CHAPTER 5 — ADDITIONAL POTENTIAL MITIGATION, MONITORING MEASURES, AND COMPENSATORY MITIGATION MEASURES

This chapter provides a summary of mitigation and monitoring actions that could be applied to the project to further minimize adverse impacts or verify the presence, extent, or absence of anticipated impacts. This list itemizes mitigation, monitoring, and compensatory mitigation (CM) that have been identified by the public and/or Interdisciplinary Team (IDT) members and that are not already specifically included as measures applicable to all or to several alternatives (see Section 2.3), as measures specific to the BLM Preferred Alternative (see Section 2.4.5), or included in the Operator-committed practices detailed in Appendix C.

Each measure listed in this chapter is briefly summarized and includes an identification of how application of the measure may influence project effects. A summary of CM as currently proposed by EnCana is also provided, as are some possible CM ideas, including estimated costs where available and identification of which resource(s) might benefit from each type of CM project.

Mitigation measures fall within the actions the Secretary of the Interior can direct to prevent unnecessary or undue degradation of the public lands and protect surface resources in the approval of surface use plans. Mitigation, as defined by the CEQ in 40 CFR 1608.20, may include one or more of the following:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action;

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(5) Compensating for the impact by replacing, or providing substitute resources or environments.

Any of the actions listed below may be required or recommended under any alternative if this project is approved. Decisions regarding the inclusion or exclusion of these actions will be made in the ROD for this project.

5.1 ADDITIONAL MITIGATION/MONITORING OPPORTUNITIES

The JIO could be established under any ROD-approved alternative except the No Action Alternative, and the JIO could consider any of the following measures for application to the project as part of its annual recommendations to the BLM. Following JIO recommendation, BLM could require certain actions, or make appropriate recommendations to affected governments,

agencies, and/or applicable Operators. Operators could voluntarily apply these measures with or without JIO recommendation.

5.1.1 Air Quality

The following actions could further identify, quantify, and reduce overall project emissions, which in turn could reduce impacts to visibility, atmospheric deposition, vegetation, wildlife, and other resources potentially affected by fugitive dust and emissions.

5.1.1.1 BLM Goals and Performance Objectives

BLM has established goals and objectives to measure its performance in meeting air quality requirements. The goals are qualitative descriptions of BLM's desired condition of air quality, and the objectives are measurable benchmarks of BLM's attainment of the goals. The reader should note that attainment of these performance objectives requires actions by many agencies, as well as BLM. The intent of the air quality goals and performance objectives is that BLM would:

- Air Quality Goal 1a: Minimize the impact of management actions in the planning area on air quality by complying with all applicable air quality laws, rules, and regulations.
    - Air Quality Objective 1a.1: Maintain concentrations of criteria pollutants associated with management actions in compliance with applicable Wyoming and National Ambient Air Quality Standards (WAAQS, NAAQS).
    - Air Quality Objective 1a.2: Maintain concentrations of Prevention of Significant Deterioration (PSD) pollutants associated with management actions in compliance with the applicable increment.
- Air Quality Goal 1b: Implement management actions in the planning area to improve air quality as practicable.
    - Air Quality Objective 1b.1: Reduce visibility-impairing pollutants, in accordance with the reasonable progress goals and time-frames established within the State of Wyoming's Regional Haze State Implementation Plan (SIP).
    - Air Quality Objective 1b.2: Reduce atmospheric deposition pollutants to levels below federally established levels of concern (LOC) and levels of acceptable change (LAC).

5.1.1.2 Mitigation and Monitoring

BLM would apply AQ Goal 1a to concentrations of criteria and PSD pollutants, and AQ Goal 1b to atmospheric deposition and visibility. Existing air quality monitoring sites are shown in Table 5.1.

Table 5.1. Existing Air Quality Monitoring

	Location	Current Funding	Air Quality Components
SLAMS State & Local Air Monitoring Stations	Pinedale	WDEQ	Particulate matter ($PM_{2.5}$)
SPM Special Purpose Monitors	Jonah	EnCana	Nitrogen dioxide Ozone Particulate matter (PM_{10}), Visibility
	Boulder	Shell/WDEQ	
	Daniel	WDEQ	
CASTNet Clean Air Status & Trends Network	Pinedale	EPA and others	Nitrogen compounds Ozone Sulfur compounds, Dry deposition
WARMS Wyoming Air Resources Monitoring System	Pinedale	BLM Wyoming	Nitrogen compounds Particulate matter ($PM_{2.5}$) Sulfur compounds
NADP	Bridger Wilderness	BLM Wyoming	Wet deposition
Lakes	Bridger, Fitzpatrick, and Popo Agie	USFS	Lake chemistry

Emissions Tracking

The BLM would work cooperatively with state and other federal agencies, and with industry, to track emissions in the Pinedale Field Office area.

