

Attachment 2
Augusta Unit Zeta Cumulative Impacts Under Each Alternative

Methodology for Analysis of Cumulative Impacts Under Each Alternative

For each alternative, the BLM considered anticipated changes to the elk population, pattern of elk use, and conducted a view shed analysis utilizing the geographic information system (GIS) model to evaluate impacts to elk within the CIAA. The direct and indirect impacts for each alternative, together with impacts from past, present, and reasonably foreseeable future actions, with avoidance and mitigation measures are described and compared below. In making these determinations, the BLM also relied upon the reasoned expert opinion of staff biologists, being informed with a firsthand knowledge of the wildlife resources in the project area.

Table 1 Cumulative Impacts Analysis by Alternative for Past, Present, and Reasonably Foreseeable Future Actions

Issues/ Metrics	Alt A (No Action)	Alt B (Proposed Action)	Alt C (Modification at onsites and seasonal restrictions)	Alt D (Modification at onsites, seasonal restrictions, and deferral of 2 well locations)	Alt E (Sage-grouse Emphasis)
<i>Habitat condition/availability (Security habitat and connectivity)</i>	1. Security habitat within the CIAA would be reduced by 4,102 acres (6.4%). 2. 60,000 acres would remain. (93.6%) 3. Connectivity between security patches would likely remain unimpeded as no loss or impacts to connectivity between security patches would result from federal development.	1. Security habitat within the CIAA would be reduced by 8,085 acres (12.6%). 2. 56,017 acres would remain. (87.4%) 3. Connectivity between security patches will be compromised security habitat from 2 adjacent security patches will be removed, leaving a much greater distance between remaining patches.	1. Security habitat within the CIAA would be reduced by 8,085 acres (12.6%). 2. 56,017 acres would remain. (87.4%) 3. Connectivity between security patches will be compromised as security habitat from 2 adjacent security patches will be removed, leaving a much greater distance between remaining patches.	1. Security habitat within the CIAA would be reduced by 8,035 acres (12.5%). 2. 56,067 acres would remain. (87.5%) 3. Impacts under Alternative D are less than those under alternative C, since 50 acres more security habitat remains within the CIAA under Alternative D.	1. Security habitat within the CIAA would be reduced by 8,085 acres (12.6%). 2. 56,017 acres would remain. (87.4%) 3. Impacts under Alternative E are identical to those under alternative C, since there are no additional avoidance or mitigation measures for the benefit of elk.

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Issues/ Metrics	Alt A (No Action)	Alt B (Proposed Action)	Alt C (Modification at onsite and seasonal restrictions)	Alt D (Modification at onsite, seasonal restrictions, and deferral of 2 well locations)	Alt E (Sage-grouse Emphasis)
<i>15 Pattern of elk use (collaring data)</i>	1. Elk are likely to seek refuge on undeveloped federal leases and remaining security patches. 2. A 50% return rate is anticipated following the completion of well drilling, construction and implementation of interim reclamation for the non-federal development.	1. Elk are likely to seek refuge on undeveloped federal leases and remaining security patches. 2. A 50% return rate is anticipated following the completion of well drilling, construction and implementation of interim reclamation for the non-federal and federal development. 3. Elk will avoid the project area and concentrate use in remaining security patches within the CIAA and/or may leave the herd unit during construction.	1. Elk are likely to seek refuge on undeveloped federal leases and remaining security patches. 2. A 50% return rate is anticipated following the completion of well drilling, construction and implementation of interim reclamation for the non-federal and federal development. 3. Due to the seasonal restrictions; elk will be more likely to continue utilizing CWR and PR during sensitive periods due to no development during these periods.	1. Elk are likely to seek refuge on undeveloped federal leases and remaining security patches. 2. A 50% return rate is anticipated following the completion of well drilling, construction and implementation of interim reclamation for the non-federal and federal development. 3. Due to the seasonal restrictions; elk will be more likely to continue utilizing CWR and PR during sensitive periods due to no development during these periods.	1. Impacts under Alternative E are identical to those under alternative C, since there are no additional avoidance or mitigation measures for the benefit of elk.
<i>Population objectives (number of elk)</i>	1. The elk population would likely remain stable or decrease within the current trend of 3% decline annually.	1. Due to the loss of security habitat and, therefore connectivity between patches, and a likely change in pattern of use, the population is likely to decrease.	1. Due to the loss of security habitat and, therefore connectivity between patches, and a likely change in pattern of use, the population is likely to decrease, but less than Alternative B as lack of activity within areas under timing limitations will act as seasonal security patches.	1. Impacts under Alternative D are identical to those under alternative C, since there are no additional avoidance or mitigation measures for the benefit of elk.	1. Impacts under Alternative E are identical to those under alternative C, since there are no additional avoidance or mitigation measures for the benefit of elk.