in producing status.

Recommendations:

- The field office should consider including interim reclamation as a required mitigation measure in all its NEPA compliance documents. This documentation further supports the field office's ability to mitigate the impacts of long-term development.

APD and Conditions of Approval

Findings:

The reclamation requirements contained in the approved APDs are very general. In four approved APDs, interim reclamation is referred to generally. In the other two approved APDs, there were no specific requirements for interim reclamation other than the inclusion of a performance standard. In all cases, the provisions for interim reclamation lack sufficient detail necessary to ensure success.

- Provisions for Adequate Topsoil Salvage and Reuse:
 - All six APDs had a general provision, whether it was through a COA or contained within the Surface Use Plan of Operations, to salvage the top six inches of topsoil. Four of the six APDs also included provisions to use the topsoil for interim reclamation.
- Provisions for Adequate Interim Recontouring:
 - Four APDs did not contain any specific requirement to recontour disturbed areas for interim reclamation. Two APDs did mention interim recontouring, but the requirement pertained only to reclaiming the reserve pit. However, all well locations were sited on flat terrain and interim recontouring was not an issue.
- Provisions for Placement and Consolidation of Facilities to Maximize Reclamation:

- Two of the six APDs contained a general requirement to place production facilities in an area on the well pad that would allow for maximum interim reclamation.
- Provisions for Successful Revegetation Practices and Standards:
 - All six APDs did identify a seeding process that should be used (i.e., seed mix, seeding method, and timing of seeding effort). None of the APDs included a revegetation success standard.
- Provisions for Erosion Control:
 - The only requirement for erosion control was to address road design and construction. However, all locations were flat and erosion was not an issue.
- Provisions for Weed Management:
 - Four of the six APDs did have general provisions for controlling weeds on all disturbed areas.

Recommendations:

All new APDs and associated ROWs should include or reference a reclamation plan containing adequate interim reclamation objectives, standards, and the minimum actions necessary to ensure adequate and successful interim reclamation. To accomplish this, the field office should adopt, and modify as necessary, the draft national reclamation plan template and ensure its inclusion in all approved APD and associated ROW permits.

Field Office Interim Reclamation Inspection

Findings:

- Prior to announcement of this ICR, interim reclamation inspections were not conducted for any of the six well locations. The Inspection and Enforcement Strategy has identified interim reclamation inspections as a priority.

Recommendations:

- In conformance with the national BLM Inspection and Enforcement Strategy and to ensure conformance with the APD and RMP, the field office should conduct an interim reclamation inspection of all new wells.
- The field office should require operators to submit notification 48 hours prior to conducting reclamation activities. The office should witness a variable sampling of those activities, depending on operator conformance with the terms of their permits, to ensure proper reclamation practices are being used and the reasons for reclamation failure.
- The field office should place a priority on completing interim reclamation inspections of producing and shut-in wells drilled after the BLM Inspection and Enforcement

Strategy (WO-IM-2006-033, Policy and Attachment 4, #11) mandated such inspections (spud or completed dates on or after 10/1/2005) and document the inspections in the case file and AFMSS. After these wells are inspected, priorities and a timeframe should be developed to complete interim reclamation inspections for all the remaining producing wells. It is recommended the field office consider hiring seasonal or temporary interim reclamation inspectors.

- The field office should use the draft national Production & Interim Reclamation Inspection/Monitoring – Environmental inspection format, or a similar format that prompts the inspector to look for standard interim reclamation inspection items.
- The field office should take necessary steps to ensure operator compliance with BLM policy and regulations, the field office RMP, and approved APD.

ICR Team Field Inspection

Findings:

General: All operators attempted some interim reclamation to slightly reduce the size of the well location. However, all well locations could have been tightened up even more, typically by consolidating facilities at the entrance of the access road, leaving caliche only on those areas needed for the production facilities and teardrop access road, and ripping, respreading topsoil, and reseeding on all areas of the well pad other than the pad road and facilities. The field office made attempts to verify with the operators of these well locations whether reseeding efforts took place. Documentation received from the operators demonstrated that no seeding occurred at any of the well sites, except for some of the pipeline routes, and that was evident to the team.

- Optimum Siting:
 - All six well locations were sited in areas that did not present an impediment to achieving interim reclamation.
- Adequate Topsoil Salvage and Reuse:
 - On two locations, it was evident that topsoil had not been adequately salvaged. A large portion of the well pads remained barren, with caliche on the surface, and one of these sites included an inadequate amount of topsoil material in a berm around portions of the pad.
 - Adequate topsoil appeared to have been salvaged on four well locations. However, on three of these locations, topsoil was not adequately respread. There were stockpiles of topsoil on the far end of two well pads and the third well pad included a high percentage of caliche compared to topsoil in a large part of the reclaimed reserve pit area.
 - More caliche should have been removed from all of the well pads allowing topsoil to be respread over a greater area.
- Adequate Interim Recontouring:
 - All sites were sufficiently recontoured.

