



**Cades Cove Campground Store
Concession Facilities Improvements
Environmental Assessment**

July 2009



Environmental Assessment

Executive Summary

Concession Facilities Improvements, Cades Cove Campground Store Great Smoky Mountains National Park

This Environmental Assessment (EA) addresses the proposal by the National Park Service (NPS) to improve concession facilities at Cades Cove Campground Store. The project site is located adjacent to Cades Cove Campground in Great Smoky Mountains National Park and approximately 8 miles from Townsend, Tennessee.

In March 2008, a new concession contract was awarded to National and State Park Concessions Cades Cove, LLC to operate Cades Cove Campground Store. This contract was competitively awarded in accordance with the Concessions Management Improvement Act of 1998. This concession contract requires the concessioner to complete a Concession Facilities Improvement Program. The proposed project would improve the existing concession facilities to enhance facilities and services for the public within the scope of the Concession Facilities Improvement Program included in the concession contract. The proposed improvements are summarized below under Alternative B (Build Alternative).

Two alternatives are analyzed in this document. Alternative A is the No Action Alternative and Alternative B is the Build Alternative.

Alternative A, No Action Alternative - Under Alternative A, there would be no changes made to the existing buildings, sidewalks, or accessible ramps. The concession facilities would remain unchanged. The No Action alternative is presented as a requirement of the National Environmental Policy Act, (NEPA) and is the baseline condition with which proposed activities are compared.

Alternative B Build Alternative (*Environmentally Preferred and Preferred Alternative*) - Under the Build Alternative, the bicycle rental building will be expanded by approximately 1,600 square feet for the storage of rental bicycles and for the storage of retail stock, vending machine stock, and firewood storage. Several sidewalks will be widened and sidewalks will be added to safely and adequately accommodate pedestrian and bicycle traffic and improve accessibility. The area between and adjacent to the two buildings will be landscaped to add some native plantings and benches. Dependent on future need, an outside service window for the snack bar may be constructed on the west side of the campground store building.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 30 days. The EA has been posted and is available for public review on the NPS' Planning web site at <http://parkplanning.nps.gov/grsm>. Click on the "*Cades Cove Campground Store EA*" link. The public can provide comments directly on the project site by clicking on "Comment on document" from the menu on the left. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

COMMENTS MUST BE RECEIVED BY August 10, 2009. Written comments may be received later if postmarked by August 10, 2009. Please address written comments to:

Superintendent
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, Tennessee 37738

Comments may also be submitted on the NPS' Planning web site at <http://parkplanning.nps.gov/grsm> as described above.

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1.0 INTRODUCTION

Great Smoky Mountains National Park proposes to improve inadequate concession facilities at the Cades Cove Campground Store, Blount County, North Carolina. The proposed facility improvements will provide new space for: rental bicycle storage and retail sales item stock storage. Improved sidewalks, accessible ramps, landscaping, and an outside snack bar service window will enhance access and provide better service for Park visitors.

1.1 Purpose and Need

1.1.1 Purpose

The purpose of the project is to improve the concession facilities at Cades Cove Campground Store in order to enable the concessioner to better provide necessary and appropriate visitor services to Park visitors. In addition, the project purpose is to continue to meet the 1982 General Management Plan's objective that called for concession services to be provided at a camp store at Cades Cove. The project will provide facilities that improve the function and appearance of the concession facilities, as well as improve access and services for Park visitors.

1.1.2 The Need

The current Cades Cove Campground Store facilities consist of a campground store building with attached public restrooms and open-sided amphitheater and a bicycle rental building. Services provided in the Cades Cove Campground Store building include; groceries, convenience items, camping supplies, a snack bar and deli, and limited souvenirs. Services provided in the Cades Cove Campground Store Bicycle Rental building include; bicycle rental and other associated bicycle services, firewood and ice sales, limited souvenir sales, and vending.

Although these facilities adequately served their purpose at the time of construction (1958), visitation to Cades Cove has increased significantly since that time and the facilities no longer meet the needs of the concessioner or the Park visitor. Approximately 1.5 million people visit Cades Cove each year. The number of vehicles using the Cades Cove Loop Road was approximately 128,824 in 1959, the year following construction of the store building, and approximately 153,200 in 1967, two years prior to construction of the bicycle rental building. The amount of traffic and visitation in Cades Cove has increased dramatically since that time. The number of vehicles entering the cove peaked in 1999 with approximately 713,000 vehicles, which is 453 percent more than in 1959. Although visitation has declined somewhat since 1999, the approximately 547,793 vehicles using the Loop Road in 2007, a 325% increase in visitation compared to 1959. A visitation study conducted in 2003 – 2004 found that almost 7,000 people will enter the store and approximately 6,000 people will enter the public restrooms on a busy day.

The bicycle rental shop rents bicycles on an hourly basis primarily to visitors riding the Cades Cove Loop Road. The Concessioner may rent up to 150 bicycles but must make at least 50 bicycles available for daily rental. Limited bicycle repair items and accessories including;

bicycle helmets, water bottles, and bicycle tubes are also sold by the bicycle rental. Bicycles are stored in bicycle racks between the two buildings and are covered with tarpaulins and secured with a locked cable when not in use. This method of storing bicycles does not adequately protect bicycles from weather, theft, and vandalism and detracts from the appearance of the store grounds. Storing bicycles in this manner suggests to the public that this is a temporary bicycle rental facility rather than a permanent, well-established facility.

The campground store building has very limited space for retail sales and snack bar service. During the frequent busy periods, customers are crowded into the space between the grocery shelving and the service counter. In order to purchase groceries, camping supplies, visitor convenience items, or snack bar items, customers must enter the store building and this limited space. Both buildings have inadequate space for the storage of retail sales stock, vending machine stock, snack bar stock, and snack bar serving containers. This has resulted in the beverages for vending machines being stacked within the visitor service area of the bike rental building.

The sidewalks that provide access to the store, restrooms, amphitheater at the rear of the store, and the bicycle rental building are not properly designed to safely serve the intended purpose and provide accessibility for persons with disabilities. There are several areas where visitors routinely leave the paved sidewalks because the paved area is not wide enough to handle the heavy traffic in this area. When visitors stop to read the NPS bulletin board on the south end of the store building, other visitors must leave the paved sidewalk to detour around this area. In addition, the outward opening store doors create a hazard to pedestrians using the adjacent sidewalk. The current sidewalks do not provide a functional and logical route for bicycle rental customers leaving or returning the bicycle rental building with bicycles. There is no ramp through the curb near the bicycle rental building for bicyclists to access the parking lot and adjacent road.

The area between and around the two buildings is not properly landscaped and does not include any benches for Park visitors. Added to the bicycles stored under tarps, the dirt and gravel surface between the buildings and the lack of landscaping presents an unappealing area to the public using this area. While landscaping can be used effectively to direct pedestrian traffic, this is not occurring at this location.

1.2 Background

The Cades Cove Campground Store building was constructed in 1958 to house concession services, public restrooms, and to provide an open-sided, roofed amphitheater to NPS interpretive programs. The bicycle rental building was constructed in 1969 for the storage of firewood, other storage, bicycle rentals and vending and was later adapted to accommodate souvenir sales. Although both of these structures are the property of the National Park Service and are assigned for the use of the concessioner, portions of the facilities are also frequently used by Park visitors who are not store customers. The amphitheater attached to the store building is used by the NPS for interpretive programs and the restrooms at the store are the primary facilities for the general public entering or leaving Cades Cove. The parking lot adjacent to the concession operation is used by visitors attending NPS programs, restroom users, visitors using the amphitheater for picnics, and hikers, in addition to store customers. The multiple uses of this

area and the increased visitation since these facilities were constructed have overwhelmed the ability of these facilities to adequately serve their intended function.

In March 2008, a new concession contract was awarded to National and State Park Concessions Cades Cove, LLC to operate Cades Cove Campground Store. This contract was competitively awarded in accordance with the Concessions Management Improvement Act of 1998. This concession contract requires the concessioner develop a Concession Facilities Improvement Program Proposal. Several issues were evaluated during that process but the primary elements proposed included consideration of the following improvements that are contingent on completion of NEPA and Section 106 compliance and the approval of final plans by the Superintendent:

- (a) Expand the current bike rental building to create storage space (estimated as 200 square feet).
- (b) Construct a standalone bicycle storage shed (estimated as 800 square feet).
- (c) Construct an outside service window on the campground store for the snack bar operation.
- (d) Renovate the sidewalk and handicap access ramp to accommodate the new outside service window.
- (e) Landscape the courtyard area between the two assigned buildings.

The elements of the Concession Facilities Improvement Program described in the contract are intended to provide the general parameters for the improvement program. As part of the Concession Facilities Improvement Program, the concessioner was responsible for submitting preliminary and final plans to the NPS for review and approval. In consultation with the NPS, the concessioner developed and submitted plans to meet the requirements of the Concession Facilities Improvement Program. The NPS believes that the plans submitted by the concessioner will meet the needs of the concessioner and Park visitors as well as accomplishing the intent of the concession contract. The approval of final plans by the NPS will not occur until after the completion of NEPA and Section 106 compliance. The proposed plans consist of the following:

- (a) Expand the current bike rental building by approximately 1600 square feet to create storage space for rental bicycles and retail stock. The existing bicycle rental building is approximately 1540 square feet.
- (b) Construct an outside service window on the west side of the campground store building for the snack bar operation.
- (c) Renovate the sidewalk on the west side of the Campground Store building to accommodate the new outside service window and improve pedestrian access to facilities. Landscape the courtyard area between and adjacent to the two assigned buildings; construct new sidewalks and a new handicapped access ramp between the two buildings to improve pedestrian and bicyclist access to facilities. Renovate the sidewalk on the south side of the campground store building in front of the NPS bulletin board.

The proposed improvements summarized above are described in further detail in Section 3.2 below as Alternative B, Build Alternative.

1.3 Draft Impact Topics Considered, But Dismissed From Further Analysis

The following is a discussion of several impact topics that have been analyzed and considered with regard to potential effects resulting from either of the alternative actions. The relationships of these topics to fishing are summarized as part of the impacts analysis based on a factual,

objective review of potential effects that alternatives might have, or the lack thereof. The impact topics are discussed below, but will not be carried forward into the detailed analysis in this Draft EA. There will not be any changes to these effect topics resulting from the proposed improvements to the Cades Cove Campground Store concession facilities.

- ***Air Resources*** - The Clean Air Act of 1973 (as amended) and associated NPS policies require the NPS to protect air quality in Parks and other holdings. The intent of this effect topic is to assess actions that may improve and protect air quality for human health and ecosystem benefits, or that may have an adverse effect. In general, this topic analyzes far reaching and local influences on air quality, many of which are out of the control of the NPS. For example, GRSM is downwind from large urban and industrial areas in states to the north and west, and prevailing winds often carry potential pollutants that are deposited in the area. Acid precipitation is a major influence on stream water quality at the park, and could cause excessive nutrient enrichment in soils, and affect sensitive vegetation. GRSM is designated a Class I area per the Clean Air Act of 1973, which provides the highest level of air-quality protection. The proposed facility improvement project would not generate any pollution that would adversely affect human health and environmental resources. An amount of exhaust from automobiles would be expected regardless of which alternative is analyzed.
- ***Geology*** - GRSM is host to a variety of outstanding geological features with unusual intrinsic value. Many of these geological features are regularly viewed and studied by a wide range of visitors, educators, and scientists and are considered a valuable natural resource. The proposed facility improvements will not alter geologic features and resources at the park. Therefore, geological resources will not be carried forward into the detailed analysis portion of this EA.
- ***Floodplains*** - Floodplain or flood-prone areas include those low-lying areas that are flooded during 100 year storm events. These areas are generally mapped by the Federal Emergency Management Agency and those maps are made available to the general public. Local and some state governments implement the federal floodplain protection regulations, which at a minimum regulate construction of dwellings and other structures in the floodplain. The proposed facility improvements would not involve the filling or alterations of floodplain areas, and would not require the construction of any structures. Earthwork and construction activities that could adversely affect flood-prone areas are not part of the proposed facility improvements. Given that the alternatives proposed will not affect floodplain values, this topic will not be carried forward into the detailed analysis.
- ***Wild and Scenic Rivers*** - Wild and scenic rivers are designated by the federal mandate and are provided with advance protection at the federal, state, and local levels. Wild and scenic rivers have not been designated within GRSM boundaries; therefore, this topic will not be carried forward into the detailed analysis.
- ***Transportation*** – GRSM does not have a public transportation system that operates and the proposed facility improvements would not require or include any transportation

services. The proposed alternatives will not affect transportation, and as such transportation will not be carried forward into the detailed analysis.

- ***Indian Trust Resources*** - Indian trust resources include those resources not on Native American owned property, but rather on DOI administered lands that are held in trust on behalf of Native American tribes. Secretarial Order 3175 requires that any anticipated impacts to Native American trust resources from a proposed project or action by DOI agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to Native American and Alaska Native tribes. GRSM as a public holding is not considered a Native American trust resource and there are not any such designated resources at the park. The proposed facility improvements and the proposed alternatives do not conflict with any American Indian interests. Therefore, this topic will not be carried forward into the detailed analysis.
- ***Prime or Unique Farmland*** - The Natural Resource Conservation Service (1993) defines prime farmland as soil that produces general crops such as common foods, forage, fiber, and oil seed. Unique farmland is defined as soil that produces specialty crops such as fruits, vegetables, and nuts. The soil types in the GRSMNP area provide limited support for prime farmland and unique farmland based on these definitions. Areas of agricultural use on GRSM do not exist and as such the proposed alternatives do not involve alterations to any land-use or soil. Therefore, prime or unique farmland will not be carried forward as an impact topic.
- ***Lightscape*** - In accordance with *NPS Management Policies, 2006* (2006), the NPS strives to preserve natural ambient lightscapes, which are resources and values that exist in the absence of human caused light. The proposed facility improvements would not be expected to result in any changes to the existing lightscape conditions. Therefore, this topic will not be carried forward into the detailed analysis.
- ***Soundscape Management*** - In accordance with *NPS Management Policies, 2006* (2006) and *NPS Director's Order 47: Sound Preservation and Noise Management* (2001c), an important part of the NPS mission is preservation of natural soundscapes associated with Parks. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in Park units, together with the physical capacity for transmitting natural sounds. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units, as well as potentially throughout each Park unit, are generally greater in developed areas and less in undeveloped areas. The proposed facility improvements would create additional noise for a short period of time during construction with no long term effects. Therefore, this topic will not be carried forward into the detailed analysis.
- ***Environmental Justice*** – According to the United States Environmental Protection Agency (USEPA), environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws,

regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Any actions related to the proposed facility improvements would not be expected to have health or environmental effects on minorities or low-income populations or communities as defined in the USEPA Environmental Justice Guidance (USEPA 1998). Therefore, this topic will not be carried forward into the detailed analysis.

