4.8 Collective Impacts, Sustainability, and Long-Term Management

In addition to evaluating the impacts of proposed actions and related cumulative impacts to individual resources, an EIS must take a collective and long-term view to consider all impacts to a park's resources

resulting from a proposed action. This evaluation of collective impacts involves consideration of sustainability and long-term management of Park resources and the ecosystem and the biodiversity values for which the Park was created, as discussed in the following sections. Discussion of the potential for collective impacts to impair GSMNP or AT resources is presented in Impairment Evaluation Summary, Section 4.9.

4.8.1 Local Short-Term Uses of Environment and Long-Term Productivity

An EIS must evaluate the impact of alternatives on the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity (NPS 2001a). This involves considering whether taking the immediate action and the related use of park land causes a change to long-term management and productivity of a park's resources and the enjoyment of these resources by future generations. As a part of this evaluation, the cumulative impact of the proposed action to resources and ecosystems when combined with other actions must be considered.

The local short-term impacts of the proposed actions are largely related to construction. Impacts to visual resources during construction would be substantial for a partial-build or build alternative, especially from high ridges along the AT. Long-term productivity within ecological systems could be affected by the spread of diseases and invasive exotic species enhanced with vehicle and human traffic through the area. Disturbance of the area's geology is a concern for both the short-term use of the environment and long-term productivity as acid-rock leaching could have ramifications for water quality, as well as local flora and fauna.

In addition, the partial-build and build alternatives would affect Park management. Currently, NPS manages the area as Wilderness, which would no longer be possible if a partial-build or build alternative is chosen.

For future generations, benefits of the partial-build and build alternatives include spurring the local tourism industry, providing access to an area with local traditional importance, and fulfilling the 1943 Agreement. A road would allow for better access to area attractions such as the former town of Proctor and existing cemeteries. A new transportation facility could directly contribute to new economic development in Bryson City, and Swain and Graham counties, potentially broadening the region's employment base.

The No-Action Alternative, if selected, is not expected to have an impact on the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.

The Monetary Settlement Alternative, if selected, would not affect short-term uses of the environment and maintenance and enhancement of long-term productivity of ecological systems within the Park; however,

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Clarification of the term "baseline" for this project:
The Partial-Build Alternative to Bushnell and the Northern Shore Corridor include a baseline route, as well as options to that route. Baseline routes and options are detailed in Section 2.5 and shown on Figure 2-8. Baseline routes have been compared to existing conditions. Impact analyses for the options are shown as a difference from the associated baseline route.

this alternative may have ramifications for the local area outside the Park depending on the use of local funds.

The Laurel Branch Picnic Area, if selected, could affect short-term uses of the environment and habitat quality within the half-mile loop road and picnic and day use area. Long-term productivity would also change for the available habitat and potential species living in this area.

The baseline Partial-Build Alternative to Bushnell or the baseline Northern Shore Corridor, if selected, would have the greatest effect on both short-term uses of the environment and the maintenance and enhancement of long-term productivity within ecological systems. The baseline Partial-Build Alternative to Bushnell and the baseline Northern Shore Corridor would affect movement of species and would introduce roadway mortality and habitat fragmentation. Both the short-term and long-term effects to water quality and aquatic species are a potential problem for the partial-build and build alternatives, caused by construction and disturbance of the geology, soils, and hydrology of the area. These alternatives would impact the maintenance and enhancement of the Park's aesthetic experience as well as the backcountry experience by permanently scarring the landscape and eliminating backcountry campsites and portions of Lakeshore Trail.

The options for the Partial-Build Alternative to Bushnell and the Northern Shore Corridor could provide minimization of some of the short and long-term effects to species by bridging over land and water instead of cutting into the land. In addition, the southern route options for the Partial-Build Alternative to Bushnell (both road types) and the Northern Shore Corridor (both road types) could avoid or minimize some of the short and long-term effects to other natural resources, geology and soils, backcountry campsites, and cultural resources; however, the bridges would introduce aesthetic impacts.

4.8.2 Irreversible or Irretrievable Commitment of Resources

An EIS should disclose to the public the long-term, permanent effects of proposed actions on a park's resources. "Irreversible impacts are those effects which cannot be changed over the long-term, or are permanent. An effect to a resource is irreversible if it (the resource) cannot be reclaimed, restored or otherwise returned to its condition prior to disturbance. An irretrievable commitment of resources is an effect to a resource that, once gone, cannot be replaced" (NPS 2001a).

The roughly 44,000-acre (17,800-ha) tract that is the subject of the 1943 Agreement was once home to several communities and is not considered virgin land. Prior to the mid-1940s, the area suffered from the effects of resource extraction, as well as inefficient farming practices and human development. Since that time, the land was transferred to the NPS as part of GSMNP, and has been managed as park land. Over the past 60 years, much of man's development has reverted to a natural habitat and is not accessible by public roads. Although man's influence has not been eliminated in this area, for the purposes of this EIS analysis, the introduction of a partial-build or build alternative is considered permanent. A partial-build or build alternative would require extensive construction; the effects of which would be long-term and permanent.