- Placement and Consolidation of Facilities to Maximize Reclamation:
 - Facilities were clustered sufficiently on two locations to allow for full interim reclamation. However, the operator did not make use of this opportunity and half of the area of these well pads still contained caliche on the surface.
 - On the other four locations, opportunities for maximizing interim reclamation were substantially reduced. Facilities placed at the far end of the pad and fence lines constructed to exclude livestock also excluded interim reclamation efforts.
- Successful Revegetation Practices:
 - There was evidence that the disturbed areas on the well pads were not reseeded and grass was not growing at all of the locations that were visited. The associated pipeline rights-of-way for these well pads did have vegetation growing on it with the straight-line pattern of the drill seeder.
 - More of the caliche should have been removed.
- Erosion Control:
 - All well pads and access roads were constructed on fairly flat terrain. Erosion was not an issue that required mitigation.
- Weed Management:
 - Weeds were identified in two of the six well locations – African rue and Russian thistle.

Recommendations:

- For future APDs, the field office should include a COA that requires the operator to submit the seed tags with location information of all areas that have undergone interim reclamation seeding.
- The field office should discuss with the operator opportunities for further improving interim reclamation practices at these and future sites, such as not placing facilities against the cut slope or on fill slopes, maximizing recontouring of slopes, further reducing the size of the well pad, and utilizing erosion control devices, such as mulch and windrows, for areas with highly erosive sandy soils.
- The field office should ensure future APDs or subsequent Sundry Notices include specific plans for siting production facilities and ensure facilities will be clustered toward the entrance of the well pad to maximize interim reclamation.
- The field office should ensure suitable topsoil depths are identified at the onsite exam and in the APD and adequate topsoil is stripped prior to pad and road construction. Ensure that when the wells go into production, 100 percent of topsoil is respread, not stockpiled, for the life of the well.

CONCLUSIONS

It is evident from this sampling of well locations that the extent of interim reclamation on BLM-managed lands is not yet optimal. To ensure the BLM continues to reduce the long-term impacts of oil, gas, and geothermal development, the Washington Office should develop a national interim reclamation policy based on the Gold Book and finalize the draft national Reclamation Plan Template.

Appendix I
Interim Reclamation ICR
Reclamation Performance Standards

Source: Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Revised 2006 and 2007 (Gold Book)

General –

During the life of the development, all disturbed areas not needed for active support of production operations should undergo “interim” reclamation in order to minimize the environmental impacts of development on other resources and uses.

Reclamation generally can be judged successful when a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community is established on the site, with a density sufficient to control erosion and non-native plant invasion and to re-establish wildlife habitat or forage production.

Erosion control is generally sufficient when adequate groundcover is reestablished, water naturally infiltrates into the soil, and gullying, headcutting, slumping, and deep or excessive rilling is not observed.

The site must be free of State- or county-listed noxious weeds, oil field debris, contaminated soil, and equipment.

A reclamation plan is included in the Surface Use Plan of Operations and should discuss plans for both interim and final reclamation.

[Interim] Reclamation is required of any disturbed surface that is not necessary for continued production operations.

Disturbed areas should be revegetated after the site has been satisfactorily prepared. Site preparation will include respreading topsoil to an adequate depth, and may also include ripping, tilling, disking on contour, and dozer track-imprinting.

Native perennial species or other plant materials specified by the surface management agency or private surface owner will be used.

Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods such as dozer track-walking followed by broadcast seeding.

When conditions are not favorable for the establishment of vegetation, such as periods of drought or the lack of sufficient salvaged topsoil, the surface management agency may allow for subsequent reseeding to be delayed until soil moisture conditions become favorable or may require additional cultural techniques such as mulching, fertilizing, irrigating, fencing, or other practices.

It is the operator's responsibility to monitor the site, take the necessary steps to ensure reclamation success, and to notify the surface management agency when success is achieved.

Well Sites –

Interim reclamation consists of minimizing the footprint of disturbance by reclaiming all portions of the well site not needed for production operations. The portions of the cleared well site not needed for operational and safety purposes are recontoured to a final or intermediate contour that blends with the surrounding topography as much as possible. Sufficient level area remains for setup of a workover rig and to park equipment. In some cases, rig anchors may need to be pulled and reset after recontouring to allow for maximum reclamation.

To reduce final reclamation costs; maintain healthy, biologically active topsoil; and to minimize habitat, visual, and forage loss during the life of the well, all salvaged topsoil should be spread over the area of interim reclamation, rather than stockpiled. Topsoil is respread over areas not needed for all-weather operations. When practical, the operator should respread topsoil over the entire location and revegetate to within a few feet of the production facilities, unless an all-weather, surfaced, access route or turnaround is needed. Where the topography is flat and it is, therefore, unnecessary to recontour the well location at the time of final reclamation, the operator may set aside sufficient topsoil for final reclamation of the small, unreclaimed area around the wellhead.

Production facilities should be clustered or placed offsite to maximize the opportunity for interim reclamation.

Roads –

Interim reclamation consists of reclaiming portions of the road not needed for vehicle travel. Wherever possible, cut slopes, fill slopes, and borrow ditches should be covered with topsoil and revegetated to restore habitat, forage, scenic resources, and to reduce soil erosion and maintenance costs.