- ***Non-Federal Lands Within GRSM - Private Residential and Commercial Properties and Municipal and State lands*** - Of the 522,000 acres within the park boundaries, the NPS owns all lands, with the exception of some 322 acres that constitute remnant private inholdings. The proposed facility improvements are not seen as an issue that affects landownership or development and are not near any inholdings. The proposed alternatives will not hinder or alter in an adverse or beneficial way public and private access to any areas in the park; therefore, this topic will not be advanced into the detailed analysis.

2.0 ALTERNATIVES

There are two alternatives for the Cades Cove Campground Store facilities improvement project, a "No Action Alternative" and a "Build Alternative." The alternatives were developed to resolve issues associated with:

- Lack of a secure, permanent, covered building for rental bicycle storage
- Lack of adequate storage space to meet concessioner needs.
- Lack of adequate interior space for retail sales and snack bar service in the campground store building.
- Inadequate sidewalks and accessible ramps to safely and efficiently handle pedestrian and bicycle traffic and protect park resources.
- Unsatisfactory aesthetic appearance of grounds and facilities.

2.1 Alternative A (No action alternative)

Under Alternative A, there would be no changes made to the existing buildings, sidewalks, or accessible ramps. The concession facilities would remain unchanged and proposed improvements to better provide necessary and appropriate visitor services to the public would not occur. The No Action alternative is presented as a requirement of the National Environmental Policy Act, (NEPA) and is the baseline condition with which proposed activities are compared.

Rental bicycles would continue to be stored in bicycle racks between the two buildings covered with tarpaulins and secured with a locked cable when not in use. Bicycles would continue to be

exposed to weather, theft, and vandalism and the temporary, unattractive appearance of this method of bicycle storage would continue.

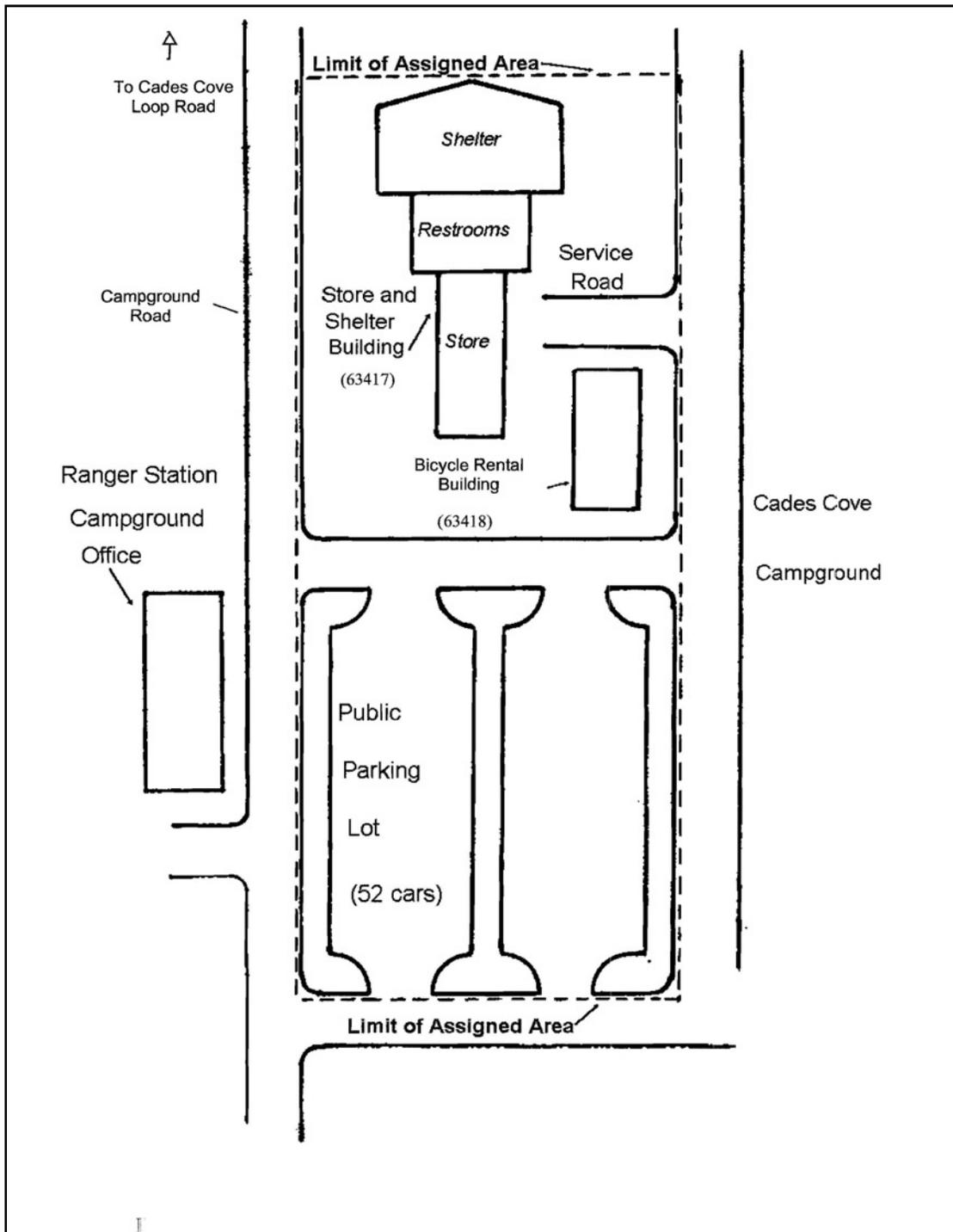
Service of customers of the campground store would remain at current levels. Customers would not benefit from an outside service window for the snack bar to help reduce crowded conditions in the store and inefficient service to the public. The concessioner's operations would continue to be hampered by inadequate storage space and the use of visitor service areas for storage purposes may continue.

The sidewalks that provide access to the store, restrooms, amphitheater at the rear of the store, and the bicycle rental building would continue to be inadequate to handle pedestrian and bicycle traffic, forcing visitors to use the areas outside of the paved sidewalks. This would result in a continuation or worsening of vegetation damage, unsightly grounds, and unsafe footing. The outward opening store doors would continue to create a hazard to pedestrians using the adjacent sidewalk. Due to the lack of adequate sidewalks and a ramp through the curb near the bicycle rental building, bicyclists would use sidewalks intended for pedestrians increasing use conflicts or would have to carry their bicycles over the curb to the parking area.

The area between and around the two buildings would continue to be unattractive and poorly designed to meet visitor needs. Landscaping would not be used effectively to direct pedestrian traffic resulting in chaotic pedestrian traffic patterns and continued resource damage.

Figure 1 shows the area assigned for the use of the concessioner and the existing facilities that would remain unchanged under Alternative A.

Figure 1. Alternative A: No Action, Concession Contract Assigned Area and Existing Concession Facilities



2.2 Alternative B (Build Alternative) (*Environmentally Preferred and Preferred Alternative*)

Under the Build Alternative, the bicycle rental building would be expanded by approximately 1,600 square feet. This would include an approximately 1,400 square foot addition to the west side of the existing building for the storage of rental bicycles and an approximately 200 square foot addition to the east side of the existing building for the storage of retail stock, vending machine stock, and firewood storage. The sidewalk on the west side of the campground store building would be widened to accommodate the outside service window and improve pedestrian access to facilities. The sidewalk along the east side of the campground store building would be widened to improve access and improve safe access to the store. An additional sidewalk would be constructed from the bicycle rental building to the parking lot with a new ramp through the curb. The sidewalk along the south side of the campground store would be widened to allow an adequate walkway and viewing area adjacent to the NPS bulletin board. The area between and adjacent to the two buildings would be landscaped to add some native plantings and benches. An outside service window for the snack bar may be constructed on the west side of the campground store building at a later date.

Alternative B would be implemented in two phases. The first phase would be all of the proposed improvement with the exception of the outside service window for the snack bar. The second phase would be the construction of the outside window for the snack bar, if further evaluation determines that this window is still necessary to improve service to the public after completion of the other improvements.

2.2.1 Bicycle rental building expansion

The bicycle rental building would be expanded by approximately 1,600 square feet to provide space for the storage of rental bicycles, retail stock, vending machine stock, and firewood storage. The expansion would be constructed to match the style and materials of the existing bicycle rental building exterior. The additions would both be wood frame construction on a concrete slab foundation. Separate additions would be constructed on the west side and east side of the existing building as described below.

A 1,400 square foot addition would be constructed on the west side of the existing building for the storage of rental bicycles. This addition would consist of one large room that would be used to store bicycles in racks on the concrete floor and hanging from the rafters. Two roll-up garage doors on the south side would allow bicycles to be removed for rental and returned to storage after rental. A door and sliding window would connect the addition to the existing building. Two additional hinged walk-through doors would provide access from the north and south sides of the addition when the garage doors are closed. This would result in ground disturbance of approximately 1,500 square feet in an area that already consists of bare ground or has a gravel surface due to heavy pedestrian use and storage of bicycles in racks.

A second 200 square foot, four feet wide addition would be constructed on the east side of the existing building under the existing roof overhang. This addition would provide much-needed storage space for retail sales stock, vending machine stock, and bundled firewood. Two hinged walk-through doors would connect this addition to the existing building and two additional hinged doors would open to the exterior on the north and south ends of the addition. This would

result in ground disturbance of approximately 250 square feet in an area that is mostly bare ground under the roof overhang of the existing building.

2.2.2 Sidewalk improvements

Several improvements would be made to sidewalks and accessible ramps around the two buildings to improve the function and appearance of walkways.

The 6.5 feet wide sidewalk along the west side of the campground store building would be widened by an additional 7 feet to accommodate access to the outside service window and to provide improved pedestrian access to facilities. The wider sidewalk would provide adequate space for the heavy two-way pedestrian traffic from the parking lot to the store, restrooms, and amphitheater, as well as providing needed clearance around the outward opening exterior door to the store. This wider sidewalk should eliminate trampling of vegetation adjacent to the inadequate existing sidewalk and provide a safer walkway for the public. This would result in ground disturbance of approximately 350 square feet in an area that is partly mowed lawn and partly bare ground due to heavy pedestrian use.

The 6.5 feet wide sidewalk along the east side of the campground store building would be widened by an additional 4 feet to better accommodate the heavy two-way pedestrian traffic from the parking lot to the store, restrooms, and amphitheater. In addition to widening the sidewalk, a railing would be installed across the existing sidewalk just north of the store door, to correct the potential hazard created by the outward opening store door and visitors approaching the door along the existing narrow sidewalk. The wider sidewalk would reduce the pedestrian traffic outside of the paved area and provide a safer walkway for the public. This would result in ground disturbance of approximately 250 square feet in an area that is mostly bare ground due to heavy pedestrian use.

The 4 feet wide sidewalk along the south side of the campground store building would be widened by an additional 7 feet to allow adequate space for pedestrians to pass visitors stopped to view the bulletin board on the south side of the building without leaving the paved walkway. This would help keep pedestrian traffic on the paved walkway and eliminate an area where vegetation has been eliminated due to trampling. This would result in ground disturbance of approximately 180 square feet in an area that is mostly bare ground due to heavy pedestrian use.

A concrete patio and additional sidewalks would be constructed on the south side of the new rental bicycle addition and west side of the existing bicycle rental building. The additional sidewalk would connect to the existing sidewalks leading towards the store building and would also lead to a new handicapped and bicycle accessible ramp through the curb to the parking lot. This additional paved area would provide a staging area for the bicycle rental, an accessible route for bicyclists to reach the road and parking lot, and a path for pedestrian access to the facilities. This patio and sidewalk area would harden this area to handle the heavy pedestrian and bicycle traffic in this area. A section of existing sidewalk in the area southwest of the existing bicycle rental building would be removed and replaced with the reconfigured sidewalk. This would result in ground disturbance of approximately 1,800 square feet in an area that is mostly bare ground due to heavy pedestrian use, gravel surfaced bare ground, or already paved.

2.2.3 Landscaping

In order to improve the appearance of this area and control pedestrian traffic, native plantings would be added in the area between the two buildings and in front of the campground store building. Several benches would be placed in this area to provide needed seating for visitors and to also help control pedestrian traffic. The landscaping with native plants would result in ground disturbance of approximately 200 square feet in an area that is partly mowed lawn and partly bare ground.

2.2.4 Snack bar service window

The outside service window was proposed to help alleviate overcrowded conditions inside the store and improve the effectiveness of snack bar service. This would provide visitors wishing to purchase ice cream or other snack bar items with the option of using the outside service window instead of entering the store building. Most of the non-food retail sales items would be moved to the bicycle rental building subsequent to the improvements made in expanding the bicycle rental building. This may help alleviate the crowded conditions in the campground store building and reduce the need for the outside service window. Should the facilities appear to be functioning effectively under the new configuration, the NPS may reconsider the need to add the outside service window but wishes to present this option within this alternative should it be needed.

Figure 2 provides a site plan and floor plan for the proposed facility improvements under Alternative B.

2.3 Alternative Considered But Rejected

The initial concept for a bicycle storage shed was a separate, detached building that would be constructed between the two existing buildings. During the design process, the NPS determined that the construction of an addition to the existing bicycle rental building would better accomplish the objectives for this storage space and would preserve the maximum amount of open space between the buildings. A separate building between the two existing buildings would crowd this space and leave only a small amount of open space separating the buildings. This would leave narrow walkways between the buildings that would not receive any sun. The NPS felt that this configuration would detract from the aesthetics of the site and create narrow, unpleasant walkways between the buildings for pedestrians. Communication between concessioner staff in the bicycle rental area and bicycle storage area would be more difficult since these would be separate buildings. For these reasons, the initial proposal for a separate, detached building was rejected during the early phase of design work.

3.0 AFFECTED ENVIRONMENT

3.1 Project area Description

The project area is located within the 28,000-acre Cades Cove valley which is approximately 8 miles from the City of Townsend, Blount County, Tennessee within Great Smoky Mountains National Park. Cades Cove is a valley located among the mountains and ridges of the Appalachians in the western portion of Great Smoky Mountains National Park. The floor of the Cades Cove valley is relatively flat and is circumnavigated by the Cades Cove Loop Road. Primary access to Cades Cove is via Laurel Creek Road, a two-way, two-lane road that begins at the Townsend “Y” intersection at State Route (SR) 73 south of Townsend, Tennessee, and continues to the entrance of Cades Cove. Figure 3 provides a general vicinity map. Once at the cove’s entrance, visitors proceed through the cove via the Cades Cove Loop Road. The 11-mile, one-way Loop Road follows the contours of the cove’s mountain valley pastureland, along the edges of the forested land. Within the Cades Cove Loop Road, two bi-directional gravel roads bisect the loop — Sparks Lane and Hyatt Lane. These roadways can be used to shorten the loop or to return to the eastern end of the loop without traveling the entire Loop Road. Two backcountry roads also exit the cove from the Loop Road. These lightly traveled gravel roads — Rich Mountain Road and Forge Creek/Parson Branch Road — serve as exit-only routes from the cove.

