

Appendix A
Applicant-Committed Environmental Protection Measures

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Topic(s)	Applicant-Committed Measures
Surface Disturbance	KMG would utilize shared well pads to the extent possible, in consideration of technical, environmental, and economic viability, to minimize the amount of total surface disturbance in the GNBPA.
Surface Disturbance	KMG would develop a Transportation Plan that will detail the procedures intended to minimize construction of roads needed to implement Project activities. KMG's Transportation Plan would include construction procedures to prevent/minimize sedimentation that may result from road and/or pad construction. KMG would submit the plan to the BLM prior to the initiation of Project activities.
Surface Disturbance	Each new produced water disposal well would be located on existing production locations.
Surface Disturbance	KMG would evaluate deepening existing wells to accomplish Mesaverde-only completions before twinning an existing well.
Surface Disturbance	KMG would strive to continually improve the development processes in order to minimize the surface impact where practical.
Cultural Resources	A Class III archeological survey has been conducted on all federal and/or tribal lands in the GNBPA. All personnel would refrain from collecting artifacts and from disturbing any significant cultural resources in the area. KMG would be responsible for informing all persons in the area who are associated with this Project that they may be subject to prosecution for knowingly disturbing historic or archaeological sites or for collecting artifacts. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to the areas examined, as referenced in the archaeological report, and to the existing roadways and/or evaluated access routes. If historic or archaeological materials were to be uncovered during construction, KMG would immediately stop surface disturbing activities that might further disturb such materials and contact the appropriate AO.
Paleontological Resources	KMG would conduct a paleontological survey on all of its federal, state, and tribal locations. All personnel would refrain from collecting fossils and from disturbing any significant fossil in the GNBPA. If fossils were to be uncovered during construction, KMG would immediately stop surface disturbing activities that might further disturb such materials and contact the appropriate AO.
Vegetation / Noxious and Invasive Species	KMG would develop a Pesticide/Herbicide Use Plan for submission to the BLM and State of Utah prior to the initiation of Project activities.
Vegetation / Noxious and Invasive Species	In accordance with the procedures described in its Pesticide/ Herbicide Use Plan, KMG would monitor for the growth of invasive species resulting from surface disturbance caused by Project activities and would control weeds caused by Project activities.
Vegetation / Noxious and Invasive Species	KMG would use its best efforts to control noxious weeds along access road authorizations, pipeline route authorizations, well sites, or other proposed facilities by spraying or mechanical removal. A list of noxious weeds would be obtained from the BLM or the appropriate County Extension Office. On BLM-administered land, a Pesticide Use Proposal would be submitted and approved prior to the application of herbicides or other pesticides or possibly hazardous chemicals.

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Sedimentation, Erosion, and Stormwater Runoff	KMG would employ industry best management practices (BMPs) to control stormwater runoff, including appropriate measures to prevent disturbed sediments from reaching the White River drainage during precipitation events.
Raptors	KMG would adhere to seasonal and spatial buffers applicable to occupied raptor nests in the GNBPA in consideration of guidelines developed by the Utah Division of Wildlife Resources and the USFWS.
Migratory Birds	KMG would install bird-excluding devices that prevent the perching and entry of migratory birds on or into its new fired vessel exhaust stacks. In addition, KMG completed retrofitting approximately 1,014 existing exhaust stacks in 2007.
Sage Grouse Protection	KMG would utilize low-profile tanks in areas where sage grouse leks are determined to be active to minimize the opportunities for raptor perching.
Sage Grouse Protection	No surface-disturbing activities would be allowed year-round within ¼-mile of active Sage-grouse leks.
Pipeline Construction	KMG would utilize the applicable USFWS' BMPs for work in Utah streams where pipelines or roads cross a stream. Additionally, KMG would utilize BLM Hydraulic Considerations for Pipeline Crossings of Stream Channels (prepared by the Utah State Office BLM, Salt Lake City, Utah).
Water Use	KMG would attempt to maximize the use of produced water for completion purposes.
Water Quality/ Soils	KMG would position two 15-foot emergency response spill trailers in areas in or near the GNBPA to respond to accidental spills or releases. At least one of the trailers would be located at a drilling site near the White River, if necessary. Each trailer would be equipped with 300 feet of 10-inch Techniboam, tow bridles, and anchor sets. In addition, the trailers contain sorbent pads, sorbent booms, flash lights, life jackets, Tyvek suits and other safety equipment. KMG has conducted training sessions that included two days of instruction and field exercises with 15 field employees. The training was conducted by the Texas Engineering Extension Service Emergency Services Training Institute.
Air Quality	KMG would use water or other BLM-approved dust suppression during drilling and completion operations for dust abatement on access roads, as needed. KMG would use water or other BLM-approved dust suppression in high traffic areas during production operations for dust abatement, as needed.
Air Quality	KMG employees would comply with speed limits on unpaved county roads used for access and would use safe vehicle speeds on other access unpaved roads.
Air Quality	KMG would install low-emission dehydration units.
Air Quality	KMG would install electric compression, where feasible (approximately 50 percent of the compression horsepower [hp] to be electrically driven).
Air Quality	KMG would install controls on new condensate storage tanks with the potential to emit more than 20 tpy VOCs.
Air Quality	KMG would install low-bleed pneumatic controllers on all new equipment.