Pipelines –

Pipeline trenches are to be compacted during backfilling and must be maintained to correct backfill settling and prevent erosion. Reclamation involves placing fill in the trench, compacting the fill, regrading cut-and-fill slopes to restore the original contour, replacing topsoil, installing temporary waterbars only where necessary to control erosion, and revegetating in accordance with a reclamation plan.

Split Estate –

The BLM will invite the surface owner to participate in the onsite and final reclamation inspections and will take into consideration the needs of the surface owner when reviewing the APD and reclamation plans and when approving final abandonment and reclamation. The BLM will offer the surface owner the same level of surface protection that the BLM provides on Federal surface.

The surface use agreement between the surface owner and the operator is confidential. However, the APD Surface Use Plan of Operations must contain sufficient detail about any aspects of the agreement necessary for NEPA documentation and to determine that the operations will be in compliance with laws, regulations, Onshore Orders, and agency policies.

Appendix II

Interim Reclamation ICR Case File Review and Site Visit Documentation Form					
Field Office:		Case #: Lease #: Operator:	Well Name: Well #: API #:		
Twn: Sec:	Rng: Qtr:	County:	State:	Surface Owner:	
ICR Team Members:					
Date: Time:					
RMP, NEPA, and Well File Review					
Comments:		File Review Documented By:			
(Note changes to BLM standards due to surface owner preferences. Are they documented in the file?)					
1. Does the SUPO Reclamation Plan Adequately Address BLM Interim Reclamation Standards?					
2. Compliance (NB) – Was Interim Reclamation Inspected by the BLM and Documented in the File? Date Inspected:					
3. Monitoring (MW) – Reclamation success monitored? Date Monitored?					
4. AFMSS – Was the Interim Reclamation Inspection Documented in AFMSS?					
Attach copies of the Interim Reclamation Portion of the Surface Use Plan, associated COAs, and interim reclamation inspection reports.					
Site Visit Inspection Items		Found In APD	Met	Not Met	N/A
Site Visit Review Documented By:					
1. Single Well Pad () Multi-well Pad () Number of wells:					
2. Resource: CBNG (); Oil (); Gas (); Oil & Gas ()					
3. Siting – Optimum Site Selected to Allow for Maximum Interim Reclamation?					
4. Facilities – Clustered on Pad Near Entrance to Maximize Interim Reclamation?					
5. Facilities – Centralized Offsite to Maximize Interim Reclamation?					
6. Facilities – Painted to Blend with Vegetated Background?					
7. Pit – Located in Cut to Allow Final Reclamation Recontouring to Original Contour?					
8. Recontouring – Sufficient Recontouring of Areas No Longer Needed for Active Production?					

Site Visit Inspection Items cont'd	Found In APD	Met	Not Met	N/A
9. Recontouring – Cut Slope?				
10. Recontouring – Fill Slope?				
11. Site Preparation – Compacted Areas Ripped or Disked?				
12. Topsoil – Adequate Depth and Quality Salvaged?				
13. Topsoil – Redistributed on Majority of the Disturbed Areas to Minimize Barren Pad Surface?				
14. Topsoil – All Topsoil Utilized?				
15. Topsoil Site Preparation – Left Rough for Broadcast <u>or</u> Less Rough for Drill Seeding?				
16. Revegetation – Seeded? Method:				
17. Revegetation – Seeding During Late Fall, Winter, or Early Spring? (Not Summer)				
18. Revegetation/Seeded, Pad – Close to the Wellhead?				
19. Revegetation/Seeded, Road – Close to the Road Surface?				
20. Revegetation Successful? – (If Adequate Time has Elapsed) If inadequate, why?				
21. Stormwater – Erosion and Runoff Absent/Controlled? Methods:				
22. Stormwater/Revegetation – Mulch Used? Type:				
23. Weeds – Free of Noxious & Invasive Weeds?				
23a. Weeds – If present, Weed Management Plan implemented?				
24. Well Road – Appropriate for Anticipated Use and Soils? Two Track (); Flat Bladed (); Resource Road (); Local Road ()				
25. Well Road – Meets Gold Book Standards?				
26. Well Road – Interim Reclamation of Cut Slope Attempted?				
27. Well Road – Interim Reclamation of Fill Slope Attempted?				
28. Pipelines – Recontoured to Original Contour, Topsoiled, Revegetated?				
29. Housekeeping – Free of Trash, Spills, and Unnecessary Equipment?				
30. Compliance – Interim Reclamation in Compliance with the APD Rec. Plan?				
Summary Points:				
Comments: List Inspection Item # for each comment, if applicable.				
GPS Rover File: ST:	LT (actual):	LT (ideal):		
Initial Disturbed Acres: (43,560 sqft/ac)	Interim Reclaimed Acres:	Final Reclaimed Acres:		
% Interim/Final Reclamation Rec. ÷ Initial Disturbance = _____ x 100= _____	Pad:	Road:		