

## **GMP Dynamic Sourcebook - Appendix I: Impact Analysis**

### **I.2 Cumulative Effects Analysis**

#### **Example of a Cumulative Impact Scenario and Analysis from Great Sand Dunes NP GMP/Wilderness Study/EIS (2006)**

##### *Cumulative Impacts*

Council on Environmental Quality regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person takes such other actions” (40 CFR 1508.7).

Cumulative impacts are considered for both the no-action and the action alternatives. These impacts were determined by combining the impacts of the alternatives with the impacts of other past, present, and reasonably foreseeable future actions. To do this, it was necessary to identify other such projects or actions at the Great Sand Dunes and in the surrounding area. The geographic scope for this analysis was the northern San Luis Valley, and the temporal scope was within 5 to 7 years of 2005. The following actions or projects were identified for the purposes of conducting the cumulative effects analysis:

##### Great Sand Dunes National Park and Preserve Act (2000)

This act authorized a change in the designation of Great Sand Dunes from a national monument to a national park, established the national preserve, and authorized establishment of the 92,617-acre Baca National Wildlife Refuge. A comprehensive conservation plan for the refuge, scheduled to begin in 2008, will provide details regarding future management.

The act also added Kit Carson Peak and surrounding lands (13,599 acres in all) to the Rio Grande National Forest. Planning for the new USFS lands is several years off.

##### National Park Service Visitor Center Renovation (2004)

Renovations to the NPS visitor center at the Great Sand Dunes were completed in September 2004. The project included constructing additions to the southwest and northeast ends of the existing building; providing expanded and improved spaces for visitor information, orientation, and interpretation; providing new exhibits; and supplying more functional spaces for NPS operations (interpretive offices and work space, ranger offices, first-aid room, conference room, curatorial storage, etc.).

##### Discontinuation of Cattle Grazing on the Former Baca Ranch (2004)

In the fall of 2005, ownership of the Baca Ranch was transferred to the federal government. Soon thereafter, cattle grazing was discontinued on these former ranch lands lying within the national park.

##### Greater Sand Dunes Interagency Fire Management Plan (2005)

This plan outlines prescribed fires, fire suppression, and fuel reduction/ management activities for approximately 275,000 acres of the greater Sand Dunes area, including the park, Baca National Wildlife Refuge, and The Nature Conservancy's Medano-Zapata Ranch.

##### Development/Expansion of Retreat Centers in the Baca Grande Area (Past, Ongoing)

The Baca Grande is a private, mostly residential development on the north part of the expanded national park. The eastern-most portion of the Baca Grande was set aside to accommodate various spiritual and religious retreat centers located primarily in the forested foothills. The number of retreat centers continues to grow, and today includes about 20 organizations representing a wide cross-section of world spiritual and religious institutions. Many of these retreats have short- and/or long-term visitors and residential members/staff.

##### Growth of the Crestone / Baca Grande Area (Past, Ongoing)

Development interest in the Baca Grande subdivision and adjacent community of Crestone increased during the period leading up to and since the Great Sand Dunes Act of 2000. The Baca Grande subdivision currently has over 600 dwelling units, many of which are currently used occasionally or seasonally. This residential community has experienced an increased pace of growth recently, and the number of residential units could more than triple during the life of this GMP.

### Wilderness Restoration in the South Colony Lakes Basin Area (Ongoing)

South Colony Lakes basin, located within the Sangre de Cristo Wilderness and the San Isabel National Forest, lies just north of the national preserve. The basin is ringed by rugged alpine peaks and is heavily used by recreationists. The USFS, with assistance from the Rocky Mountain Field Institute, is working to improve the natural ecological conditions and wilderness values of the basin through mitigation of recreational threats to biological and physical resources and restoration of damaged sites. Recent work includes refining hiking/ climbing routes and trails, closing social trails, and restoring damaged sites and slopes.

### Oil and Gas Exploration Activities on Former Baca Ranch Lands (Past, Future)

Lexam Explorations, Inc. ("Lexam") retains subsurface mineral rights to most of the former Baca Ranch. Lexam has conducted oil and gas exploration activities on lands that were formerly part of the Baca Ranch, but are now within the national park. Continuation of these activities, which include exploratory drilling and seismic testing using "thumper trucks," is reasonably foreseeable for the near future. However, Lexam and others retaining subsurface mineral rights within Great Sand Dunes National Park and Preserve must now conduct such activities according to 36 CFR Part 9, Subpart B, which regulate activities in the exercise of rights to oil and gas that are not owned by the United States. These regulations are designed to ensure that such activities are conducted in a manner consistent with: park purposes, preventing or minimizing damage to the environment and other resource values, and ensuring to the extent feasible that all national park system units are left unimpaired for the enjoyment of future generations. The regulations require an NPS-approved plan of operations.