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Air Quality	<i>KMG would use “green completion” BMPs (“green completion” indicates the use of additional surface equipment including special gas-liquid-sand separator straps and additional tankage allowing the well to immediately be connected to a sales line, significantly reducing emissions associated with flow back operations).</i>
Air Quality	<i>KMG would phase in the use of Tier 2 drill rig engines (90 percent by 2010 and 100 percent by 2012).</i>
Air Quality	<i>For engines greater than 500 hp, KMG would install lean-burn engines or engines equipped to achieve comparable emission reductions.</i>
Air Quality	<i>KMG would install and optimize artificial lift.</i>
Air Quality	<p><i>In the event monitoring shows the fourth high to exceed the NAAQS for ozone of 75 ppb, KMG would institute the following:</i></p> <ul style="list-style-type: none"> • <i>Install controls on existing condensate storage tanks with potential VOC emissions greater than 20 tons per year;</i> • <i>Within 3 years, retrofit or replace any remaining high-bleed pneumatic devices on existing equipment;</i> • <i>Perform annual inspections on thief hatch seal and Enardo pressure relief valves to ensure proper operation;</i> • <i>Conduct annual review of gathering system pressures to evaluate any areas where gathering pressure may be reduced, resulting in lower flashing losses from the condensate storage tanks; and</i> • <i>Periodically evaluate well-site automation systems to reduce vehicle tail pipe emissions at individual well sites.</i>
Air Quality	<p><i>KMG would jointly support (with other active oil and gas industry operators, oil and gas industry vendors, and non-industry emission source contributors) activities undertaken by a BLM/Industry Work Group that may include:</i></p> <p>Modeling:</p> <ul style="list-style-type: none"> • <i>Model calibration with monitored and meteorological data;</i> • <i>Source apportionment sensitivities;</i> • <i>Ozone precursor sensitivities; and</i> • <i>Mitigation control sensitivities.</i> <p>Industry Wide Emission Control Strategy:</p> <ul style="list-style-type: none"> • <i>In the event that monitoring shows the fourth high after 2 years exceeds the ambient standard of 75 ppb for ozone in two successive years, KMG would initiate additional emission controls as warranted through the development of an air mitigation strategy plan developed by a BLM/Industry Work Group.</i>

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Air Quality	<p>KMG would implement the following Ozone Awareness and Outreach Plan:</p> <p>Mobile Sources:</p> <ul style="list-style-type: none"> • Refuel vehicles in the evening hours: Employees and contractors would be encouraged to refuel their vehicle fleet during the cooler evening hours; • Refuel activities: Operators would not overfill fuel tanks and would ensure that fuel caps are properly installed; • Minimize vehicle engine idling: Employees and contractors would minimize vehicle idling when practicable, resulting in the emission of reduced ozone precursors; • Minimize vehicle miles traveled: Employees and contractors would plan ahead to consolidate trips and minimize miles traveled between various drilling, production, and compression sites; • Double-up vehicle occupancy: Employees and contractors would maximize vehicle occupancy whenever possible to reduce the number of vehicles in operation and to eliminate redundant trips; and • Review vehicle maintenance: KMG would review fleet maintenance prior to summer weather to ensure that vehicles operate as efficiently as possible, reducing combustion emissions. <p>Training and Outreach:</p> <ul style="list-style-type: none"> • Staff Awareness: KMG would conduct annual training for regional staff to ensure increased ozone awareness; • Industry Awareness: KMG would participate in forums sharing BMPs for oil and gas sources. Technology and work practices can change dramatically with greater understanding of the creation of ozone. Sharing BMPs would educate all industry partners and facilitates the transfer of technology between industry partners.
Wilderness Characteristics	<p>KMG would not disturb the surface for project-related activities in NENW Section 22, T10S-R23E.</p>
Wildlife	<p>Installation of raptor perch deterrents.</p> <p>In order to minimize potential of electrocution mortality of raptors, KMG would utilize methods and designs described in <i>Suggested Practices for Raptor Protection on Power Lines</i> (APLIC 2006) and in <i>Mitigating Bird Collisions with Power Lines</i> (APLIC 1994) during construction, operation, and maintenance of power lines.</p>
Surface Disturbance	<p>Burying of distribution pipelines and/or flow lines in or adjacent to access roads.</p> <p>KMG would evaluate burying pipelines after site-specific evaluation of surface and subsurface conditions with consideration to the materials that would be transported through the pipelines. KMG proposes to bury approximately 10 miles of pipelines transporting produced water and 25 miles of gas-transportation pipelines. In areas where there is sufficient soil to excavate and after consultation with the BLM AO, KMG would consider burying well gathering lines adjacent to access roads.¹</p>