- BLM would track numbers of wells, numbers of drill rigs, drilling emissions, and compressor stations
- The Wyoming Department of Environmental Quality, Air Quality Division (WDEQ-AQD) would continue to track permitted emissions
- Operators would provide BLM with information on their drill rigs, including drilling days, horsepower, load factors, and emission factors.

Concentrations

Potential concentrations were all below applicable WAAQS and NAAQS (see TRC EC 2006:Tables G-ES-1 and G-ES-4). BLM plans no additional mitigation focused on potential concentrations. In the case of ozone, however, it may become necessary for BLM to develop a strategy to mitigate impacts in the future. While developing the current EIS, BLM learned of exceedances of the levels of the ozone NAAQS that occurred in the Jonah field in February 2005; however, the factors contributing to these levels were unclear. In cooperation with the JIO established under the ROD, BLM would review ozone data collected in the area. If in the future air monitoring were to show ozone exceedances that were attributable at least in part to sources in the Jonah field, BLM would consult with WDEQ-AQD, EPA, USFS, and NPS to determine whether adaptive management would be needed to mitigate impacts. WDEQ has the regulatory authority to determine a NAAQS violation. To date, there is no finding of a NAAQS violation.

BLM would continue to work cooperatively with WDEQ, EPA, USFS, and NPS to maintain concentration monitoring in the Pinedale Field Office (PFO) area. Existing concentration monitoring includes regulatory (SPM and SLAMS) and non-regulatory (CASTNet and WARMS) networks (Table 5.1).

BLM would also work cooperatively with other federal and state agencies and industry to enhance concentration monitoring in the PFO area. BLM and the cooperating agencies would contribute technical expertise to maintaining and enhancing air quality monitoring. The Operators would bear the financial costs of maintaining and enhancing air quality monitoring.

WDEQ is developing a joint funding agreement with federal agencies and industry to finance and operate air quality monitoring in southwest Wyoming. Operators would be required to participate in any joint industry/state/federal monitoring agreement.

Ozone monitoring would continue at existing air monitoring stations in the region under the regulatory authority of WDEQ-AQD or the non-regulatory review of CASTNet. These authorities would periodically assess the networks and may add, move, or terminate ozone monitoring.

WDEQ is currently performing a regulatory PSD Increment Consumption Analysis for southwest Wyoming, and preliminary results are available at http://deq.state.wy.us/aqd. That analysis will be available in early 2006, and will present the status of the NO_2 increment consumption in Bridger and Fitzpatrick Wilderness Areas. BLM may provide a more informative PSD comparison in the State of the Atmosphere annual reports. This comparison, similar to the current comparison, will not constitute a regulatory PSD Increment Consumption Analysis.

Atmospheric Deposition

Potential atmospheric deposition values were all below applicable LOC and LAC (see TRC EC 2006:Tables G-ES-1 and G-ES-4). BLM plans no additional mitigation focused on atmospheric deposition.

BLM would continue to work cooperatively with WDEQ, EPA, USFS, and NPS to maintain atmospheric deposition monitoring in the PFO area. Existing atmospheric deposition monitoring includes: NADP wet deposition monitors (Pinedale, South Pass, Gypsum Creek), CASTNet dry deposition monitor (Pinedale), bulk deposition sites (Black Joe Lake, Hobbs Lake) and long-term lake sites (Black Joe, Hobbs, Deep, Upper Frozen, Ross, Saddlebag).

BLM would also work cooperatively to enhance atmospheric deposition monitoring in the PFO area. BLM and the cooperating agencies would contribute technical expertise to maintaining and enhancing air quality monitoring. The Operators would bear the financial costs of maintaining and enhancing air quality monitoring.

WDEQ is developing a joint funding agreement with federal agencies and industry to finance and operate air quality monitoring in southwest Wyoming. Operators would be required to participate in any joint industry/state/federal monitoring agreement.