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The alternatives would require utilization of a variety of natural and human resources. Resources within the Park that would be irretrievable if impacted by the alternatives include cultural resources, geology, soils, backcountry campsites, trails, wildlife habitat, some species, and alter the areas' aesthetic experience for visitors.

The No-Action Alternative would not cause a permanent loss of any Park resources.

The Monetary Settlement Alternative would not irreversibly or irretrievably commit Park resources. However, this alternative may have ramifications outside the Park depending on the use of local funds.

Federal money would be committed to the county; these funds might be allocated to a variety of capital projects, operational expenditures, or reinvestment options.

Construction of any of the partial-build or build alternatives would have permanent impacts associated with the area's wildlife, geology, soils, backcountry campsites, trails, and cultural resources in proportion to their construction footprint.

Construction of any of the partial-build or build alternatives would result in the permanent loss of both aquatic and terrestrial habitat, and therefore a decline in wildlife abundance, as a result of habitat destruction. For aquatic habitat loss, restoration efforts if undertaken would not be likely in the immediate vicinity of the impact. Forested areas would be cleared and wetlands and other waterbodies may be filled within the right-of-way of a new road. Increased sound levels would be disruptive to some wildlife species and roadway mortality would be introduced. After construction, some habitat types may be restored within the construction limits, although their value to wildlife is unlikely to equate to the original. Nevertheless, the commitment of natural resources within the right-of-way is a permanent loss of productive wildlife habitat.

Construction of any of the partial-build or build alternatives would result in permanent changes to the existing topography and geology. In addition, these alternatives may require off-site disposal of excess rock and soil. Runoff carrying pollutants may enter nearby streams and other waterbodies. If not properly managed, these pollutants can have a long-term impact on the quality and productivity of aquatic habitats in the vicinity of the road.

Indirect impacts include the effect on species from noise, changes to water quality and biodiversity downstream of a partial-build or build alternative. Certain species may exhibit avoidance behavior because of an increase in noise and habitat fragmentation as a result of a partial-build or build alternative. Areas downstream of a partial-build or build alternative will experience changes to water quality, changes to wildlife and aquatic species who inhabit or frequent streams, and changes to downstream hydrology. Careful design of the road's drainage features would help to lessen the degree of surface runoff from the road, and its affects to aquatic ecosystems in its vicinity. In addition, a partial-build or build alternative would indirectly result in the spread of invasive exotic species after introduction from a road.

Clarification of the term "baseline" for this project:
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If a partial-build or build alternative is chosen, visitors would have access to previously hard to access areas. The result would be an increase in visitation requiring an increase in NPS management of these areas.

Irretrievable human and capital resources would also be committed to any of the partial-build or build alternatives. Human resources include the skills and labor required to design, construct, and maintain the road as well as fabricate and prepare the construction materials. Capital expenditures include the federal monetary commitment required to construct the road. Natural resources that would be used in construction include fossil fuels and stone used in cement, aggregate, and bituminous products. These materials are generally not retrievable. However, they are not in short supply and their use would not limit the availability of these resources and materials.

Construction of the Partial-Build Alternative to Bushnell or the Northern Shore Corridor would cause a permanent loss of backcountry campsites and portions of Lakeshore Trail within the Park. These alternatives would permanently alter the area's solitude and aesthetic experience. The presence of a new roadway and its associated noise would permanently change the area's character both visually and audibly.

4.8.3 Adverse Impacts that Could Not Be Avoided

A proposed action may result in impacts that could not be fully mitigated or avoided if a proposed action were implemented. An EIS should discuss major impacts that cannot be avoided or fully mitigated (NPS 2001a).

The No-Action Alternative would not result in any adverse impacts.

The Monetary Settlement Alternative would likely result in negligible impacts within the Park. This alternative could result in impacts outside the Park and indirect impacts to the Park depending on the use of local funds.

Construction of any of the partial-build or build alternatives would result in adverse impacts to the local geology, soils, backcountry campsites, trails, visual resources, cultural resources, and natural resources that cannot be avoided or fully mitigated. Aquatic areas that would be impacted by these alternatives may never be fully restored to their native community. Disturbance to a cultural resource site is permanent and cannot be fully mitigated. Existing topography and geology, once cut and/or filled, would be permanently changed with these alternatives. Changes to the aesthetic experience and visual resources would persist and cannot be fully mitigated unless the roads were abandoned and a substantial amount of time had lapsed. The loss of backcountry campsites and portions of Lakeshore Trail would not be avoided if the Northern Shore Corridor or the Partial-Build Alternative to Bushnell were selected, and cannot be fully mitigated. In the event of rare species that do not occur elsewhere in the Park, species mortality caused by the road would be irreversible and could not be mitigated.

Clarification of the term "baseline" for this project:
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