Figure 3. General Vicinity Site Map

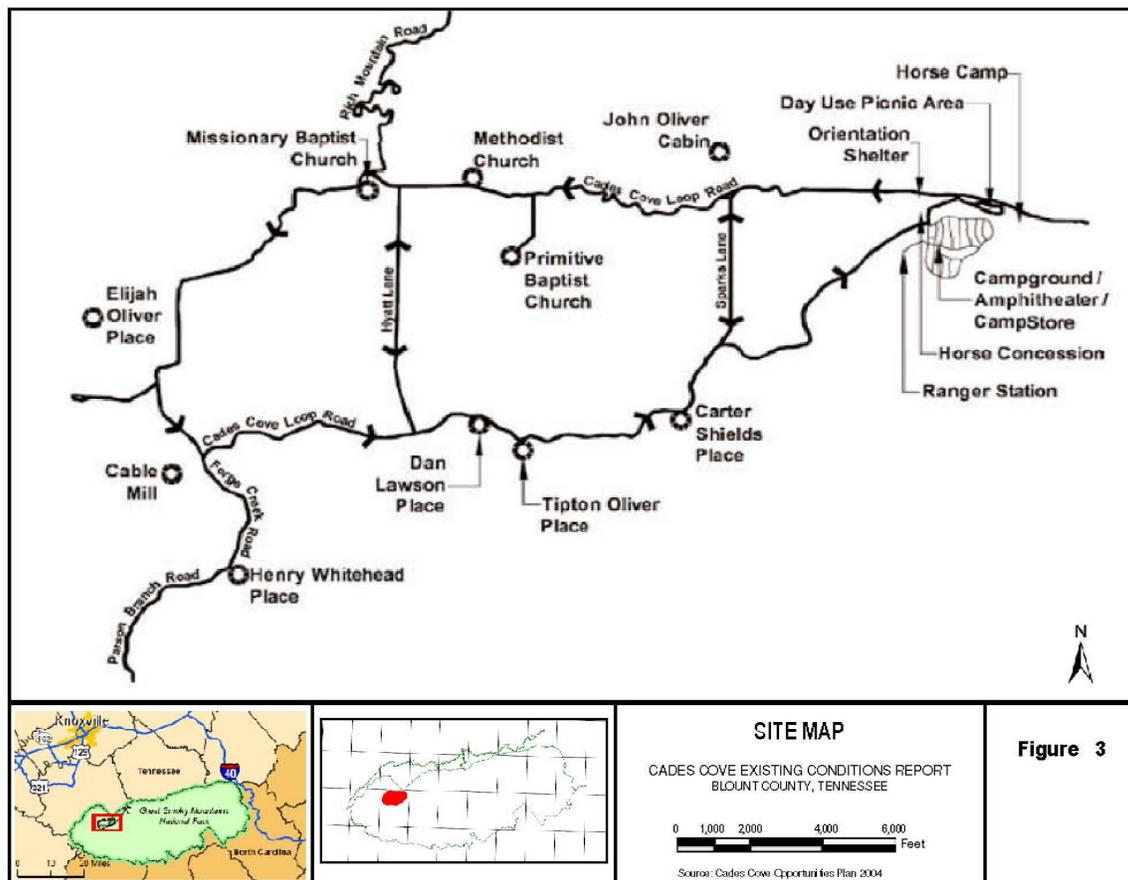


Figure 3

3.2 Physical Environment

3.2.1 Topography and Soils

Topography. The Cades Cove area is part of Great Smoky Mountains National Park (GRSM). According to U.S. Geological Survey (USGS) topographical maps, topography within GRSM dramatically ranges from steep mountainous terrain with significant slope relief (18 to 28 degrees) to rolling hills to alluvial floodplain valleys. The highest mountains rise more than 5,000 feet above the valley floors. The highest elevation in the park is atop Clingman's Dome, at 6,643 feet above mean sea level (msl), while the lowest elevations are encountered along the Little Tennessee River, averaging 1,000 feet msl. Interspersed between the valleys, ridges, and mountains are hollows, gaps, and coves.

Cades Cove is located within the 7.5' series USGS topographical map for the Cades Cove, Tennessee, Quadrangle. The various ridges and mountains surrounding Cades Cove are also located in the Cades Cove Quadrangle, as well as in the Kinzel Springs, Calderwood, and Thunderhead Mountain Quadrangles. Laurel Creek Road, leading into the entrance of Cades Cove, is located within the Wear Cove and Cades Cove Quadrangles. Abrams Falls is located within the Calderwood Quadrangle.

Cades Cove is an oval-shaped geologic window located in the western portion of GRSM. The relatively flat valley floor of Cades Cove is surrounded on all sides by steep ridges and mountains. The western end of the valley floor lies at approximately 1,720 feet msl, while the eastern end lies at approximately 1,840 feet msl. The surrounding ridges and mountains reach elevations above 3,500 feet msl. These ridges and mountains include: Cades Cove Mountain, Rich Mountain, Pinkroot Ridge, Turkey Pen Ridge, Crooked Arm Ridge, Horseshoe Ridge, Boring Ridge, Tater Ridge, Cave Ridge, Leading Ridge, Allnight Ridge, Anthony Ridge, Leadbetter Ridge, Andy McCully Ridge, Arbutus Ridge, Gregory Bald, Stony Ridge, Coalen Ground Ridge, McCampbell Knob, Cobb Butt, Cobb Ridge, Coon Butt, Pine Mountain, Spruce Double, and Cerulean Knob. Caves are also present in Cades Cove. The largest known cave in Cades Cove, Gregory's Cave, is located in the northern portion of the cove, where the valley floor meets Cave Ridge.

Soils: The most common soil series within the park is the Soco series, a residual soil found over the park's widespread sandstone. Due to the cove's unique geology; however, there are no Soco series soils found there. In the cove, soils are alluvial (i.e., derived from sediment deposited by flowing water), consisting of ancient sediments transported from the sides of Rich Mountain and other adjacent ridges thousands and thousands of years ago (Fraser 2005).

Soil in the project area is classified as *Northcove-Maymead-Nowhere* soil complex. In this particular polygon, *Northcove* is about 45%, *Maymead* is ~25% and *Nowhere* is ~15% of the area. This mapped polygon is a mixture of these three soils with 15% minor soils; however, the resolution required to map each of these cannot be accomplished at the mapped scale, therefore they are combined into an associated soil complex.

In storm events, rainwater off the adjacent uplands is concentrated into surface runoff, which causes overland flow in concave areas. Colluvium material beneath the soils serves as a good substrate for the aquifer. The water in the colluvium moves laterally down slope, where it reaches the soil surface and forms springs, this is where the *Nowhere* soils are located within this complex.

These soils are not defined as Prime Farmland (per executive order) and are generally well drained (see *Nowhere* soils), with 1-3 % organic matter in surface layer, and abundant cobbles. *Nowhere* soils are underlain by an aquifer layer of cobbly-sandy material from further upslope, and are recognized by abundant springs and seeps which “well-up” during wet weather.

Otherwise these soils have moderately rapid permeability, low shrink-swell capacity, and low potential for run-off. Other data are available on-line at the Soils Data Mart of USDA-NRCS.

3.2.2 Water Resources

Surface Water. The Little Tennessee River watershed in Tennessee is divided into the Abrams Creek watershed and Parson Branch watershed. The entirety of Cades Cove lies within the Abrams Creek watershed. Laurel Creek Road traverses the West Prong Little River watershed, which empties into the Tennessee River watershed. The Tennessee River watershed also includes the Whiteoak Sink watershed and Hesse Creek watershed.

The main surface water feature of Cades Cove is Abrams Creek, which traverses the entire length of Cades Cove from northeast to southwest. Abrams Creek bisects Cades Cove as it enters near the beginning of Loop Road and flows southwesterly across the valley floor to the Abrams Falls trailhead, where it meanders by Spruce Double to Abrams Falls. From the falls, it flows west-southwest into Chilhowee Lake (Little Tennessee River). Anthony Creek is located in the eastern portion of Cades Cove and joins Abrams Creek just north of the campground. There are also several sewage lagoons located in the upper cove in between Abrams Creek and Cooper Branch.

- (a) Chapter 1200-4-3 of the Tennessee Water Quality Standards (TWQS) states the designated uses for surface waters in the state of Tennessee and the state’s Antidegradation Statement (chapter 1200-4-3-.06). High-quality waters in Tennessee are Tier II and Tier III waters. In Tennessee, Tier III waters are also referred to as Outstanding National Resource Waters (ONRWs).

The Tennessee Department of Environment and Conservation (TDEC) specifically states in chapter 1200-4-3 of the TWQS that the portions of Little River and Abrams Creek within the park are designated by the state as Tier III-ONRW waters. The main stream and all tributaries to these streams are designated as Tier III-ONRW waters; thus all waters within the cove and the Laurel Creek Road corridor are Tier III-ONRW waters. No degradation is allowed in these Tier III-ONRW waters.

Additionally within the park, Tennessee has designated the following streams located in the Cades Cove area as Trout Streams (TS): Wilson Branch, Stony Branch, Arbutus Branch, Tater Branch, McCaulley Branch, Rowans Branch, West Prong Little River, Laurel Creek, and

Meadow Branch. Tennessee has further designated the following waters within the park as Naturally Reproducing Trout Streams (NRTS): Abrams Creek, Mill Creek, Forge Creek, Anthony Creek (includes Left Prong), Middle Prong Little River, and Little River. All of these waters are located in the Cades Cove area.

Since 1982, Abrams Creek and Anthony Creek have been listed by the National Park Service on the Nationwide Rivers Inventory (NRI) List. The outstanding remarkable values (ORVs) listed for both creeks are scenic, recreational, geological, and wildlife. Both creeks are described as small scenic streams entirely within GRSM, with deer and furbearers common and near an NPS campground. Under a 1979 Presidential Directive and Council on Environmental Quality (CEQ) directives, all federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments.

Groundwater. The U.S. Environmental Protection Agency (USEPA) protects waters designated as sole-source aquifers. The designation is given to waters that are the only source, or one of few sources, of drinking water for an area. If sole-source aquifer waters are contaminated, use of an alternative source of drinking water would be extremely expensive. To ensure the protection of these waters, any proposed project within a designated area receiving federal funding must be reviewed by USEPA. No sole-source aquifer areas are designated by the USEPA within Cades Cove.

Potential contaminant sources in the Cable Mill historic site include the pump house with two aboveground storage tanks (ASTs) containing diesel fuel and the access roads. Potential contaminant sources in the Cades Cove campground include a pump house, transformer for electrical power lines, restrooms (including sewer lines), and access roads.

Sinkholes, springs, disappearing streams, and caves characterize karst topography, where the dissolution of underlying soluble rocks by surface water or groundwater occurs. Carbonate rocks, such as limestone, are soluble in groundwater, leading to the formation of limestone caverns and sinkholes, such as those present in Cades Cove and nearby Whiteoak Sink, Bull Cave, and Tuckaleechee Caverns. In karst areas, the groundwater flows through solution-enlarged channels, bedding planes, and microfractures within the rock. Characteristic landforms in karst regions include closed depressions of various size and arrangement, disrupted surface drainage, caves, and underground drainage systems. Abrams Creek is known to have underground channels and connections to limestone springs. Gregory's Cave is located in the northern portion of the cove. Sinkholes are locally common within parts of the cove as well. Gum Swamp and two small ponds northeast of Carter Shields Place are considered to be water-filled sinkholes. The water levels in the cove sinkholes and Gregory's Cave are directly related to rainfall amounts. Aquatic species unique to these sinkholes and caves are located in the cove and Laurel Creek Road corridor; some of these species are federal and/or state protected species.

Groundwater recharge occurs when water moving into the groundwater system arrives at the top of the saturated zone. Climate, vegetation, land use, and soil characteristics are factors that affect the rate of recharge. Groundwater recharge for most of the park is estimated at 600,000 gallons per day/square mile.

Wetlands. The National Wetland Inventory (NWI) identifies both riverine and palustrine wetland habitats in the Cades Cove area. The riverine system includes all wetlands and deepwater habitats contained in natural or artificial channels, and periodically or continuously containing flowing water or forming a connecting link between two bodies of standing water. The upper perennial system is characterized by a high gradient and fast water velocity. “Unconsolidated bottom” includes all wetlands and deep-water habitats having at least a 25 percent cover of particles smaller than stones (less than 6 cm to 7 cm) and a vegetative cover less than 30 percent, although finer or coarser sediments may be intermixed. “Permanently flooded” indicates that water covers the land surface throughout the year in all years. The NWI characterizes these wetland areas as palustrine temporarily, seasonal, or semi-permanently flooded.

The riverine areas include from the confluence of Mill Creek and Abrams Creek to the cove boundary. The NWI characterizes these wetland areas as riverine, upper perennial, unconsolidated bottom, cobble-gravel, and permanently flooded. Another area of riverine type habitat is located within the highway corridor from the confluence of the West Prong of Little River and the Middle Prong of the Little River to the “Y” at Highway 73, then downstream to the park boundary. Four areas of freshwater forested/scrub-shrub wetland lie along Abrams Creek and along Mill Creek/Forge Creek near the confluence of the two creeks. An additional isolated area of forested/shrub wetland is identified on the NWI map east of the Cable Mill area. Palustrine wetlands are described by either the dominant life form (trees, shrubs, emergents, mosses and lichens, or aquatic plants) where vegetation covers 30 percent or more of the substrate; or the physiography and composition of the substrate (rock bottom, unconsolidated bottom, or unconsolidated shore) where there is less than 30 percent vegetative cover.

The wetland areas in proximity to Abrams Creek, Laurel Creek, and their tributaries are classified as riverine. The steep banks and undulating floodplain along much of the river limit wetlands to areas extending just above the normal channel. Due to the scouring effect of seasonal flooding, the wetland boundary along the bank can be somewhat dynamic, with wetland vegetation becoming established in areas where sediment deposition occurs as flood water recedes. The streambed and immediate stream bank generally contain only sparse areas of vegetation. The majority of vegetation growing along Abrams Creek is dominated by upland species, including the hemlock-forested wetland alliance and the sycamore-ash-oak association described above.