Visibility

Potential visibility values were above applicable significance criteria for both project and cumulative impacts in Bridger Wilderness and other Class I areas (see TRC EC 2006: Tables G-ES-1 and G-ES-4). BLM would require the Operators to demonstrate annually that

emission reductions from the Jonah Infill Project will reduce the potential impact to visibility as follows:

Demonstration Period: Operators in the JIDPA would begin a 12-month demonstration period beginning with the signing of the ROD. In correspondence with BLM, WDEQ affirmed the State's position that BLM "require the use of Tier II diesel technology on drill rigs used in the Jonah area at the earliest possible date" (WDEQ 2005). Because preliminary modeling conducted for the DEIS indicated that emissions from engines for drilling rigs would have to be further reduced to attain the air quality goals stated above, BLM treats emission factors for Tier 2 engines (EPA 1998) as a reference point for the minimum control of emissions during the demonstration period. Operators in the Jonah and Pinedale fields have suggested several technologies that could achieve emissions lower than Tier 2. As part of this demonstration period, the Operators in the Jonah field would conduct emission tests on various drilling engine technologies as defined in a plan to be developed by the Operator(s) and approved by WDEQ-AQD. The results from this demonstration period would be provided to WDEQ as soon as possible, but no later than 1 year after the ROD is signed. WDEQ would then consider the emissions testing data in the determination of the appropriate Best Available Technology (BAT) for the engines associated with all drilling operations. Until such time as the WDEQ-AQD establishes appropriate BAT standards, Operators would be required to demonstrate that the impact levels from the proposed project will be less than the impact levels of the 80% emission reduction scenario as described in FEIS Section 4.1.2.5 and AQTSD Appendix G, Section G-2. Within 90 days of the ROD, the Operators would submit a plan to BLM that describes in detail how the potential impacts will be minimized.

Implementation Period: All Operators would comply with WDEQ-established BAT standards. In the absence of WDEQ-established BAT standards, the Operators would submit annual operating plans that report the emissions from all emitting units in order to demonstrate that the potential visibility impact from the proposed project will be less than the potential visibility impact levels of the 80% emission reduction scenario described in FEIS Section 4.1.2.5 and AQTSD Appendix G, Section G-2, at a minimum, and to demonstrate that any potential visibility impact decreases as soon as possible to no days with an impact greater than 1 deciview (dv).

Based upon emissions data collected during the demonstration period, BLM would run an air dispersion model, comparable to the model run for the AQIAS, to reassess air quality impacts. BLM, in conjunction with the JIO, would use the results of the model to assess whether emission controls in the JIDPA adequately control emissions to achieve the air quality goals. Annually thereafter, BLM would determine whether an additional model run is necessary based upon field-wide emissions or a comparable indicator selected by BLM (in cooperation with the JIO). Operators should continue to innovate by demonstrating and using new techniques for controlling emissions after the demonstration period.

The method by which the Operators would demonstrate potential project visibility impact would be determined by BLM in consultation with WDEQ, EPA, USFS, and NPS. BLM would rely on the Operators to determine how they would attain the reduction in potential visibility impacts from the Jonah Infill project.

Technological advances in drill rig engines as well as aftermarket engine control represent great potential to reduce emissions from project development. In general, the more advanced the emission-reduction technology of drill rigs, the more wells per year could be drilled to net the same impact.

BLM's performance objective for visibility would be attained if actual visibility monitored by the Bridger Wilderness IMPROVE aerosol sampler complies with the reasonable progress goal of the Wyoming Regional Haze State Implementation Plan. Also, BLM would report the occurrence of layered hazes as measured by the visibility cameras operated by WDEQ-AQD. It is BLM's goal that the occurrences of layered hazes decrease over the life of the Jonah Infill project.

BLM would continue to work cooperatively with WDEQ, EPA, USFS, and NPS to maintain visibility monitoring in the PFO area. Existing visibility monitoring includes camera sites (Boulder, Daniel, Jonah), and IMPROVE aerosol and transmissometer sites (Bridger Wilderness).

BLM would also work cooperatively to enhance visibility monitoring in the Pinedale Field Office area. The BLM and the cooperating agencies will contribute technical expertise and financial resources to maintaining and enhancing air quality monitoring. The Operators would bear the financial costs of maintaining and enhancing air quality monitoring.

WDEQ is working on developing a joint funding agreement with federal agencies and industry to finance and operate air quality monitoring in southwest Wyoming. Operators would be required to participate in any joint industry/state/federal monitoring agreement.

5.1.2 Topography

The following action could protect important or unique topographic features in the JIDPA, which in turn could reduce soil erosion and protect the wildlife habitats provided by these features:

- no disturbance at rock outcrops in the JIDPA.