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Topic(s)	Applicant-Committed Measures
Transportation	<p>Centralizing production facilities.</p> <p>Project wells would utilize centralized compression facilities. The proposed use of telemetry would reduce the frequency of well visits and therefore decrease vehicle traffic within the GNBPA, one objective of combining production facilities.</p>
Surface Disturbance	<p>Drilling multiple wells from a single pad.</p> <p>KMG would carefully evaluate drilling multiple wells from a single pad on an ongoing basis and has included the potential to use multiple wells from a shared pad in the GNBPA to the extent that KMG determines technically and economically viable.²</p>
Wildlife	<p>Wildlife monitoring.</p> <p>KMG would enter into discussions with the BLM to determine how, when and for what species wildlife monitoring may be implemented. KMG would participate in industry groups and projects to support efforts to reduce impacts to wildlife that may result from oil and gas activities in the GNBPA. KMG would enter into discussions with the BLM to mutually investigate possibilities for voluntary offsite mitigation measures for wildlife habitat enhancement after evaluation of the effectiveness of onsite mitigation, including <i>BMPs</i>.</p>
Public Safety Wildlife	<p>Seasonal restriction of public vehicle access.</p> <p>KMG would construct fences to surround its proposed evaporation ponds to prevent the public or animals from accessing these facilities. In consultation with the BLM AO, KMG would comply with applicable OSHA requirements by taking measures such as installing “warning” signs at locations where public access could result in potential safety issues.</p>
Transportation	<p>Most of the unpaved roads within the GNBPA are claimed as Class “B” and “D” roads by Uintah County and are, therefore, public roads. The remaining roads in the GNBPA are short, dead end roads used to access well pads. These roads would not be considered “through” roads by the public, rendering their use by the public unlikely.</p>
Visual Resources	<p>Avoiding placement of production facilities on hilltops and ridgelines.</p> <p>KMG would utilize low-profile tanks in the portions of the GNBPA visible from the White River where the river can be viewed from the location, such as ridgelines, or would utilize topographic features, to the extent available, to prevent viewing the tanks from the White River.</p>
Visual Resources	<p>Screening facilities from view.</p> <p>KMG would utilize topographic features, to the extent available, and utilize screening or other design measures, to the extent practical, to prevent stationary permanent equipment from being viewed from the White River. KMG would develop methods for screening facilities on a site-specific basis.</p>
Surface Disturbance	<p>Use of common utility or right-of-way corridors.</p> <p>KMG would locate gathering lines adjacent to access roads. KMG would locate larger pipelines adjacent to roads or within existing utility corridors.</p>
Floodplains	<p>Exempting existing pipelines and projects previously approved, KMG would bury gas pipelines associated with new and future construction within 100-year floodplains.</p>

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Noxious and Invasive Weeds	KMG would conduct pre-disturbance weed inventories to identify locations of noxious and invasive weed species.
Sedimentation, Erosion, and Stormwater Runoff	KMG will implement Reasonable and Prudent Practices for Stabilization (RAPPS) and develop Storm Water Pollution Prevention Plans (SWPPPs) for individual new construction sites associated with compressor stations, processing plants, and pipeline projects that disturb more than 5 acres.
Surface Disturbance	KMG would not construct new mancamps within 0.5 mile of floodplains (including the floodplain) of major drainages (Sand Wash, Cottonwood Wash, Bitter Creek, White River, Green River); and within occupied Threatened and Endangered Plant habitat. This mitigation measure would be applied only if there is a demonstrated need (i.e., only if other mitigations do not adequately mitigate impacts).
Threatened and Endangered Fish	<p>KMG would adhere to the following mitigation regarding protection of threatened and endangered fish:</p> <ol style="list-style-type: none"> 1. Limit pumping to off-channel locations – ones that do not connect to the river during high spring flows. 2. If the pump head is located in the river channel where larval fish are known to occur, the following measures apply: <ol style="list-style-type: none"> a. Pumps will not be situated in low-flow or no-flow area as these habitats tend to concentrate larval fishes; b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (see above); and c. Limit the amount of pumping, to the greatest extent possible, during the pre-dawn hours as larval drift studies indicate that this is a period of greatest daily activity. 3. Screen all pump intakes with ¼” mesh material. 4. Report any fish impinged on the intake screen to the Service (801.975.3330) and the: <p style="margin-left: 20px;">Utah Division of Wildlife Resources Northeastern Region 152 East 100 North Vernal, UT 84078 Phone: (435) 781-9453</p>

¹ The disturbance associated with these buried gas gathering and water pipelines is considered in the analysis as new disturbance.

² For the purpose of the EIS analysis, all wells in the Proposed Action Alternative and the Optimal Recovery Alternative are assumed to be drilled vertically.