The Cades Cove area contains nine tributaries to Abrams Creek, including Feezell Branch, Tater Branch, Cades Branch, Mill Creek and tributaries, McCauley Branch and tributaries, Maple Branch, Cooper Branch and tributaries, Martha’s Branch, and Harrison Branch. The wetland type most closely associated with the tributaries is the riverine type. The floodplains of the Abrams Creek tributaries are more defined and may contain small palustrine wetlands composed of three different wetland types. The first type is classified as emergent, persistent wetland and has two variants. The first variant wetland is located in highly disturbed areas and is dominated by an exotic species, Japanese grass (*Microstegium vimineum*). Some control of the invasive Japanese grass has been obtained by cutting it prior to seed production. The second variant of these emergent, persistent wetlands is located in less disturbed areas and is dominated by sweet Joe-pye weed (*Eupatorium purpureum*), southern lady fern (*Athyrium felix-femina*), Cherokee sedge (*Carex cherokeensis*), smartweed (*Polygonum cespitosum*) and Christmas fern (*Polystichum*

acrostichoides). The second wetland type is classified as shrub/scrub, broad-leaved deciduous wetland. This alliance is dominated by mountain laurel (*Kalmia latifolia*) and spicebush (*Lindera benzoin*), with rosebay rhododendron (*Rhododendron maximum*) as a subordinate species. The third type is classified as forested broad-leaved deciduous wetland, dominated by sycamore (*Platanus occidentalis*), sweet gum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*). The presence of sycamore in these wetlands is an indication that, prior to disturbance, these areas may have been occupied by montane alluvial forest.

None of these wetland features are within the project area.

3.3 Natural Resources

Aquatic Resources. Abrams Creek, a tributary to the Little Tennessee River, has distinct ichthyofaunas that characterize it as separate stream system (Parker and Pipes 1990). Annual or biannual fish population surveys are conducted in the larger streams in the park. Results of these large stream surveys and of more than 200 historical fish collections in the park have identified 78 native and five introduced species of fishes within the park's boundaries. Fifteen families are found within the park boundary. Upper Abrams Creek and the Little River tributaries (including Laurel Creek) are known to support 31 species of fish representing seven families.

Aquatic macroinvertebrates found in the park include insects, annelids, crustaceans, mollusks, and arachnids. Aquatic macroinvertebrate species are numerous in the park and as diverse as the number and types of streams, creeks, and rivers offering habitats. These species break down organic material and are the source of food for fish species. One of the ways scientists monitor the water quality and health of streams and creeks in the park is by sampling and analyzing the numbers and ratios of aquatic macroinvertebrate populations. In particular, the population ratios of aquatic young insect species belonging to three orders are examined. The larva (young) of mayflies (order Ephemeroptera), naiads (young) of stoneflies (order Plecoptera), and larva of caddisflies (order Trichoptera) are examined to determine stream health, because species in these three insect orders are particularly susceptible to any changes in DO levels, pH, temperature, and sedimentation in the water. Scientists use the abbreviation "EPT" to represent insects in these three orders.

The species of aquatic insects most commonly found in the creeks and tributaries in the cove and Laurel Creek Road corridor include: mayflies; stoneflies; caddisflies; dragonflies (order Odonata); mosquitoes, flies, midges, and crane flies (order Diptera); fishflies and alderflies (order Megaloptera); and whirligig beetles (order Coleoptera, family Gyrinidae). Water striders (order Hemiptera, family Gerridae) are usually found on the surface of slow moving waters, ponds, and marshes. EPT species likely to be found in the Abrams Creek and Little River areas include: mayfly species *Baetis tricaudatus*, *Epeorus rubidus*, and *Stenonema pudicum*; stonefly species *Acroneuria abnormis*, *Leuctra* spp., and *Tallaperla* spp.; and caddisfly species *Brachycentrus spinae*, *Neophylax consimilis*, and *Rhyacophila fuscula*.

Terrestrial Resources. The vegetation within the Laurel Creek Road corridor lies mostly on steep slopes, with virtually no alluvial flood plains, few mesic-to-wet slopes, and little cleared ground that is not in forest cover. Cades Cove has been manipulated by human influences as an

agricultural community. The current condition of the valley floor resulting from this manipulation is a plant community dominated by non-native grasses in lieu of native vegetation communities. The common plant communities in the forested portions of both the corridor and Cades Cove (below 3,000 feet) are deciduous oak and hickory forests, and forests dominated by Virginia pine (*Pinus virginiana*), pitch pine (*Pinus rigida*), and Table Mountain pine (*Pinus pungens*). Stands of white pine (*Pinus strobus*) are occasional, as are rich cove hardwood forests.

The wildlife resources in the Cades Cove area include common large mammals (e.g., black bear [*Ursus americanus*] and white-tailed deer [*Odocoileus virginianus*]), medium-sized mammals (e.g., eastern cottontail rabbit [*Sylvilagus floridanus*], striped skunk [*Mephitis mephitis*], opossum [*Didelphis virginiana*], woodchuck or groundhog [*Marmota monax*], red fox [*Vulpes vulva*], gray fox [*Urocyon cinereoargenteus*], and raccoon [*Procyon lotor*]), and several species of small mammals (e.g., various species of shrews, mice, and voles).

GRSM is a premier place for birds.. From the high, exposed peaks, to the warmer, sheltered lowlands, some 240 species of birds have been found in the park. Sixty species are year-round residents. Nearly 120 species of birds breed in the park, including 52 species from the neotropics. Many other species use the park as an important stopover and foraging area during their semiannual migration. More birds will be heard than seen in the park's dense, tall forests, where more than 100 species of birds a day can be found during peak migration (late April and early May).

Migratory and resident bird species are well documented in Cades Cove. Some common species sighted in the cove include juncos, mourning doves, chimney swifts, eastern phoebes, barn swallows, blue jays, indigo buntings, cardinals, towhees, sparrows, eastern bluebirds, eastern meadowlarks, field sparrows, red-winged blackbirds, crows, chickadees, wild turkeys, and warblers. Golden eagles have been sighted flying over the cove in autumn. The pileated woodpecker requires stands of dead and dying pines for its habitat, and has been found nesting in some portions of the cove where pines are prevalent. The barred owl, screech owl, and Chuck Will's widow are the most common birds heard in the cove at night. Open fields in the park provide habitat for red-tailed hawks, American kestrels, northern bobwhite quail, wild turkeys, killdeer, eastern bluebirds, field sparrows, and eastern meadowlarks. In the summer, Cades Cove is visited by barn swallows, downy woodpeckers, ruby-throated hummingbirds, common yellowthroat, blue grosbeak, Acadian flycatchers, eastern wood pewees, blue-gray gnatcatchers, eastern kingbirds, barn swallows, yellow warblers, indigo buntings, and orchard orioles.

Three major groups of reptiles are found in the park: turtles, lizards, and snakes. The most common snakes in Cades Cove are the northern ring-neck snake (*Diadophis punctatus edwardsii*), black rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis*), northern water snake (*Nerodia sipedon*), eastern milk snake (*Lampropeltis triangulum triangulum*), and northern copperhead. Timber rattlesnakes can be found on the dry ridges surrounding the cove.

GRSM is the "Salamander Capital of the World." Climatic and geologic factors have combined to spur the development of 31 salamander species in five families, making this one of the most diverse areas on earth for this order. In fact, lungless salamanders have undergone an extraordinary level of evolutionary diversification in the park, accounting for 24 of the

salamander species in the park and making it the center of diversity for the family. In total, 31 salamanders and 13 frogs are known to inhabit GRSM.

Insects make up the bulk of the non-microbial diversity in GRSM. Estimates of the number and type of species found in the park are, at best, educated guesses, and only through further research will the total number that inhabit the Smokies be approached. Many insects are beneficial to the environment and the park's ecosystem, performing key tasks, such as plant pollination and organic decomposition and recycling, and serving as food for birds, fish, and other animals. Without insects performing these services, hundreds of plants and other animals would disappear from the park. Some insects, however, are agricultural pests or serve as disease vectors that can affect plants and other animals, including humans. Some of these insect pests are responsible for the decline in eastern hemlock and Fraser fir within the park and in the surrounding areas.

Threatened and Endangered Species. Under Section 7 of the Endangered Species Act (ESA) of 1973, as amended, any action likely to adversely affect a species classified as federally protected is subject to review by the USFWS. Under Tennessee law, any action likely to adversely affect a species classified as protected by the state of Tennessee is subject to review by the TWRA. Species of plants and animals that are listed by the state of Tennessee or the USFWS as endangered or threatened are few. The number of species that are listed as being of management concern by the NPS and state of Tennessee is much larger.

No surveys for protected species in the Cades Cove and Laurel Creek Road corridor have been conducted as part of this project. Previous studies and investigations concerning listed species found in the cove and Laurel Creek Road corridor have occurred and are presently ongoing. Investigations regarding these species are determined in consultation with NPS, USFWS, and TWRA. Species potentially found within GRSM based on previous survey information include:

Indiana Bat. The Indiana bat (*Myotis sodalis*) is a federal- and state-listed endangered species that utilizes cave habitats in the cove for winter hibernation. Indiana bats mate in the fall, but the female Indiana bats do not actually become pregnant until spring. Indiana bats migrate to tree roost sites in the spring, where they form maternity colonies consisting of 20 to 100 members. The bats roost beneath the shedding bark of live or dead trees, bearing only one young per female. The female may relocate their young to warmer spots on the tree where the tree is exposed to sunlight, as temperature affects the length of time required for the young to mature (Britzke et al. 2003 and 2006; USFWS 2004; Humphrey et al. 1977). According to Dr. Susan Loeb, project leader of the USDA Forest Service Southern Research Station (SRS) Threatened and Endangered Species Unit, it is common for Indiana bats to move from roost to roost, carrying their young with them (Loeb 2002; USFWS 2004).

Northern Carolina Flying Squirrel. Although the federal- and state-listed endangered northern Carolina flying squirrel (*Glaucomys sabrinus coloratus*) is listed as potentially being located in the Cades Cove USGS quadrangle, Thunderhead Mountain USGS quadrangle, as cited by NPS personnel, Upper Abrams Creek watershed, and Middle Prong Little River watershed, no known sightings of this species have been recorded in the cove or Laurel Creek Road corridor. The northern Carolina flying squirrel is known from five isolated localities: three in the western mountains of North Carolina (Yancey County, Haywood County, and in the vicinity of Mount Mitchell), and two localities in

the eastern mountains of Tennessee (Carter and Sevier counties). Within the park, northern flying squirrels have been found in Swain and Haywood counties, North Carolina, and Sevier County, Tennessee. This species is a high-elevation species not likely to be found in the cove or along the Laurel Creek Road corridor.

Duskytail Darter, Smoky Madtom, Yellowfin Madtom, and Spotfin Chub. Efforts to reintroduce native fish species to Abrams Creek were begun by the USFWS in 1986. Although there are no confirmed historical records, four federal-listed fish species — the endangered duskytail darter (*Etheostoma percnurum*), the endangered smoky madtom (*Noturus baileyi*), the threatened yellowfin madtom (*Noturus flavipinnis*), and the threatened spotfin chub (*Cyprinella monacha*) — likely inhabited Abrams Creek below Abrams Falls in the past. To date, the reintroduction of three of the four federally protected fish species to lower Abrams Creek below Abrams Falls has shown moderate success, whereas one species has shown no success.

Threatened and Endangered Plant Species in Cades Cove. Protected plant species listed in the quadrangles and watersheds containing Cades Cove include several species that are only found at higher elevation habitats (i.e., over 5,000 ft msl). These species are unlikely to be found in the cove and include spreading avens, plains frostweed, Clingman's hedges-nettle, and Blue-Ridge St. John's wort. Rare plants known in the cove include; the Virginia chain fern (*Woodwardia virginica*) and marsh bellflower (*Campanula aparinoides*), both listed as state species of special concern. The sweet pinesap (*Monotropsis odorata*) is listed as being found in Blount County by the USDA. This plant is listed as threatened by the state of Tennessee. Based on species descriptions, this plant is found in the elevations covered by the Cades Cove area, and has the potential to be found in the Cades Cove area. Sweet pinesap inhabits pine-dominated forests and pine-oak heaths; it is very small and tends to blend into the adjacent pine forest floor.

3.4 Cultural Resources

3.4.1 Cultural Summary

The earliest known human occupation of east Tennessee occurred during the Paleoindian period at the end of the Wisconsinan glaciation. This period is not clearly understood in east Tennessee, as very few stratified sites are known. None of the known sites are in the Cades Cove area.

The Archaic Period, which immediately followed the Paleoindian period, is divided into the Early (8000-6000 BC), Middle (6000-3000 BC), and Late (3000-1000 BC) subperiods. These divisions are based on climatic and technological changes. The Early Archaic period corresponds to a shift from a cold climate to a cool, moist climate. The climate became drier during the Middle Archaic, and reached basically modern conditions by the Late Archaic. The overall subsistence patterns were also related to the climate, as the remaining Pleistocene species were replaced by modern species and as the gathering of wild plant foods increased in importance. In the Smoky Mountains, Early Archaic sites tend to be located in upland areas, and are represented by relatively few artifacts, none of which are reported from the Cades Cove area. The Middle Archaic was likely the beginning of intensive human occupation of the Smoky Mountains, based on an increased number of sites and a shift to the use of local lithic resources. Sites are not

concentrated in any specific physiographic region, and no sites are reported for the Cades Cove area. Late Archaic sites in the Great Smoky Mountains tend to be concentrated in floodplains and near quartzite sources, although no sites are reported for the Cades Cove area.

The Woodland period (1000 BC-AD 1000) was marked by changes in settlement and subsistence patterns, technology, and social organization. Ceramic types increased in number and become more varied as to temper and decorative technique. The bow and arrow were introduced during the Woodland period, and extensive trade networks were established. No Woodland period sites are reported for the Cades Cove area.

The Mississippian period (AD 100- 1540) is characterized by major changes in the social structure, subsistence patterns, and settlement patterns of the prehistoric people of east Tennessee. Large permanent settlements ruled by an elite chief and a strong reliance on maize agriculture are typical of the Mississippian period in the broad river valleys of the Ridge and Valley. In the Tennessee mountains, however, Mississippian settlement patterns are different due to the lack of well-defined river valleys suitable for horticulture. The earliest recognized manifestation of the Mississippian culture in the Smoky Mountains is known as the Pisgah phase (AD 1000-1450), which is characterized by small, triangular projectile points and several types of plain and stamped ceramics. While larger village-type sites are located in the well-defined river valleys on the North Carolina side of the mountains, sites on the Tennessee side represent small, temporary hunting camps. It should also be noted that despite the importance of maize agriculture, the gathering of wild plant foods and hunting were still important parts of the subsistence strategy (TRC Garrow and Associates 2002). No Pisgah phase sites are reported for Cades Cove.