5.1.3 Paleontology

The following action could protect important or unique paleontological features in the JIDPA by identifying their location and subsequently restricting project activities that could disturb them:

- an active program of inventory and evaluation of sediments known or suspected to contain paleontological materials and an assessment of cumulative impacts.

5.1.4 Soil Resources

The following actions could protect soils by reducing erosion, compaction, loss through mixing with unsuitable plant growth material, and the time necessary for disturbance to be reclaimed. By reducing soil erosion, these actions could also protect surface water quality and promote revegetation, which in turn could promote the provision of forage for livestock and wildlife. These actions include:

- site-specific predisturbance landscape descriptions, including soils data, plant species composition and cover data, and proposed reclamation seed mixes with application rates;

- analyze soils prior to disturbance to determine appropriate reclamation seed mixtures and potential soil amendment needs; and

- utilization of fertilizers or other soil amendments at reclamation sites to facilitate site re-vegetation.

5.1.5 Surface Water Resources

The following actions could protect surface water resources and could protect groundwater quality in areas where surface water percolates below the ground surface. There is to be no surface discharge of wastewater from facilities in the JIDPA. Additional potential measures to protect water resources include:

- utilize catchment basins, sediment retention ponds, and/or spreader dikes within or external to the JIDPA to capture potentially increased flows due to runoff from disturbed areas to prevent channel morphology damage;

- monitor channel condition in the JIDPA with photopoints and/or other appropriate methods in coordination with BLM;

- no additional linear crossings (road and/or pipeline crossings/crossing corridors) of Sand Draw and/or other ephemeral drainages, unless it can be proven that such activity would reduce the erosive potential of the JIDPA and could be accomplished with no disturbance to the drainages;

- develop and implement an adaptive surface water management plan for the entire JIDPA which could include the NPDES process and consider runoff on a cumulative watershed basis;

- pipeline crossings of all drainage channels could be fitted with shutoff valves or other systems to minimize accidental discharge and facilitate channel protection from contamination in the event of a pipeline break;

- maximize recycling of waters utilized and produced for this project and increase capacities to both treat and re-use clean produced water within the field;

- consider all practical methods and technological improvements that would increase the use of recycled water, and decrease fresh water withdrawals, erosion, and salt loading of surface soils and water bodies; and

- file all NPDES permits and associated water quality data with the BLM and consult with WDEQ, WGFD, BLM, and livestock permittees before any water release.

5.1.6 Vegetation, Including TEP&C and BWS Plant Species

The following actions could protect vegetation, including TEP&C and BWS plant species and protect soils, water quality, and wildlife habitat and livestock forage:

- scalping and post-construction ripping rather than removal and re-spreading of topsoil for all new pipelines;

- establish vegetative plots to scientifically evaluate reclamation success, to develop appropriate procedures for timely sagebrush reestablishment, and/or to further identify the most desirable reclamation species; and

- in coordination with the BLM, Natural Resources Conservation Service, and Sublette County Conservation District, Operators could utilize irrigation at reclamation sites to improve germination and vegetation establishment.

5.1.7 Wildlife, Including TEP&C and BWS Animal Species

The following actions could protect wildlife, including TEP&C and BWS animal species and soils, vegetation, and water quality resources:

- utilization of low-profile tanks within line-of-sight, up to a maximum of 0.5 mile, of greater sage-grouse leks;

- develop water sources within the JIDPA that are outside of areas with a high level of development for area wildlife and/or convert existing project-developed water wells for wildlife use when they are no longer required;

- avoid all raptor nest territories (rather than just active nests) during the nesting season;

- expand annual wildlife monitoring in the JIDPA and Wildlife Study Area to include new wildlife/habitat study opportunities identified in consultation with the BLM, WGFD, and/or USFWS;

- modify wildlife protection measures (e.g., altered buffer area sizes, seasonal restriction dates) based on the results of annual monitoring and/or other regional wildlife studies;

- develop habitat enhancement projects on the JIDPA to accommodate displaced wildlife or altered migration routes; and

- inventory the Big Piney white-tailed prairie dog complex for black-footed ferrets and pursue a block clearance of the complex.

5.1.8 Cultural Resources

The following actions could protect cultural resources:

- Initiation of a Programmatic Agreement/Cultural Resources Management Plan (PA/CRMP) with SHPO;

- develop and implement a research design, discovery plan, and/or cultural resource management plan for the combined areas of the Pinedale Anticline Project Area and JIDPA, and consult with SHPO pursuant to the effect of these plans on affected cultural resources;

- implement larger cultural resource survey areas for site-specific development actions (areas of potential effect); and

- intensify data collection efforts at affected high-value archaeological sites in exchange for disturbance of sites with less unique values.