### Rehabilitate Main Park Roads and Parking (Future)

The National Park Service plans to rehabilitate the main park road, the dunes lot access road, and associated parking areas at Great Sand Dunes by improving the condition of the pavement and its underlying structure. The dunes parking lot will be expanded (~5% additional paved surface) and reconfigured to improve traffic flow and increase parking for buses and RVs.

### Establishment of a Water Right to Fulfill the Purposes of the National Park and Preserve (Future)

The Great Sand Dunes Act of 2000 directed the Secretary of the Interior to appropriate water for maintaining groundwater levels, surface water levels, and stream flows on, across, and under the national park and preserve, to accomplish the purposes of the national park and preserve, and to protect park resources and park uses. The National Park Service has filed for such a right in state water court and park managers are working to establish this water right.

### Relocate Horse Loading Area and Dump Station from Amphitheater Parking Lot (Future)

The National Park Service plans to relocate the horse loading area and RV dump station from the amphitheater parking lot to the west side of the main park road. The horse loading area would have a dirt surface and the dump station surface would be paved.

### Sale/Development of Private Land Parcels Near the Entrance to the Park (Future)

At the time of this writing, a private land parcel, about 40 acres in size, was for sale near the park entrance. The parcel is located on the west side of SH 150, just inside the expanded park boundary. This parcel is currently zoned rural. Within rural zoning, agricultural operations are allowed, including construction of single-family residences. Because there is a commercial operation across SH 150 from this parcel, it is reasonably foreseeable that the parcel, once purchased, could be rezoned to commercial.

### Elk Herd Reduction (Future)

The size of the northern San Luis Valley elk herd has grown to nearly 6,000 animals, which is well above the 1,500-animal herd objective set by CDOW. A 3-year cooperative research study is underway that will provide much needed information on elk movements, distribution, and habitat selection. This information will be used in the preparation of an interagency elk management plan, which is expected to include strategies for reducing the size of the elk herd.

### ***Analysis of Cumulative Impacts to Big Horn Sheep in the NPS Preferred Alternative***

Under the NPS preferred alternative, unleashed dogs used for hunting would continue to be allowed in the preserve. Leashed dogs not used for hunting would also continue to be allowed in the preserve. . . . Thus, anticipated impacts of the NPS preferred alternative on viability and persistence of bighorn sheep within the park would be the same as for the no-action alternative: leashed dogs allowed in the preserve are anticipated to contribute minor to moderate adverse impacts on bighorn sheep populations within the park.

**Cumulative Impacts.** Cumulative actions contributing to impacts on riparian associated species as described above include growth of the human population in the area surrounding the park, oil and gas exploration on former Baca Ranch lands, and elk herd reduction. The first two of these would contribute

adverse impacts, while elk herd reduction would contribute beneficial impacts, specifically to the riparian corridor habitats. In combination with these cumulative actions, the NPS preferred alternative is anticipated to contribute minor to moderate, adverse impacts.

Cumulative actions contributing to ungulate herd numbers and health include the enabling legislation for the expanded park and preserve (negative impacts from hunting of elk not being permitted in expansion areas of the national park), but also beneficial impacts from increased protection for habitats and species (from conservation-based NPS management). Also contributing to ungulate herd numbers and health would be the interagency fire management plan, which should provide beneficial impacts through habitat management and enhancement. Finally, the elk herd reduction tentatively planned for the future, pending justification stemming from ongoing research and appropriate NEPA analysis, would most likely provide beneficial impacts to elk by reducing numbers to levels closer to the predicted carrying capacity of the area, and reducing the risk of diseases often associated with high herd densities. Beneficial impacts to other ungulates (mule deer and bighorn sheep) would stem from reduced elk impacts on shared habitats and reduced likelihood of exposure to diseases. Combined with past, present, and reasonably foreseeable future actions, the NPS preferred alternative would be anticipated to contribute negligible to minor beneficial impacts to ungulate herd numbers and health.

Cumulative actions contributing to impacts on bighorn sheep would include growth of the human population in the area surrounding the park, and elk herd reduction. The first of these would contribute adverse impacts, as this would be anticipated to increase the number of leashed dogs in the preserve, while elk herd reduction would contribute beneficial impacts by reducing competition from, habitat impacts due to, and the threat of diseases from, elk. In combination with these cumulative actions, the NPS preferred alternative is anticipated to contribute minor adverse impacts and negligible to minor beneficial impacts on bighorn sheep within the park.