The Pisgah phase was followed by the Qualla phase (AD 1450-1540), which includes the Cherokee encountered by Spanish explorers in the mid-16th century. The early Qualla phase is characterized by a continuation of Pisgah technology, but as contact and interaction with Europeans increased, so did their influence over the native people. Qualla sites are scarce on the Tennessee side of the mountains, although a Cherokee village, Tsiyahi, was located within Cades Cove (Dunn 1988).

Historic Background (AD 1540-Present) — The ethnic origin of the people encountered by the Spanish when they arrived in the southeast portion of what is now the United States in 1540 has been the subject of debate. Early research by Cyrus Thomas (1894) led him to hypothesize that the culture of the Cherokee was a result of the constant occupation of the area since the late 13th century. Lewis and Kneberg (1946) refuted this, arguing that the Cherokee had replaced earlier Dallas- and Mouse Creek-affiliated peoples. By the middle of the 17th century and into the 18th century, the Cherokee inhabited large portions of Tennessee, Georgia, North Carolina, and South Carolina. The Overhill Cherokee controlled the valleys of the Little Tennessee, Tellico, and Tennessee Rivers in east Tennessee (Schroedl and Russ 1986), with the Out Towns and Middle Towns located on the west side of the mountains (TRC Garrow and Associates 2002).

By the beginning of the 18th century, British and French traders were regularly traveling to Cherokee towns in east Tennessee and western North Carolina. The Cherokee allied with the British during the American Revolution, which led to the destruction of many of their towns. Treaties signed by the Cherokee in the late 18th century greatly reduced their holdings. The

increased influx of European settlers after the Revolution pushed the Cherokee to north Georgia, northeast Alabama, extreme southeastern Tennessee, and western North Carolina by 1819. Early efforts were made by the United States ostensibly to protect the Cherokee's property, but settlement by Euro-Americans continued. By the beginning of the 19th century, Cherokees had widely become acculturated to their new neighbors, as exhibited by a wide-spread shift from Qualla structures and technology to European-style cabins and tools (TRC Garrow and Associates 2002).

A number of sources have noted that, in the period just prior to Euro-American settlement, the Cherokee established a large town in Cades Cove on Abrams Creek called Tsiyahi, or "otter place." While the presence of a formal town has not yet been verified archeologically, it is certain that the Cherokee maintained a continued presence in the cove for several centuries. Cades Cove was apparently an important junction of several trails that connected the Cherokee villages of the Carolinas with those of the Overhill in Tennessee.

By 1835, the Cherokee had ceded the remainder of their land east of the Mississippi River to the United States (Schroedl and Russ 1986). The majority of the Cherokee refused to leave, however. In 1838, those who had chosen to stay were arrested, detained in stockades, then forcibly marched to "Indian lands" in Oklahoma by United States soldiers under the command of General Winfield Scott (Hudson 1976). Their final removal opened the area to uninhibited settlement by Euro-Americans. Some of the last of the Cherokee to be removed by the United States government hid in the mountains around the cove, but they, too, were captured and sent west by the end of 1838 (Dunn 1988).

[Note: This section drawn from *Cades Cove Historic Cultural Landscape Report* (draft CLR) (John Milner Associates 2004)]

Early Euro-American settlement of Cades Cove focused on the eastern end of the valley floor, but by the second quarter of the nineteenth century, the swampy western end was drained and subsequently settled. By 1850, approximately 671 people resided in Cades Cove. Cash crops and livestock were the predominant means of livelihood, but early industry, including forges and mills, also thrived.

During the Civil War, the eastern part of Tennessee, including Cades Cove, was pro-Union. Confederate troops occupied the larger part of east Tennessee in an attempt to control what they perceived to be a rebellious population. Because of their pro-Union stance, Cades Cove residents suffered under repressive civil measures and frequent raids by small guerrilla forces, or "bushwackers," from North Carolina. The raids resulted in substantial losses in personal property, including crops and livestock, and, less frequently, loss of life.

Economic recovery for Cades Cove during the postbellum period was slow, as formal market relations with regional towns were only gradually re-established. Two significant developments occurred in the Cades Cove area during this period. During the 1870s and 1880s, the grassy balds that had been utilized for decades were expanded. Likewise, small-scale industrial development blossomed in Cades Cove during this period. By the last quarter of the nineteenth century, several grist and sawmills, as well as smithies, had been established on local drainages. In the

final two decades of the nineteenth century, small-scale logging provided employment for several residents.

When interest in the establishment of a national park within the Smoky Mountains first arose in 1924, many Cades Cove residents were supportive, presumably due to the potential economic benefits. During the same year, John Oliver rented cabins to tourists and subsequently built a tourist lodge in Cades Cove. In 1926, Congress established GRSM, and active NPS administration of the area began in 1930. Beginning in 1927, the states of Tennessee and North Carolina acquired necessary land by purchase, and, ultimately, by eminent domain. Realizing that their homes and livelihood would be lost, many residents fought the land acquisition through the state court system, but were eventually defeated. Those that chose to stay were given leases to their property. By 1932, only 57 families remained in Cades Cove.

The establishing legislation for GRSM prohibited the construction of any permanent visitor or administrative facilities pending acquisition of the required acreage (a goal that was only achieved in 1938). Early NPS development in Cades Cove focused on the improvement of roads and trails throughout the Cades Cove area. Between 1930 and 1938, the NPS allowed the valley floor, once a patchwork of fields and meadows, to begin to revert to its forested, natural condition.

Although it was designated as a natural resource park, NPS officials clearly recognized the significance of early nineteenth century vernacular architecture in Cades Cove. As early as 1932, park officials began to implement a policy that would preserve the best examples of local log construction in Cades Cove and elsewhere. Other, more modern structures were deemed “non-historic” and systematically razed.

By the early 1950s, the first formal campground and picnic area were developed in the eastern end of the cove. With the completion of the Laurel Creek Road in 1950, the Cades Cove Loop Road was converted to one-way. Major facilities development within Cades Cove, however, occurred during the “Mission 66” period. In 1977, Cades Cove was listed in the National Register of Historic Places as an historic district.

3.4.2 Archeological Resources

Project Site Investigation - On November 13, 2008, a visual inspection of the proposed project site was undertaken by Park Archeologist Erik Kreusch to determine the extent of previous disturbance existing on the site. Heavy visitation at the site was apparent in and around the walkways areas. These areas had been previously hardened to accommodate visitor use by placement of gravel on the surface.

The area proposed for the construction of a new bicycle storage facility was similarly hardened in the past, but a small patch of ground appeared to have sod and was chosen for subsurface testing to determine if archeological resources might be present. This area was located along the western edge of the proposed limits of the buildings construction. One shovel test pit (STP) was placed in this area. The shovel test pit measured 30 centimeters (cm) x 30 cm and was excavated to a depth of 35 centimeters below the surface (cmbs). All sediment was screened through ¼” mesh.

Sediments identified within the STP were exclusively fill and consisted of a subsoil matrix mixed in various portions with large limestone gravels. One white earthenware ceramic fragment was identified, but occurred in an erroneous stratigraphic context. No intact archeological artifacts and/or archeological features were identified.

3.4.3 Historic Structures

The bicycle rental building is less than 50 years old, appears to possess no outstanding characteristics and is not considered by the Park to be potentially eligible for listing on the NRHP. The camp store/amphitheater structure was built in 1958 (over 50 years old) and associated with the Mission 66 period of park improvements. A draft multiple property documentation form for the National Park Service Mission 66 Resources (2006) has been prepared for the National Register of Historic Places (NRHP). This draft documentation lists two potential property types – visitor center and Mission 66 district. These property types imply that buildings, structures, and sites other than visitor centers should not be individually assessed for potential National Register eligibility. That same documentation states that “In other cases, however, such as...or Great Smoky Mountains national parks, Mission 66 may have provided the means for constructing certain facilities or utilities, but did not represent a significant redevelopment of the frontcountry overall. While individual visitor centers (and in exceptional cases other individual buildings or structures) should be considered for National Register eligibility in these parks, Mission 66 districts should not be.” Based on the 2006 direction provided by the NPS, Mission 66 resources in Cades Cove would not be considered eligible for the NRHP as a district. Individually the camp store/amphitheater structure has not been formally assessed for eligibility for listing on the NRHP as a Mission 66 property on an individual structure basis.

3.4.4 Cultural Landscapes

[Note: This section drawn from *Cades Cove Historic Cultural Landscape Report* (draft CLR) (John Milner Associates 2004)]

In 1945, Cades Cove was designated as one of several historic districts within GRSM by NPS park personnel. Potential historic districts within GRSM, predominantly coves and valleys containing concentrations of vernacular architecture, were identified through several reports generated in the late 1930s and early 1940s. These reports formalized a desire by park officials to preserve rapidly disappearing “authentic patterns of mountain culture.” These desires were incorporated into park master plans prepared in the 1940s that suggested the development of formal “field exhibits,” to be located primarily near existing campgrounds or roads, and designed to permit visitors to view and study the “history and culture of the mountain folk.”

It was not until 1973 that the Cades Cove historic district was nominated to the National Register of Historic Places. By 1977, the Cades Cove historic district was formally listed in the National Register. In 1998, the Cades Cove historic district National Register nomination was modified to include additional documentation. The revised form provided much-needed additional historic context information, suggested the removal of three previously listed contributing resources — Noah Birchfield Pig Pen, Tipton Oliver Apiary, and the Tipton Oliver Woodshed — and the

addition of three buildings — Lawson Barn, Caughron Barn, and the Cistern House at the Primitive Baptist Church — as contributing structures. The number of contributing structures within the Cades Cove historic district since the revision has remained at thirty.

A Cultural Landscape Inventory (CLI) for the Cades Cove landscape was developed in 1998. It identified twelve component landscapes within Cades Cove which were treated as individual cultural landscapes:

- Cades Cove Valley Floor
- John and Lucretia Oliver Homestead
- Methodist Church and Cemetery
- Primitive Baptist Church and Cemetery
- Missionary Baptist Church and Cemetery
- Elijah Oliver Homestead
- Cable Mill, Cable Cemetery
- Henry Whitehead Homestead
- Peter Cable and Dan Lawson Homestead
- Tipton-Oliver Homestead
- Carter Shields Homestead

The CLI included its own statement of significance, which generally concurs with the modified National Register nomination. Both identify significance under criterion A at the state level for early settlement and on-going evolution of a southern Appalachian farming community, and for the cove's association with early conservation efforts east of the Mississippi River, and under criterion C for the vernacular architecture of the farm buildings, and for the NPS Park Development Era interpretation of the Cades Cove "pioneer" culture. Criterion D significance is suggested for the site's likelihood to yield information important to the knowledge of the prehistory or history of the community. The primary distinction between the CLI and National Register documentation is in the identification of a period of significance; while the National Register nomination suggests that the landscape is significant for the period from 1818 through 1926, the CLI suggests that the period should be expanded to include the NPS Park Development through 1942. The CLI also recommends expansion of the historic district boundary to encompass the 28,000 acre Cades Cove area.

The camp store and the associated area are classified in the Draft 2004 Cultural Landscape Report as potentially contributing to the Mission 66 period of the cultural landscape with regard to spatial organization. The camp store paths and parking lot are considered potentially contributing to the Mission 66 period of the cultural landscape with regard to circulation. However, none of these facilities and features is classified as contributing to the Cove Dwellers or Early NPS periods of the cultural landscape that are encompassed by the CLI or National Register periods of significance and as noted in the historic structure discussion Mission 66 resources in Cades Cove would not be considered eligible for the NRHP as a district based on 2006 guidance.

3.4.5 Ethnographic Resources

An ethnographic resource is a resource under NPS stewardship that is of cultural significance to peoples traditionally associated with it. In other words, the resource is "closely linked with [the peoples'] own sense of purpose, existence as a community, and development as ethnically [and occupationally] distinctive peoples."

Thus, an ethnographic resource can appear, at first glance, like any other resource over which NPS has stewardship. The difference is that its meaning comes from how it is viewed by traditionally associated peoples. These peoples are distinct from the public in general, in that: the people often live together as a community; the people are associated with the resource for at least two generations – or for forty years; the association is linked to the groups sense of purpose and existence; and the association pre-dates the park. There are four major categories of ethnographic resource: landscape, place, object, or natural resource.

Preliminary work with regard to ethnographic resources at Cades Cove has been conducted, including archival review and limited interviews. An ethnographic survey, such as this was designed to identify ethnographic resources, which are defined by the NPS as “the cultural and natural features of a park that are of traditional significance to traditionally associated peoples.” The research was executed for the identification of ethnographic resources by the following methods: searching the available published literature; combing the archives of the Great Smoky Mountains Historical Association for correspondence and park records relating to Cades Cove; interviewing members of the Cades Cove Preservation Association (CCPA), a group composed primarily of former residents of Cades Cove, and descendants of Cades Cove families along with other concerned individuals. This research was conducted over two short field periods, one in the summer of 2005 and one in the summer of 2006.

There are several potential places within the Cove that may represent resources but none of those are within the project site location. The primary theme that emerged from the research was associated with descendents of the settlers of Cades Cove expressing a need to have continuing open and available access to the lands inhabited by their ancestors. The proposed alternatives have no way to limit access to these resources and thus ethnographic resources are not effected by this proposal.

3.5 Aesthetic Resources and Visitor Experience

Cades Cove provides a representative sample of GRSM’s natural and cultural history, as well as its recreational opportunities. Over 25 percent of the park visitors travel to Cades Cove in the western portion of the park for its beautiful scenery and distinctive natural features, as well as historic sites and popular wildlife viewing areas along the Loop Road (HNTB 2004).

3.5.1 Existing Visitor Experience

Types of Visitor Experiences. Cades Cove offers a variety of visitor experiences. Some of these experiences can also be found elsewhere in GRSM and the surrounding area, however, Cades

Cove offers many experiences that are unique, either because they are not found elsewhere or because their availability and specific use is different.

A list of typical Cades Cove visitor experiences follows:

- cultural heritage education (settlers, settler life, etc.)
- natural heritage education (geology, plants, animals, etc.)
- immersion in cultural setting (sense of living in the past)
- immersion in natural setting (sights/sounds of nature)
- scenic views
- wildlife viewing/bird watching
- peace and quiet (relaxation, reflection)
- family recreation (fishing, picnics, biking, etc.)
- challenge/adventure (camping, hiking)
- exploring family heritage
- solitude
- social interaction
- exercise (hiking, biking, horseback riding)

Although there are other experiences and services offered at Cades Cove (such as descent use for family gatherings, weddings, and burials), the list above reflects the primary visitor experiences in the highly-visited areas.