5.1.9 Land Use/Livestock Grazing

The following actions could protect livestock from hazards associated with development:

- Operators could commit to work with BLM and affected livestock permittees to mitigate the loss of AUMs in the JIDPA through provision of range improvement projects to modify grazing distribution patterns (e.g., water developments, vegetation treatments, irrigation, fencing, use of herders, actions that improve carrying capacity) within the project-affected allotments;

- Operators could commit to reduce fugitive dust on all proposed roads to decrease the potential for dust pneumonia in cattle; and

- Operators could commit to converting project-developed water wells for livestock use when they are no longer required for the project.

5.1.10 Land Use/Recreation

The following actions could minimize adverse project effects to JIDPA recreation by providing a new tourism opportunity:

- provide one or more quality interpretive sites with public access and/or publications with public distributions to provide the general public and interested parties educational information regarding JIDPA developments and management actions for other area-specific natural resource values.

5.1.11 Land Use/Transportation

The following actions could reduce impacts to roads, the transportation network, the traveling public, air quality, soils, vegetation, wildlife, livestock grazing, and recreation:

- prepare road development and transportation management plans;

- utilize car pools and/or bus crews from communities of origin to the field to minimize commuting traffic;

- utilize existing roads in the JIDPA as collector and/or resource roads to the maximum extent possible to avoid new surface disturbance; and

- Operators could jointly develop and submit for BLM approval road maintenance and use agreements designating road development, maintenance, and use requirements by each Operator. These agreements could identify responsibilities for necessary preventative and corrective road maintenance throughout the LOP. Maintenance responsibilities could include, but not be limited to, blading, gravelling or aggregate-surfacing, cleaning ditches and drainage facilities, dust abatement, noxious weed control, culvert maintenance and repair, or other requirements.

5.1.12 Visual Resource

Additional measures identified for vegetation and wildlife habitat (reclamation actions) and transportation (reduced traffic volumes) could also benefit visual resources. The following measure could also reduce project impacts to the visual resource:

- Funding a hosted worker (visual resource management specialist) or other such qualified consultant to work with the BLM and Operators to monitor and minimize visual effects. This position could be required until such time it is determined that both short- and long-term VRM objectives would be accomplished.

5.1.13 Health and Safety/Hazardous Materials

The following measures could protect public and worker health and safety and improve BLM's inspection and enforcement capability:

- provide the BLM copies of field- or lease-specific SWPPPs, SPCCPs, Spill Response Plans, and Emergency Response Plans; and

- thoroughly purge pipelines prior to abandonment.

5.1.14 Other Actions

The following actions or recommendations could enhance various resource protections, facilitate field management, or assist other entities with management decisions. These actions include:

- implement Operator-committed practices under any approved alternative when not already committed to (see Appendix B, Exhibit B-1) or required by BLM;

- establish the JIO under any approved alternative;

- utilize new drilling and development technologies (e.g., laser drilling, natural gas powered drill rig engines, micro-hole drilling, mat drilling) as they become available and feasible, and develop research or pilot projects to test new development technologies;

- utilize new technologies or technological innovations as they become available and feasible to minimize pad/road/pipeline/ancillary facility footprints and/or other adverse impacts;

- as a method of obtaining defensible data over the LOP to prove the success of reclamation efforts on a landscape scale, monitor both background and JIDPA-boundary "first flush" total suspended solids (TSS) using low-cost collection vessels placed at key locations (culverts), and monitor over the LOP in coordination with the JIO;

- increase bond amounts for JIDPA developments. Such action could ensure that sufficient funds are available to reclaim disturbed areas in the event Operators inadequately implement reclamation;

- Operator surveyors could submit electronic data for wells, roads, pipelines, and other project infrastructures in a format suitable to the BLM. Provision of electronic data

would allow for consistency among project data across Operators and would facilitate BLM database management. This action could benefit all area resources potentially affected by specific project development features (e.g., wildlife, habitats);

- Operators could provide hosted workers to the BLM as needed throughout the project development phase or LOP. If applied, this measure could facilitate efficient and timely BLM permitting; and

- utilize smaller ROWs to disturb less surface area during pipeline construction and initially install larger diameter pipelines to minimize pipeline disturbance corridor widths. If applied, this measure could reduce all impacts associated with linear surface disturbances.

5.2 COMPENSATORY (OFF-SITE) MITIGATION

Preliminary research and monitoring results, as well as the project impacts reported herein, indicate that existing surface disturbance especially in combination with certain project alternatives may be appropriate for CM. Some Operators have also acknowledged that the level of development that would occur under the Proposed Action and other alternatives presented in the EIS would result in impacts that cannot be sufficiently mitigated within the JIDPA.

As a general guideline, CM may be considered after other forms of on-site mitigation, including BMPs, have been analyzed. In other words, while on-site mitigation is the first priority when mitigating significant impacts, CM is an available tool for enhancing mitigation when impacts to BLM resources cannot be adequately mitigated on the site where the impacts are occurring.

To comply with BLM Instruction Memorandum (IM) 2005-069, a signed cooperative agreement between all affected parties, including BLM, the Operators, and applicable state resource management agencies, would be required before any funds can be transferred or received. Additionally, BLM would retain final approval authority for all proposed mitigation projects.

Considering projected impacts under each of the alternatives in the FEIS, BLM Wyoming identified CM as necessary to adequately offset or mitigate adverse on-site impacts. Though CM must be volunteered by the Operators prior to being included in a ROD, it is the BLM's opinion, in consultation with the WGFD, that CM should be applied.

In general, off-site mitigation or CM for direct surface disturbance impacts to wildlife would be necessary at a minimum rate of 3:1 (off-site treatments to on-site disturbance), with the goal of off-site treatments being to provide improvements and/or protection to other comparable habitat areas within relatively close proximity to the JIDPA. As an example, if the development approved 10,000 acres of direct surface disturbance, a minimum of 30,000 acres of off-site habitat treatment would be required. For other impacted resources that could not be adequately mitigated on-site, CM would be considered acceptable on a 1:1 basis. Under no circumstances would implementation of CM measures obviate the Operator's requirement to comply with all on-site mitigation and monitoring, outcome-based performance objectives, COAs, BMPs, and/or Operator-committed practices.

5.2.1 Operator-proposed CM

EnCana (Personal Communication, November 11, 2005, Letter from John Schopp, EnCana Vice President, Northern Rockies Business Unit, to Robert Bennett, BLM Wyoming State Director) is

committed to funding certain levels of offsite mitigation or CM depending on the level of future surface disturbance authorized, through subsequent applications of APD and ROW approvals by the BLM in the ROD for the Jonah Infill Drilling Project (Table 5.2). Funding levels are as indicated below for the following five developments scenarios:

1. In the event the BLM selects an alternative in the ROD which authorizes between 8,300 and 9,999 acres of new surface disturbance, EnCana would contribute 5.5 million dollars to fund offsite mitigation projects and monitoring in and around the JIDPA. At least $1.5 million of the total $5.5 million would be deposited with the State of Wyoming Wildlife and National Resources Trust Account Board and would be dedicated to funding habitat improvement projects on lands around the JIDPA. As directed by the BLM, a portion of the remaining balance of the CM funds may be used to fund other positive environmental impacts including monitoring, inspection, and enforcement activities in and around the JIDPA.

2. In the event the BLM selects an alternative in the ROD which authorizes between 10,000 and 10,999 acres of new surface disturbance, EnCana would contribute 12.1 million dollars to fund offsite mitigation projects and monitoring in and around the JIDPA. At least 7.5 million dollars of the total 12.1 million dollars would be deposited with the State of Wyoming Wildlife and National Resources Trust Account Board and would be dedicated to funding habitat improvement projects on lands around the JIDPA. As directed by the BLM, a portion of the remaining balance of the CM funds may be used to fund other positive environmental impacts including monitoring, inspection, and enforcement activities in and around the JIDPA.

3. In the event the BLM selects an alternative in the ROD which authorizes between 11,000 and 11,999 acres of new surface disturbance, EnCana would contribute 19.7 million dollars to fund offsite mitigation projects and monitoring in and around the JIDPA. At least 13.5 million dollars of the total 19.7 million dollars would be deposited with the State of Wyoming Wildlife and National Resources Trust Account Board and would be dedicated to funding habitat improvement projects on lands around the JIDPA. As directed by the BLM, a portion of the remaining balance of the CM funds may be used to fund other positive environmental impacts including monitoring, inspection, and enforcement activities in and around the JIDPA.