The Cades Cove Campground Store concession facilities contribute primarily to the family recreation, challenge/adventure, and exercise visitor experiences by providing commercial visitor services that support these activities. Since the amphitheater is used by the NPS for educational programs, this facility contributes in an important way to the cultural and natural heritage education visitor experiences. During a 2005 workshop, Park staff judged the Campground Store to be of very high potential interest to the Park visitor and very low significance to the Park Purpose, Significance, and Themes. The amphitheater was judged to be of high potential interest to the Park visitor and very high significance to the Park Purpose, Significance, and Themes.

3.6 Public Use

The broad management goals of the park are to preserve the park's diverse resources while providing for public benefit and enjoyment. GRSM is the most heavily visited park of the national park system with nearly 10 million visitors annually (9,167,044 for 2004). Most visitors to the region travel in private automobiles. In addition to roads providing access to and within the park, numerous foot and horse trails provide access to the park's backcountry. The principal use of GRSM is recreational. Activities include; viewing wildlife and scenery from motor vehicles, hiking, biking, camping, horseback riding, kayaking, and fishing. The Cades Cove Campground Store facilities support and enhance visitor participation in hiking, biking, and camping activities by providing commercial visitor services sought by participants in these activities.

Park visitation rates vary seasonally, peaking between June and October. Visitation tends to be heavier during weekends and holidays, and backcountry use is high during college breaks. The park's natural features are the main attraction for visitors, with most activities restricted to driving through the park, or picnicking, rather than backcountry camping and hiking (USDI NPS 1982). The park's backcountry contains approximately 850 miles of trail with 102 campsites and 18 shelters. Camper nights numbered 276,468 at the 10 developed campgrounds (GRSM 2005). The park had 73,786 camper nights at backcountry campsites in 2004 (GRSM 2005). In 2004, GRSM had an annual budget of \$15.4 million (GRSM 2005).

The GRSM is noted for its outstanding vistas. These vistas include:

- Forest resources
- Mountain streams
- Wildlife
- Flowering plants
- Historical resources
- Scenic roads
- Scenic trails

3.7 Park Management and Operations

On March 8, 2008, the Southeast Regional Office of the National Park Service awarded a new concession contract to National and State Park Concessions Cades Cove, LLC to provide commercial visitor services to the public at Cades Cove Campground Store. The services provided under this contract include a convenience and campground store, snack bar, bicycle rental, vending, battery and device charging, and limited souvenir sales. The award of a concession contract to operate Cades Cove Campground Store was the result of a competitive process that is required by the National Park Service Concessions Management Improvement Act of 1998 (Public Law 105-391). This concession contract requires the concessioner to complete a Concession Facilities Improvement Program, following successful completion of the compliance requirements that are the subject of this Environmental Assessment.

Concessioners provide commercial visitor services that the National Park Service has determined to be necessary and appropriate for public use and enjoyment of a National Park Service area. The Park's 1982 General Management Plan (GMP) establishes long-range strategies for resource management, visitor use, and provides an integrated plan for the management of the Park. This plan creates a framework for all future programs, facilities, and management actions. The GMP addresses concession operations, in part, as follows:

CONCESSION SERVICES: Park visitors are well served by adjacent communities, which provide varied lodging accommodations and eating facilities as well as regional crafts, souvenirs, and entertainment. There is little or no need for most such services within the Park. Park concession services will be limited to fulfilling visitor needs that cannot be met or that would be inefficiently met by other sources. These include horse rental within the Park, a campers' store, and the LeConte Lodge operation. Products of living history demonstrations, films, interpretive literature, pertinent postcards, and thematic mementos, as permitted by

consideration of public health and National Park Service policies, will be available through the Great Smoky Mountains Natural History Association (USDI NPS 1982).

Great Smoky Mountains National Park has 312 onsite Park staff that provides the full scope of functions and activities to accomplish management objectives in law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, community services, utilities, and housing. Park Rangers respond to accidents that occur with the concessioner's assigned area and also accidents involving concession rental bicycles at any location in the Park. The Division of Resource Education offers educational programs in the amphitheater attached to the store building and presents other programs and demonstrations within the concessioner's assigned area. The Division of Resource Education also maintains an enclosed bulletin board with educational information for Park visitors that is installed on the south end of the store building. The Division of Facility Management assumes responsibility for public restroom custodial duties during the winter season when the store is closed.

4.0 ENVIRONMENTAL CONSEQUENCES

NEPA requires that a range of reasonable alternatives and the unavoidable environmental consequences associated with implementation of the alternatives be revealed prior to undertaking proposed federal actions. This chapter provides a summary of the analysis of the environmental consequences associated with implementation of the No Action Alternative and the proposed improvements to the Cades Cove Campground Store concession facilities.

The goals of NPS management for all resources are achieved through consideration of the potential resource impacts associated with each alternative and identification of an alternative that balances unavoidable impacts with the goals and objectives for the project. Resource impacts associated with each alternative differ greatly in their context, intensity and duration and this balanced approach considers the merit of all resources equally.

Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were evaluated: natural resources, cultural resources, surrounding community, public use and experience, and park management and operations. Other impacts categories were dismissed due to the nature of the project and the lack of direct relevance to the project yet are briefly discussed in Section 4.1.

4.1 Determination of Impairment to Park Resources

Management Policies 2006 (NPS 2006) require analysis of potential effects to determine whether or not actions would impair national park resources or values. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values. These laws give the National Park Service the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment

of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. An impact on any park resource or value may constitute impairment. However, an impact would be most likely to constitute impairment if it affected a resource or value whose conservation was:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

The intent of this project is to improve concession facilities at Cades Cove Campground Store to enable the concessioner to better provide necessary and appropriate visitor services to Park visitors. The project will provide facilities that improve the function and appearance of the concession facilities as well as improving access and services for Park visitors.

Impairment Determination: The results of the analysis presented in this EA lead the NPS to determine that the preferred alternative of the proposed improvements to concession facilities would not result in any impairment to Great Smoky Mountains National Park resource values. This action would improve the enjoyment of Park resource values as defined by the Organic Act.

4.2 Environmental Impact Definitions

Type of Impact: Impacts are categorized in two different and contrasting types: adverse and beneficial. Adverse impacts are considered contrary to the goals, objectives, management policies, and practices of the NPS and the public interest or welfare. These impacts are of a kind likely to be damaging, harmful, or unfavorable to one or more of the various impact topics. Beneficial impacts are believed to promote favorable conditions for the impact topics.

Levels of Intensity: Levels of intensity refers to severity of the impact, whether it is negligible or major, or somewhere in between. The gradient of this grading system can be general or very detailed, but ultimately the assumptions and subjectivity of the system affect its sensitivity. A simple and subjective rating system is used in this Draft EA, which includes a rating scale of “no effect, negligible, minor, moderate, and major effects.” The authors of this Draft EA based the rating system score on studies completed, data and information obtained from scientific and administrative sources, discussions with relevant individuals, public comments, common sense, and professional opinion. For example, consideration was given as to whether or not an action

affects any natural resource parameters. The definition of “no effect” would be the same for each of the general impact topics, natural resources, cultural resources etc. No effect would mean that no measurable effects could be recorded or surmised. Each of these gradient levels are further defined below.

- For natural resource impacts including wildlife and vegetation:
 - *Negligible:* Impacts would be barely detectable, measurable, or observable.
 - *Minor:* Adverse Impacts would be detectable, but not expected to have an overall effect on the natural community. Impacts generally affect less than one-half acre vegetation or would not be expected to influence the population of any wildlife species, or may influence a small number of individuals of a species. Beneficial impacts would enhance the ecology for a small number of individuals.
 - *Moderate:* Impacts would be clearly detectable, but could have short-term appreciable effects on the local ecology. Impacts may affect up to one-acre of vegetation, but would not threaten the continued existence of any natural community. Impacts would have short-term effects. Beneficial impacts would enhance the population of any species at the park.
 - *Major:* Long-term or permanent, highly noticeable effects on the population of a species, natural community, community ecology, or natural processes. Impacts may affect over one-acre of vegetation or may affect the continued existence of any natural community or species. Beneficial impacts would enhance the population of more than one species over the long-term.

- For cultural resource impacts including cultural heritage:
 - *Negligible:* Impact to the resource is barely perceptible and not measurable and is confined to a very small local area.
 - *Minor:* Adverse impact – Impact(s) would not affect a character-defining pattern, behaviors of individuals, and features of the local heritage. Beneficial impacts would include maintaining and making slight improvements, having a positive influence on the use and behavior patterns of visitors on a small-scale, local level.
 - *Moderate:* Adverse impacts would alter a character-defining pattern or features of the local heritage, but would not diminish the integrity of the local heritage. Beneficial impacts would include improving the character and features of the local heritage.
 - *Major:* Adverse impacts would alter a character-defining pattern or features of the local heritage and diminishing the integrity of the local heritage. Beneficial impacts would include improving the character-defining patterns and features of the local heritage by including an increase in the number of people involved with heritage defining patterns.

- For aesthetic resources and visitor experience:
 - *Negligible:* Impact to aesthetic resources and visitor experience would be barely perceptible and, hence visitors would not be aware of any changes to aesthetic resources. There would be no noticeable change in the visitor experience or any indicators of changes in visitor satisfaction.
 - *Minor:* For adverse impacts, visitors would be aware of effects, but this would not appreciably limit critical characteristics of the major of visitors. For beneficial impacts, public satisfaction would be enhanced for a small number of visitors.

- Moderate:* Adverse impacts would result in a change of a few critical characteristics of the desired public experience and/or the number of visitor complaints would increase. Public satisfaction would begin to either decline as a result of the effect. Beneficial impacts would improve a few critical characteristics of the public experience and/or the number of positive visitor comments would increase.
- *Major:* Multiple critical characteristics of the desired public experience would change and/or the number of visitor complaints would greatly increase. The public would be aware of the effects associated with implementing the alternative and public satisfaction would markedly decline or increase. Beneficial impacts would improve multiple characteristics of the public experience and/or the number of positive visitor comments would increase, substantially.
- For public use and recreation - public use and experience impacts:
 - *Negligible:* Impacts would be barely detectable, hence visitors would not be aware of any effects or changes to the concession operation. There would be no noticeable change in public use and experience or in any indicators of visitor satisfaction or behavior.
 - *Minor:* For adverse impacts, visitors would be aware of effects, but this would not appreciably limit critical characteristics of a majority of the visitors. For beneficial impacts, public satisfaction would be enhanced for a small number of visitors.
 - *Moderate:* Adverse impacts would result in a change of a few critical characteristics of the desired public experience and/or the number of participants engaging in an activity would decrease. Public satisfaction would begin to decline as a result of the effect. Beneficial impacts would improve a few critical characteristics of the public experience and/or the number of visitors would increase.
 - *Major:* Multiple critical characteristics of the desired public experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. The public would be aware of the effects associated with implementing the alternative and public satisfaction would markedly decline or increase. Beneficial impacts would improve multiple characteristics of the public experience and/or the number of visitors would increase, substantially.
 - For Park Management and Operations – consistency with park and NPS legislative mandates, goals, plans, policies, guidelines, and mandates:
 - *Negligible:* Impacts would be barely detectable, any alterations or conflicts with legislative mandates, goals, policies, etc. could be alleviated through a brief administrative process. Beneficial impacts would include the termination of one policy waiver.
 - *Minor:* A waiver or other administrative process for two management policies would be required or the NPS would deviate from two policies or guidelines. Beneficial impacts would include the termination of two policy waivers.
 - *Moderate:* A waiver from more than two management policies would be required or the NPS would deviate from one or two policies and guidelines. The NPS would deviate from any legislative mandate. Beneficial impacts would include the elimination of two or more policy waivers or the elimination of one deviation from a legislative mandate.

- *Major:* Adverse impacts include deviation from NPS policies and/or guidelines would require extensive administrative change. Beneficial impacts would eliminate all deviations from policies and guidelines.

Duration: Duration describes how long an impact would be expected to last. In this EA, impacts are described as either being short-term or long-term. Short-term is an impact that would last no more than two years. Long-term would be an impact that would last for more than two years.

Context: Context is the setting within which an impact is analyzed, such as the affected region or locality and the affected interests. In this EA, the intensity of impacts is evaluated within a local context, primarily considering effects park area itself. The intensity of effects on cumulative impacts is evaluated in a regional context, and considers effects further in time and effects from other projects.

Direct and Indirect Impacts: Direct impacts include effects on the resource actually caused by the proposed action, generally at the immediate site of the action and at the time of the action. Direct impacts can extend into the future and are often permanent, but can be temporary. A direct effect is an effect that is caused by an action and occurs at the same time and place. An example of a direct impact would be the filling of a portion of a stream, which immediately causes habitat loss at that location.

Indirect impacts generally occur as a result of a “side-effect” of a direct impact, but occur later in time or further in distance than the action. For example, an indirect impact could result from silt flowing downstream, creating turbid conditions, and adversely affecting water quality.

Cumulative Impacts: The CEQ regulations, which implement the NEPA (42 USC 4321 *et seq.*), 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 non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and focus on a regional area well beyond the park boundary.

Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the park and the vicinity. These impacts are assessed on a regional basis. These projects include development within the region, long-term population trends, cultural and social changes.

As part of concession operations in Cades Cove several additional improvements have been proposed or implemented incrementally. All elements of the Cades Cove concession improvements that have occurred to date do not have any notable cumulative impacts to the region. Given that concession contracts are negotiated on a rotating basis, it is possible that future actions may alter that view but at this time, reasonably foreseeable future actions do not appear to contribute to any notable cumulative impacts.

4.3 Cultural Resource Analysis

Impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. These impact analyses also are intended to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (*36 Code of Federal Regulations* Part 800, Protection of Historic Properties), impacts on cultural resources were identified and evaluated by:

- Determining the area of potential effects;
- Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;
- Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and
- Considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must also be made for affected cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (*36 Code of Federal Regulations* Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

The Council on Environmental Quality (1978) regulations and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001a) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact because of mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse. A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 of the National Historic Preservation Act and is an assessment of the effect of implementing the alternatives on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations. It should also be noted that not all cultural resources of concern in the park are listed resources but are still evaluated as part of this assessment.

4.4 Alternative A (No Action Alternative)

4.4.1 Natural Resources

Impacts: In the short-term, the No Action alternative would have no apparent effect on the condition of Park vegetation, fish, wildlife or soils and in particular there would be no affect on the natural resources associated with the proposed building site. Over the long-term, this alternative would have a minor adverse impact on vegetation and soils due to continued trampling of vegetation and compaction of soils outside of paved walkways. There are no federally listed threatened or endangered species that would be impacted from this alternative. The No Action alternative would not have any apparent effect on the condition of Park water resources.