4. In the event the BLM selects an alternative in the ROD which authorizes between 12,000 and 16,999 acres of new surface disturbance, EnCana would contribute 24.5 million dollars to fund offsite mitigation projects and monitoring in and around the JIDPA. At least 16.5 million dollars of the total 24.5 million dollars would be deposited with the State of Wyoming Wildlife and National Resources Trust Account Board and would be dedicated to funding habitat improvement projects on lands around the JIDPA. As directed by the BLM, a portion of the remaining balance of the CM funds may be used to fund other positive environmental impacts including monitoring, inspection, and enforcement activities in and around the JIDPA.

5. In the event the BLM selects an alternative in the ROD which authorizes at least 16,200 acres of new surface disturbance, EnCana would contribute 28.5 million dollars to fund offsite mitigation projects and monitoring in and around the JIDPA. At least 20.5 million dollars of the total 28.5 million dollars would be deposited with the State of Wyoming Wildlife and National Resources Trust Account Board and

would be dedicated to funding habitat improvement projects on lands around the JIDPA. As directed by the BLM, a portion of the remaining balance of the compensatory mitigation funds may be used to fund other positive environmental impacts including monitoring, inspection, and enforcement activities in and around the JIDPA.

Table 5.2. EnCana Proposed CM Funding, Jonah Infill Drilling Project, Sublette County, Wyoming, 2006

Amount of Additional Surface Disturbance Authorized in the Jonah Drilling Project ROD	Funding Distribution		Total
	State of Wyoming Wildlife and Natural Resources Trust Account Board for Offsite Wildlife Habitat Improvement Projects	Other Positive Environmental Projects Including Monitoring, Inspection, and Enforcement Activities	
16,200 or Greater Acres New Initial Surface Disturbance	$20.5 million	$8 million	$28.5 million
Between 12,000 and 16,199 Acres New Initial Surface Disturbance	$16.5 million	$8 million	$24.5 million
Between 11,000 and 11,999 Acres New Initial Surface Disturbance	$13.5 million	$6.2 million	$19.7 million
Between 10,000 and 10,999 Acres New Initial Surface Disturbance	$7.5 million	$4.6 million	$12.1 million
Between 8,300 and 9,999 Acres New Initial Surface Disturbance	$1.5 million	$4 million	$5.5 million

EnCana's contribution to CM would be distributed as requested by the BLM so long as no more than 20% of the total commitment is paid out in any one year. Although EnCana is committed to funding CM as described above, EnCana hopes that other Operators in the JIDPA would agree to voluntarily contribute to CM funding in which case EnCana's contribution would be proportionately reduced.

EnCana understands that the CM funds would be distributed in accordance with an appropriate document such as a memorandum of understanding, agreement, or cooperative agreement between the BLM, the State of Wyoming Wildlife and Natural Resources Trust Account Board, and any potentially impacted State of Wyoming divisions, agencies, or boards (see Appendix F). EnCana further understands that the funds designated for onsite and offsite monitoring, studies, and enforcement activities would be administered by the BLM or some other entity selected by the BLM and designated in the ROD for the Jonah Infill Drilling Project.

5.2.2 Other Compensatory Mitigation Ideas

It is assumed that any BLM-approved CM project would reduce impacts to the same or similar resources impacted by project activities, or would substitute resources for those impacted by the project. However, any quantitative analysis of beneficial effects of CM cannot be identified until specific projects are proposed and it is known what specific impacts a project is intended to mitigate. The BLM may include other affected federal agencies and the State of Wyoming in discussions regarding selection of specific CM projects, and may provide opportunity for public input.

In lieu of EnCana proposed CM, the Operators could voluntarily develop proposals, submit those proposals to BLM for approval, and fund and implement the BLM-approved CM projects.

The following list provides some of the types of CM activities that could be undertaken to mitigate for impacts within the JIDPA that cannot be fully mitigated on-site, to substitute similar resources for those not able to be mitigated on-site in the JIDPA, or to provide tangible benefits similar to those that would have been provided with successful on-site mitigation in the JIDPA. Included with each CM idea an estimated cost, where available, and the resources whose impacts might be mitigated by that type of project. There is no implied prioritization to the list, nor is the list intended to be exhaustive.

Assist with funding for a WDEQ emissions inspector for the JIDPA for 5 years, or financially assist WDEQ and USFS with ongoing air quality monitoring in the Upper Green River area; consultation with the USFS and WDEQ/AQD to develop and implement a consistent funding mechanism to continue existing on- and off-site air quality monitoring actions at Class I airsheds and sensitive lakes. Monitoring at local communities and/or at other potentially affected sites could also be implemented.

- Impacted resource potentially benefited: Air quality
- Cost estimate: $15,000 to $100,000 per year

Install an engineered headcut stabilization structure in the Alkali Creek drainage outside the JIDPA

- Impacted resources potentially benefited: Soils, topography, surface water, stream channel morphology and stability
- Cost estimate: $10,000 to $15,000

Purchase a conservation easement on an irrigated hay meadow adjacent to existing greater sage-grouse habitat that is as close to the JIDPA as possible, that is not encumbered by fluid mineral leases, and restore that meadow to sagebrush vegetation similar to the adjacent sagebrush community

- Impacted resources potentially benefited: Soils, vegetation, greater sage-grouse and other sagebrush-obligate species
- Cost estimate: Conservation easements could vary from a few thousand to several million dollars, depending on size and location; restoration costs, likely less than $500,000

Purchase ROW(s) and install water improvement on an area near the JIDPA where forage is underutilized for lack of water

- Impacted resources potentially benefited: Wildlife including TEP&C and BWS, soils, surface water, vegetation, livestock grazing
- Cost estimate: ROWs could vary from several hundred to several thousand dollars, depending on size and location; water improvement costs, likely less than $100,000

Purchase a large block of sagebrush ecosystem land as close as possible to the JIDPA, that is unencumbered by fluid mineral leases and is adjacent to existing greater sage-grouse habitat, and enhance sagebrush habitat function on that land for the LOP at a ratio of 3:1, or three acres enhanced for every acre impacted in the JIDPA

- Impacted resources potentially benefited: Wildlife including TEP&C and BWS, vegetation, soils
- Cost estimate: Land prices vary from several thousand to tens of millions of dollars, depending on existing use, location, and parcel size; enhancement activity costs, likely less than $500,000

Purchase development rights on grasslands in the area that are unencumbered by fluid mineral leases, and enhance forage production

- Impacted resources potentially benefited: Wildlife including TEP&C and BWS, vegetation, soils, visual, recreation, livestock grazing
- Cost estimate: Development rights costs vary considerably with location and parcel size, and could vary from several thousand to several million dollars; forage enhancement costs, likely less than $500,000

Assist local government with funding of public service projects such as city sewage treatment facility upgrade, mosquito abatement, or West Nile virus inoculation programs

- Impacted resource potentially benefited: Socioeconomic
- Cost estimate: Several thousand to several million dollars

Purchase conservation easements and establish and maintain 3 ferruginous hawk or bald eagle or burrowing owl nesting sites as close as possible to the JIDPA, and facilitate continued occupation of those nests for LOP

- Impacted resource potentially benefited: Wildlife
- Cost estimate: Cost of conservation easement + up to $10,000

Work with impacted communities to develop and fund "portable" infrastructure enhancements (infrastructure provided by Operators during "boom" peaks, removed by Operators during "bust" times)

- Impacted resource potentially benefited: Socioeconomic
- Cost estimate: Several thousand to several million dollars

Work with WyDOT and/or Sublette County Road and Bridge to install appropriate road-side signs outside the JIDPA that indicate potential hazards (e.g., school bus stops, high-traffic volume turnouts, trucks entering roadway)

- Impacted resource potentially benefited: Socioeconomic
- Cost estimate: Likely less than $10,000

Develop wildlife habitat improvements designed to increase huntable/viewable species populations

- Impacted resource potentially benefited: Socioeconomic, recreation, wildlife
- Cost estimate: Several thousand to several million dollars

Develop rangeland improvement projects designed to increase the stability of ranching operations that depend on the use of federal forage, and intermingled private and state-owned forage, in the JIDPA.

- Impacted resource potentially benefited: rangelands
- Cost estimate: $10 to $20 per acre for improvements.

Develop partnerships between industry, private recreation providers, non-governmental organizations, county governments, State of Wyoming, and BLM that improve recreation opportunities, benefit public health, and enhance regional tourism opportunities.

- Impacted resource potentially benefited: recreation
- Cost estimate: several thousand to perhaps $500,000

Secure public access to recreational or visual opportunities where existing access across private, state or county lands is at risk or does not currently exist. This includes acquisition and/or negotiation of ROWs, easements, agreements, etc., for public access.

- Impacted resource potentially benefited: recreation and visual resources
- Cost estimate: several thousand to several million dollars