Cumulative Impacts: There would be no cumulative impacts under this alternative. Improvements to the adjacent horse concession may result in a slight increase in use in the camp store, which in turn could result in some additional vegetation impacts to the area.

Conclusion: Alternative A would result in minor adverse long-term impact on natural resources.

Impairment: Alternative A would result in no impairment to Park natural resources.

4.4.2 Cultural Resources

Impacts:

Archeological Resources. As the no action alternative, Alternative A would involve no ground disturbance. There would be no adverse or beneficial impact upon archeological resources.

Historic Structures. As the no action alternative, Alternative A would involve no changes to either the store or bicycle rental building. As a result, there would be no adverse or beneficial impact to historic structures.

Cultural Landscapes. As the no action alternative, Alternative A would involve no change to the landscape. As a result, there would be no adverse or beneficial impact to cultural landscape resources.

Ethnographic Resources. Ethnographic survey work conducted for the Cades Cove area in 2005 and 2006 reveal that a high priority for descendents associated with Cades Cove is continued open access to cultural sites found in the Cades Cove area. As the no action alternative, Alternative A would not alter access to these sites. As a result, there would be no adverse or beneficial impact to Ethnographic Resources for the descendent groups surveyed.

Cumulative Impacts: There would be no cumulative impacts under this alternative.

Conclusion: Alternative A would result in a no adverse or beneficial long or short-term impacts on cultural resources.

Impairment: Alternative A would result in no impairment to Park cultural resources.

4.4.3 Aesthetics and Visitor Experience

Impacts: Since there would be no construction activities associated with this alternative, alternative A would result in a negligible short-term beneficial impact on aesthetics and visitor experience.

Under alternative A, no facility improvements will be made to improve the aesthetics of the Cades Cove Campground Store area, which would result in a moderate long-term adverse impact. Areas of trampled vegetation and disturbed soils outside of paved sidewalks will continue to detract from the appearance of this area. The sidewalks that provide access to the store, restrooms, amphitheater at the rear of the store, and the bicycle rental building will continue to be inadequate to handle pedestrian and bicycle traffic, forcing visitors to use the areas outside of the paved sidewalks. Bicycles stored under tarpaulins will continue to lend a temporary, unappealing appearance to the facilities. The lack of secure, enclosed facilities for bicycles is also likely to adversely impact the appearance and condition of bicycles rented by the public. No landscaping with native plants will occur and no benches will be installed for visitor convenience and enjoyment. No outside service window for the snack bar will be constructed to reduce crowding in the campground store and provide more efficient service to the public. As a result of the items listed above that would occur under alternative A, this alternative would result in moderate direct long-term adverse impacts to aesthetics and visitor experience.

Cumulative Impacts: The continued heavy visitor use of inadequate facilities under this alternative added to overuse of other facilities in Cades Cove would have a minor adverse cumulative impact on the visitor experience. The improvements to the adjacent horse concession may result in a slight increase in use in the camp store, which in turn could result in some additional pressure on facilities.

Conclusion: Alternative A would result in a negligible short-term beneficial impact and a moderate long-term adverse impact on aesthetics and visitor experience.

Impairment: Alternative A would result in no impairment to Park resources.

4.4.4 Public Use and Access

Impacts: Alternative A would have negligible short-term beneficial impacts since there would be no disruption of public use of this area during a construction period.

There would be minor long-term adverse impacts on public use and access since the proposed improvements to concession facilities used by the public would not be constructed. Sidewalks would continue to be inadequate and this would adversely impact safe access to the concession facilities, restrooms and the amphitheater. No permanent, secure, enclosed storage area for bicycles would be constructed and the unsatisfactory appearance and function of the bicycle rental facility will adversely impact public use of the bicycle rental operation and store.

Cumulative Impacts: The continuation of inadequate public access to these facilities under this alternative would have a minor cumulative adverse impact on the overall problem of inadequate public access in the Cades Cove area.

Conclusion: Alternative A would result in negligible short-term beneficial impacts and minor long-term adverse impacts on public use.

4.4.5 Park Management and Operations

Impacts: Under alternative A, the facility improvements required under the concession contract between the National Park Service and concessioner would not occur, resulting in minor short and long-term adverse impacts on park management and operations. The National Park Service would have to amend the concession contract that was awarded in March 2008 to eliminate the Concession Facilities Improvement Program. The National Park Service would incur unbudgeted administrative costs to develop and issue a contract amendment. This additional work and cost would adversely impact the ability of the National Park Service to carry out other essential concession management activities. The continued lack of adequate facilities would hamper the ability of the concessioner to provide necessary and appropriate commercial visitor services to the public. The higher risk of visitor accidents due to inadequate sidewalks and uneven footing under this alternative may adversely affect the Park Rangers who respond to visitor accidents. The Park Ranger staff would also be adversely affected by any increase in rental bicycle accidents or breakdowns due to the continued storage of bicycles outdoors. The continued lack of adequate sidewalks for visitors to access educational programs offered in the amphitheater would adversely impact the Division of Resource Education.

Cumulative Impacts: Alternative A would result in minor adverse cumulative impacts since the work and cost to issue a contract amendment will adversely impact the ability of the NPS to carry out other essential concession management activities.

Conclusion: Alternative A would result in minor short-term adverse impacts on Park management and operations.

4.5 ALTERNATIVE B (Build Alternative) (*Environmentally Preferred and Preferred Alternative*)

4.5.1 Natural Resources

Impacts: Construction-related land disturbance would expose soils to possible erosion, but due to the small area of disturbance, any impacts would be negligible and short-term. Best Management Practices will be employed during construction to avoid soil erosion or potential for runoff. Approximately 4,530 square feet of land would be disturbed during the construction period with approximately 3,925 square feet of permanent land disturbance resulting from the completed construction of improvements. The majority of this area is already bare ground or paved and the remaining area is a mowed lawn area. This alternative will prevent continued trampling of vegetation and compaction of soil by providing adequate paved sidewalks to handle this traffic. Landscaping with native plants that will replace areas that are now bare ground or mowed lawn will provide a more natural setting and reduce the occurrence of exotic plant

species. No noticeable impacts on wildlife species would occur because construction would occur in an area that has already been impacted by visitor use and does not serve as wildlife habitat.

The potential for the camp store to house more firewood would potentially reduce import of firewood from quarantined sections of the country by providing a ready and accessible supply of local wood. It is difficult to estimate how this may protect park resources as it only takes one illegal source to infest local ecosystems with forest pests transported in firewood from quarantined sources but certainly a local source may reduce the likelihood of transport to the area by campers.

No federally listed threatened or endangered species or federally designated critical habitat have been identified in the project area. The project area is primarily bare ground and mowed lawn area that receives regular and heavy pedestrian traffic and does not include any likely habitat for threatened or endangered species. The one tree to be removed and that may be potential summer habitat for the endangered Indiana bat will be removed during specified dates (late November or early December-March) to mitigate any potential impacts to the Indiana bat. The proposed action would not affect a listed species or designated critical habitat.

The project area is approximately 392 feet from Stillhouse Branch and 1,940 feet from Abrams Creek, the nearest streams. Any ground disturbance will be mitigated for erosion using best management practices. Native plants will be used in revegetating the area and the disturbed area will be monitored for exotics and treated as appropriate.

Cumulative Impacts: There would be no cumulative impacts under this alternative. There may be a net beneficial impact from this action as the potential for increased access to the camp store from the adjacent horse concession operation on vegetation (trampling) would be mitigated by these actions.

Conclusion: Alternative B would result in negligible short-term adverse impacts due to soil disturbance during construction. There would be minor long-term benefits through the reduction of vegetation trampling and soil compaction and the introduction of landscaping with native plant species. Alternative B would have some potential beneficial effects in protecting localized resources from forest pests as the increase in storage would potentially allow for greater access to firewood locally and may diminish import of firewood from quarantined areas outside the park.

Impairment: Alternative B would result in no impairment to Park resources.

4.5.2 Cultural Resources

Impacts:

Archeological Resources.

Archeological investigations of the site were undertaken in 2008, and revealed no intact archeological artifacts and/or archeological features. As a result there would be no adverse or beneficial impact to archeological resources under alternative B.

Historic Structures. The majority of proposed facility improvements involve the bicycle rental building, which is less than 50 years old and is not considered by the Park to be eligible for listing on the National Register of Historic Places. The only change proposed for the actual camp store/amphitheater building (built 1958) is the potential addition of a service window. In addition, while widening of the sidewalks serving the camp store and adding pavement around the bicycle rental building would be a minor alteration of the setting of these buildings, this action would enhance the structure's continued functionality.

Overall as a result of the proposed action the negligible adverse impact of adding pavement and a service window would be countered by the benefit of continued use and maintenance, and there would be no adverse or beneficial impacts to historic structures under alternative B.

Cultural Landscapes. The draft 2004 Cultural Landscape Report (CLR) classifies the facilities and features in the project area as potentially contributing elements of a Mission 66 district. However, a draft multiple property documentation form for National Park Service Mission 66 Resources (2006) provided additional guidance and based on that guidance Mission 66 resources in Cades Cove would not be considered eligible for the NRHP as a district.

The CLR also provided the following specific recommendations with regard to an addition to the camp store building:

- *Locate the addition on the east, or least visible, side of the camp store*
- *Design and construct the addition in such a way as to allow its later removal without damaging the original structure.*
- *Rehabilitate area sidewalks by replacing damaged and inadequate walks with wider ones.*
- *Provide a shaded, hard-surfaced area with seating and limited picnic tables for visitors.*
- *Follow the guidelines in this section and the overall CLR treatment guidelines in preserving the Mission 66 character of the area and in addressing any future proposed alterations to this area.*

The CLR made specific recommendations in order to preserve the cultural resource values of the Cades Cove District. Placement of the proposed bicycle rental building on the least visible side of the camp store, replacement of inadequate sidewalks, and placement of seating (park benches) in a hard-surfaced area is consistent with the CLR recommendations and would not constitute an adverse affect to the District. Based on these considerations, Alternative B is considered to have no adverse or beneficial impacts to cultural landscape resources.

Ethnographic Resources. Ethnographic survey work conducted for the Cades Cove area in 2005 and 2006 reveal that a high priority for descendents associated with Cades Cove is continued open access to cultural sites found in the Cades Cove area. The camp store area is not part of the area identified by descendent groups to preserve as open space and is not in itself a cultural site. Open access to cultural sites would not be altered by Alternative B. As a result, there would be no adverse or beneficial impact to Ethnographic Resources under this alternative.

Cumulative Impacts: There would be no cumulative impacts under this alternative.

Conclusion: Alternative B would have no adverse or beneficial impacts on cultural resources.

Impairment: Alternative B would result in no impairment to Park resources.

Section 106 Statement on the Preferred Alternative: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the improvements to the concession operation in Alternative B would not have an adverse effect on any historic property, i.e., any area or object included in, or eligible for inclusion in, the National Register of Historic Places. As required by Section 106 of the NHPA, the National Park Service has initiated informal consultation with the Tennessee State Historic Preservation Officer regarding this project. The National Park Service will also consult with other interested parties, as appropriate. Comments on the project from the State Historic Preservation Officer and other interested parties will be addressed in the final compliance documents. Should the need arise, additional mitigation measures will be developed in consultation with the State Historic Preservation Officer.

4.5.3 Aesthetics and visitor experience

Impacts: During the construction period, alternative B would result in negligible short-term adverse impacts due to construction activities in this area that would detract from the aesthetics of the area and the visitor experience.

The proposed facility improvements would result in moderate long-term beneficial impacts to aesthetics and visitor experience. The construction of new, more adequate sidewalks would reduce trampling of vegetation and disturbed soils in this area. The construction of permanent, secure, enclosed facilities for the storage of bicycles will improve the appearance of this area and enhance the bicycle rental experience for the visitor. The proposed landscaping with native plant species and installation of benches would improve the aesthetics of the area and the experience for the visitor.

Cumulative Impacts: There would be beneficial cumulative impacts under this alternative as the long-term loss of vegetation would be reduced or eliminated allowing for native vegetation to colonize. The overall appearance will improve.

Conclusion: Alternative B would result in negligible short-term adverse impacts and moderate long-term beneficial impacts on aesthetics and visitor experience.

Impairment: Alternative B would result in no impairment to Park resources.

4.5.4 Public Use and Access

Impacts: Alternative B would have negligible short-term adverse impacts due to minor disruption of public use of this area during the construction period.

There would be minor long-term beneficial impacts on public use and access as a result of the proposed improvements to concession facilities used by the public. The construction of new sidewalks would facilitate safe access to the concession facilities, restrooms and the amphitheater. The permanent, secure, enclosed storage area for bicycles will provide a more functional and attractive facility for bicycle rentals and prevent deterioration to bicycles from storage under tarpaulins. The facilities to be constructed or renovated would meet ADA accessibility requirements.

Cumulative Impacts: There would be no cumulative impacts under this alternative.

Conclusion: Alternative B would result in negligible short-term adverse impacts and minor long-term beneficial impacts on public use.

4.5.5 Park Management and Operations

Impacts: Under alternative B, the facility improvements required by the concession contract would be completed as required by the concession contract. There will be no adverse impact on the ability of the National Park Service to carry out other essential concession management activities. The concessioner will be better able to provide the necessary and appropriate visitor services required by the concession contract. The project would not alter interpretive programs or impact law enforcement operations.

Cumulative Impacts: Alternative B would result in no cumulative impacts.

Conclusion: Alternative B will result in minor short-term beneficial impacts.

4.6 Environmentally Preferred Alternative

- Alternative B has been identified as the Environmentally Preferred Alternative since it is the alternative that will promote the environmental policy expressed in the National Environmental Policy Act (NEPA) (Sec. 101 (b)). The specific objectives of NEPA that will be met by Alternative B include the following:
 - *Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.*
 - Alternative B will provide minor long-term benefits to natural resources and will not have any long-term adverse impacts on the environment.
 - *Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.*
 - Alternative B will result in measurable long-term benefits to Park visitors by providing safe and enhanced access to visitor facilities, providing better opportunities for healthful recreation, and improving the esthetics of the project area and facilities.
 - *Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.*
 - Alternative B will improve the commercial visitor services that are available to Park visitors and that help support diverse beneficial recreational and educational

enjoyment of the Park. This alternative will eliminate existing safety problems and provide safer use of and access to facilities.

- *Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.*
 - Alternative B will preserve historic, cultural, and natural aspects of our heritage. It will improve access to the amphitheater that is used to provide educational programs to the Park visitor regarding the use, appreciation, and enjoyment of these resources. It will improve opportunities to explore these resources through bicycling, hiking, and camping. The improved quality of commercial services and access to these facilities will support use of the Park by a diverse visitor population and will provide more varied choices for enjoying the Park.
- *Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and*
 - Alternative B will enhance the quality of visitor services and access to these services, which will increase opportunities for visitors to enjoy the amenities offered by the Park and this concession facility.
- *Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*
 - Alternative B will not have any adverse impact on renewable resources or depletable resources. Alternative B will enhance bike concession efficiency, which indirectly supports use of non-motorized vehicles in the Cove resulting in some reduction of depletable fuel resources.

4.7 Summary of Impacts / Alternatives

The following table (Table 1) summarizes and compares the likely results of implementing the No Action Alternative and the Preferred Alternative as they relate to the environment.

Table 1. Summary of Environmental Consequences

Impact Topic	Alternative A - No Action Alternative	Alternative B - Build Action
Natural Resources (Botanical, vegetation, wetlands, open fields, Vascular plants, Bryophytes, Lichens.)	<u>Short-term:</u> No effect. <u>Long-term:</u> Minor adverse <u>Cumulative:</u> No effect.	<u>Short-term:</u> No effect <u>Long-term:</u> Minor beneficial impact <u>Cumulative:</u> No effect
Soils	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Cultural Landscape	<u>Short-term:</u> Negligible beneficial impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Aesthetics and Visitor Experience	<u>Short-term:</u> Negligible beneficial impact <u>Long-term:</u> Moderate adverse impact <u>Cumulative:</u> Minor adverse impact	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Moderate beneficial impact <u>Cumulative:</u> No effect
Public Use and Access	<u>Short-term:</u> Negligible beneficial impact <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> Minor adverse impact	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Minor beneficial impact <u>Cumulative:</u> No effect
Park Management and Operations	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> Minor adverse impact	<u>Short-term:</u> Minor beneficial impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect

5.0 CONSULTATION AND COORDINATION

To date the NPS has consulted or coordinated with the following groups and individuals on this assessment:

Advisory Council on Historic Preservation
Tribal Historic Preservation Office
Tennessee Historical Commissions

Public notice regarding the availability of this Environmental Assessment will be distributed to local news media and other interested parties. A public comment period is scheduled to run from to July 10, 2009 to August 10, 2009. Written comments can be submitted to:

Superintendent
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, Tennessee 37738

Public comments will be reviewed and responded to on an individual basis. Public comment will be summarized in the decision document. This environmental assessment will be on public review for 30 days. Comments may also be submitted on the NPS' Planning web site at <http://parkplanning.nps.gov/grsm>.

6.0 RELATIONSHIP TO OTHER PLANNING EFFORTS

The Park's 1982 General Management Plan (GMP) establishes long-range strategies for resource management, visitor use, and provides an integrated plan for the management of the Park. This plan creates a framework for all future programs, facilities, and management actions. The proposed action supports the General Management Plan summary statement regarding concession services, which is as follows:

CONCESSION SERVICES: Park visitors are well served by adjacent communities, which provide varied lodging accommodations and eating facilities as well as regional crafts, souvenirs, and entertainment. There is little or no need for most such services within the Park. Park concession services will be limited to fulfilling visitor needs that cannot be met or that would be inefficiently met by other sources. These include horse rental within the Park, a campers' store, and the LeConte Lodge operation. Products of living history demonstrations, films, interpretive literature, pertinent postcards, and thematic mementos, as permitted by consideration of public health and National Park Service policies, will be available through the Great Smoky Mountains Natural History Association (page 33).

The Park initiated a process to develop a Cades Cove Development Concept and Transportation Management Plan (also known as the Cades Cove Opportunities Plan) in January 2002 in cooperation with the Knoxville Regional Transportation Planning Organization. This project was undertaken as a means to develop a long-range management vision to protect the Cove's natural and cultural resources and ensure that visitors will continue to have a quality experience. This long-range vision was to provide a program of management strategies to improve visitor experience, preserve and restore resources, provide adequate facilities and infrastructure capacity, and increase the level of information/education that visitors receive. A number of existing conditions reports identified a variety of issues that might be addressed by the Opportunities Plan. This included the identification of the following issues related to the Cades Cove Campground Store:

1. The amphitheater is too close to the roadway
2. The restrooms are too small
3. The retail and counter space at the campstore is undersized
4. The bicycle storage would be improved with all-weather protection
5. The campstore parking lot does not have adequate spaces resulting in parking in adjacent areas not designated for parking.

This planning process has entered Phase II which will involve the refinement of the alternatives identified in Phase I. Given the extended timeframe until possible implementation of Opportunities Plan facility improvements, the NPS proposes to move forward with modest facility improvements at Cades Cove Campground Store to address the critical issues at this location.

7.0 COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS

National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) requires consideration of the environmental effects of proposed federal actions. NEPA also ensures that environmental information is available to public officials and members of the public before decisions are made and before actions are taken. This Environmental Assessment provides a description of a No Action alternative and a Build Alternative, and summarizes potential environmental consequences of the alternatives. A public review period will be held.

Endangered Species Act of 1973

Section 7 of the Endangered Species Act directs all federal agencies to further the purposes of the act. Federal agencies are required to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. The NPS did not initiate consultation with the U.S. Fish and Wildlife Service regarding the proposed project, as no listed species are potentially impacted by this project.

Clean Water Act

The proposed actions will have no effects on water quality. No construction activities or activities that would result in release of sediment or contaminants to the environment are planned under either alternative proposed and thus would not need to comply with the requirements of sections 401 and 404 of the Clean Water Act and other applicable federal, state and local regulations.

Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands)

Executive Orders 11988 and 11990 direct federal agencies to enhance floodplain and wetlands value, to avoid development in flood plains and wetlands whenever possible, and to minimize adverse impacts if development cannot be avoided. The preferred alternative, construction of improved concession facilities, does not fall within the regulatory Floodplain (100 year).

Section 106 of the National Historic Preservation Act of 1966, as Amended

Section 106 of the National Historic Preservation Act requires that an assessment be conducted of any project, activity, or program that could change the character or use of properties listed in or eligible for listing in the National Register of Historic Places. The NPS has coordinated with the State Historic Preservation Office in Tennessee to ensure concurrence that there are no potential impacts on the cultural landscape from the proposed project.

Archeological Resources Protection Act of 1979

The Archeological Resources Protection Act requires that archeological resources be identified and that proper permits be obtained prior to excavating any resources. The NPS has conducted the necessary survey work to ensure that no archeological resources will be impacted by this project. The NPS has initiated consultation with the State Historic Preservation Office in Tennessee regarding the proposed project.

Comprehensive Environmental Response, Compensation and Liability Act

The Comprehensive Environmental Response, Compensation and Liability Act established regulations regarding the assessment, remediation, and liability for remediation of hazardous substances that have caused contamination. No areas within the park have been designated as a National Priority List site, nor found to contain any hazardous materials.

Clean Air Act

The Clean Air Act establishes regulations regarding disclosure, control, and abatement of air pollutants. The alteration in use of the areas associated with the project is not expected to have a significant impact on regional air quality. Therefore, the alternatives are compatible with the requirements of the Clean Air Act.

Toxic Substances Control Act

The Toxic Substances Control Act establishes regulations regarding proper management and disposal of polychlorinated biphenyls (PCBs) and other hazardous chemicals. The proposed project will not involve the use of any hazardous materials.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act establishes regulations regarding the generation, transportation, storage, treatment, and disposal of hazardous waste. No hazardous materials are to be used as part of the proposed project.

Americans with Disabilities Act of 1990

The Americans with Disabilities Act (ADA) establishes federal guidelines that define requirements for disabled access to Parking facilities, pathways, and buildings. The ADA is applicable because development is planned in association with design and building of the proposed facility improvements. Design will fully address accessibility and provide facilities that are ADA compliant.

8.0 LIST OF PREPARERS

The following organizations and people contributed to writing this assessment:

Dale A. Ditmanson, Superintendent
Kevin Fitzgerald, Deputy Superintendent
Nancy Finley, Chief, Resource Management and Science
Joel Ossoff, Concessions Management Specialist
Dianne Flaugh, Cultural Resources Specialist

Eric Kreusch, Archeologist and Cultural Resource Coordinator
Jami Hammond, NEPA Coordinator, SER

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Wetzel, Mark J., and Peggy Morgan

- 2006 "The Aquatic Oligochaeta (Annelida) of the Great Smoky Mountains National Park: North Carolina and Tennessee, USA." Illinois Natural History Survey. Available on the internet at <http://www.inhs.uiuc.edu/~mjwetzel/AOGSMNP.home.html>. Page updated on 17 April 2006.

Appendix 1: Supporting Documentation on Consultations/Coordination



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, Tennessee 37738



H 30

January 16, 2009

Mr. Reid Nelson
Director, Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, NW, # 803
Washington, DC 20004

Dear Mr. Nelson:

Great Smoky Mountains National Park (Park) has begun an Environmental Assessment process to analyze alternatives to provide for improved visitor services at the Cades Cove Campstore and Bicycle Concession Facilities in the Cades Cove area of Great Smoky Mountains National Park (Park) located in Blount County. This project has been assigned the Planning, Environment and Public Comment (PEPC) number of 23596 for tracking purposes.

Under the terms of Concession Contract number CC-GRSM001-08 the current campstore concession operator is required to develop and complete a Concession Facilities Improvement Program to address several facility deficiencies. Initial concepts being considered included expansion of the existing bicycle rental building, approximately doubling the size of the existing 1,540 square foot structure to provide storage space for bicycles and retail stock; minor modifications of the existing campstore to better accommodate the snack bar operation, and renovation of the courtyard and sidewalks in the area of the campstore and bicycle concession operation to improve pedestrian flow and accessibility.

By this letter, we would like to initiate formal consultation with your office regarding Section 106 of the National Historic Preservation Act and 36 CFR 800.3. As allowable under 36 CFR 800.8, the Park proposes to coordinate Section 106 consultation with the steps taken to meet the requirements of the National Environmental Policy Act (NEPA).

The project site is located within the boundaries of the Cades Cove Historic District which is listed on the National Register of Historic Places (NRHP) and within the developed area defined by the Park's General Management Plan. A location map and map showing proposed boundaries for an area of potential effect is enclosed. Generally,

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the area is bounded by the Cades Cove access road on the west, the Cades Cove Campground on the south and west, and the Cades Cove picnic area on the north.

We look forward to working with you and your staff. Should you have any questions regarding the planning process, feel free to contact Joel Ossoff, Concession Specialist and Project Manager, at (828) 497-1932, or Dianne Flaugh, Cultural Resource Program Manager, at (865) 436-1239. Your continued interest in the programs of the National Park Service is appreciated.

Sincerely,

1/20/09
DATE

SIGNED: *D. D. Ditmanson*

Dale A. Ditmanson
Superintendent

Enclosures

bc:

GenFile(RM&S)

Blue/green

Flaugh, RM&S

DFlaugh:dg(Initial Cades Cove Concession_20090107 w JDO comments)



Preserving America's Heritage

February 5, 2009

Mr. Dale A. Ditmanson
Superintendent
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, TN 37738

REF: ***Preparation of Environmental Assessment (EA) to Comply with Section 106 Proposed Improvements to Visitor Services at the Cades Cove Campstore and Bicycle Concession Facilities, Great Smoky Mountains National Park, Tennessee***

Dear Mr. Ditmanson:

The Advisory Council on Historic Preservation (ACHP) recently received Great Smoky Mountains National Park's (Park) notification for the referenced undertaking pursuant to 36 CFR § 800.8(c) of the ACHP's regulations, "Protection of Historic Properties" (36 CFR Part 800). We appreciate receiving your notification, which establishes that the Park will use the process and documentation required for the preparation of an EA to comply with Section 106 of the National Historic Preservation Act in lieu of the procedures set forth in 36 CFR §§ 800.3 through 800.6.

In addition to notification to the ACHP, the Park must also notify the Tennessee State Historic Preservation Officer (SHPO) and meet the standards in 36 CFR § 800.8(c)(1)(i) through (v) for the following:

- identifying consulting parties;
- involving the public;
- identifying historic properties and assessing the undertaking's effects on historic properties; and
- consulting regarding the effects of the undertaking on historic properties with the SHPO and Indian tribes that might attach religious and cultural significance to affected historic properties, with other parties, and the ACHP, where appropriate, during National Environmental Policy Act (NEPA) scoping, environmental analysis, and the preparation of NEPA documents.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

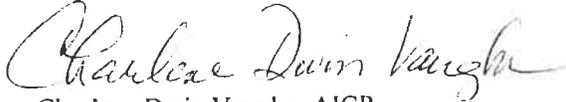
1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

The regulations do not specifically require that an agency submit an EA to the ACHP. However, keep in mind that in the case of an objection from the ACHP or another consulting party, our regulations (at 36 CFR § 800.8(c)(2)(ii) and (c)(3)) provide for ACHP review of the EA to (1) determine whether preparation of the EA has met the standards set forth in 36 CFR § 800.8(c)(1) and/or (2) evaluate whether the substantive resolution of the effects on historic properties proposed in the EA is adequate.

Should the Park determine, in consultation with the SHPO, tribes, and other consulting parties, that its proposed undertaking may have an adverse effect on properties listed or eligible for listing on the National Register of Historic Places and/or that it will develop a Programmatic Agreement for this undertaking pursuant to 36 CFR § 800.14(b), we request that you notify us of this decision and provide adequate documentation for our review. We would also appreciate you providing in your cover letter the schedule for Section 106 consultation and a date by which you require a response by the ACHP. The ACHP's decision to review the EA and participate in the development of a Memorandum of Agreement or Programmatic Agreement will be based on the applicability of the criteria in Appendix A of the ACHP's regulations.

Thank you for your notification pursuant to 36 CFR § 800.8(c). If you have any questions, or if you would like to discuss our comments, please contact Kelly Fanizzo at 202-606-8583 or via e-mail at kfanizzo@achp.gov.

Sincerely,



Charlene Dwin Vaughn, AICP
Acting Assistant Director
Federal Property Management Section
Office of Federal Agency Programs



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

January 30, 2009

Mr. Dale A. Ditmanson
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, Tennessee, 37738

RE: NPS, CADES COVE/CAMPSTORE/BICYCLE CON., UNINCORPORATED, BLOUNT COUNTY

Dear Mr. Ditmanson:

In response to your request, received on Monday, January 26, 2009, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering available information, we find that the project as currently proposed MAY AFFECT PROPERTIES THAT ARE ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. You should continue consultation with our office, designated consulting parties and invite them to participate in consultation, and provide us with appropriate survey documentation for review and comment. Please direct questions and comments to Joe Garrison (615) 532-1550-103. We appreciate your cooperation.

Sincerely,

E. Patrick McIntyre
Executive Director and
State Historic Preservation Officer

EPM/jyg