National Park Service
U.S. Department of Interior

Cuyahoga Valley National Park
Brecksville, Ohio

FINAL Trail Management Plan and Environmental Impact Statement

Cuyahoga Valley National Park

2012

Front Cover Photo: Tom Jones

About this Document

In 1969, the United States Congress passed the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.). As a result, when any agency of the Federal Government proposes a "major Federal action significantly affecting the quality of the human environment," a detailed statement on the environmental impact of the proposed action must be prepared. NEPA requires that the process include; 1) consideration of a range of alternatives, 2) an evaluation of potential environmental consequences of an action before deciding to proceed and 3) provide opportunities for public involvement. NEPA requires the preparation of an Environmental Impact Statement (EIS) when a federal agency proposes an action that may have significant impacts on the human environment. The EIS process serves as a primary tool to help NPS decision-makers assess the types and levels of impacts expected from a proposed action to avoid impairment. An EIS is the highest level of compliance provided under NEPA. Because of the scope and park-wide nature of the Cuyahoga Valley National Park *Trail Management Plan*, the Park is required to conduct an EIS for the Plan.

The Final Environmental Impact Statement is organized in accordance with the National Environmental Policy Act and NPS Director's Order #12. Below is an outline of the document.

Purpose and Need for Action and Goals and Objectives. This section sets forth the purpose, needs and goals and objectives of the Trail Plan. The section provides general information on Cuyahoga Valley National Park, background on the park's trail system, an overview of the public scoping process and the issues identified for consideration of impacts from proposed actions.

Alternatives. This section describes the proposed actions common to all alternatives and those specific to each of the alternatives. It compares the alternatives by their general framework, impacts and goals of the Plan and criteria set forth by the National Environmental Policy Act.

Affected Environment. This section describes existing conditions of resources that may be affected by the proposed actions of the alternatives.

Environmental Consequences. This section describes the impacts on resources by the proposed actions of the alternatives.

Consultation and Coordination. This section provides an overview of the public participation process and project team.

Executive Summary
Cuyahoga Valley National Park
Final Comprehensive Trail Management Plan & Environmental Impact Statement

Introduction and Background

Cuyahoga Valley National Park encompasses 33,000 acres between the metropolitan areas of Cleveland and Akron, Ohio. Cuyahoga Valley National Park provides visitors the opportunity to experience the cultural, scenic, natural and recreational resources of the Cuyahoga River Valley and a portion of the Ohio & Erie Canal Corridor.

Recreational use is central to Cuyahoga Valley National Park's legislative mandate as stated, "To preserve and protect for public use and enjoyment, the historic, scenic, natural and recreational values of the Cuyahoga River and the adjacent lands of the Cuyahoga Valley and for the purpose of providing for the maintenance of needed recreational open space necessary to the urban environment" (Public Law 93-555, 1974).

The Cuyahoga River Valley has a strong history as a centerpiece for outdoor recreation opportunities. At the same time, the Valley continues to be restored with thriving ecosystems while retaining the cultural heritage and landscapes of the Ohio & Erie Canal Corridor. These successes are particularly significant, given the Park's location within a large metropolitan area boasting a human population of over 3 million people within 25 miles. New challenges arise for the Park in meeting all of the goals of its legislative mission as visitation continues at a high level, recreation trends and the way people spend their leisure time change, and its landscape continues to be restored.

In 2009, the NPS embarked on a planning process to develop a *Trail Management Plan and Environmental Impact Statement* for Cuyahoga Valley National Park in accordance with the requirements of the National Environmental Policy Act to meet these emerging challenges for the Park.

Purpose of and Need for the Plan

The purpose of the updated *Trail Management Plan and Environmental Impact Statement* is to develop a blueprint that will guide the expansion, restoration, management, operations and use of the trail system and its associated amenities, over the next 15 years, in keeping with the purpose, mission and significance of Cuyahoga Valley National Park. Since 1985, when the Park's first Trail Plan was established, many changes have occurred that require an update to the Plan. These include the Park's growth in visitation and programs, some park trails requiring increased operational investment due to their location and use patterns, expansion of regional trail networks, and change in outdoor recreation trends.

The Park set forth goals and objectives to guide the development of the Trail Plan and consideration of proposed actions. The goals of the Trail Plan include that the trail network provides for a variety of trail users, shares the features significant to the Park, minimizes impacts to park resources, can be sustained for future generations, and engages cooperative partnerships.

Public Participation

The Trail Plan has been following the required NEPA and NPS planning process for the past three years. The Trail Plan process began with the Notice of Intent published in Fall, 2009. Public involvement was a large component of the development of the trail elements established under the alternatives. Through public scoping, ideas were generated for the trail system and issues were identified to be considered in the planning process. Public scoping, largely conducted in 2010, included a survey of trail stakeholder groups, workshops to collect ideas for the Trail Plan and public meetings to present and receive input on conceptual alternatives. The Park received approximately 500 comments at the scoping workshops from approximately 150 persons. Additional comments were received from approximately 100 persons during an open comment period on a set of preliminary alternatives.

The Park received 159 comments during the Final Trail Plan public review and comment process that occurred between June 22 and August 20, 2012.

Issues and Impact Topics

Through the public scoping process and initial data collection on existing conditions, five primary issues were identified for the Plan: park resources, visitor use, facility uses, maintenance and administrative operations. Impact topics were identified that may be impacted or have an impact on the proposed actions. Other resource topics were dismissed from further analysis because the alternatives would have negligible or no impacts to these resources. Impact topics retained and analyzed include:

- Water Resources (Water Quality, Wetlands, Floodplains, and Riparian areas)
- Vegetation and Invasive Plant Species (Trampling, Fragmentation, Proliferation of Exotic Species)
- Wildlife (Disturbance, Fragmentation)
- Soils (Soil Suitability, Slope Gradient)
- Cultural Resources (Archeological, Historical Districts, Cultural Landscapes and Scenic Values)
- Visitor Use and Experience (Visitor accessibility, visitor experience, visitor conflict, public health and safety, orientation and interpretation)
- Socioeconomic (Local Jurisdictions, Land Ownership, Transportation Network, Soundscapes/Noise, Business)
- Park Operations (Staffing, Partnerships, Local Jurisdictions)

Summary of Alternatives Considered

The alternatives reflect information and input from a variety of sources during the planning process. This Environmental Impact Statement evaluates eight alternatives that provide a park-wide vision of the trail network for the next fifteen years. A brief summary of each alternative is presented below with more information provided for Alternative 5, the preferred alternative. Elements that are common to all alternatives or all action alternatives are presented first.

Elements Common to All Alternatives

There are actions and policies that will apply or occur under any alternative selected. The actions common to all the alternatives include:

- *Polices, Protocols, Monitoring and Special Designations*. All alternatives will adhere to the policies, protocols and monitoring set forth by the National Park Service, including special designations that are applicable to Cuyahoga Valley National Park.

- *Trail Projects Underway*. The Park is currently managing trail-related projects that are in various stages of planning and development. These projects have completed or will undergo environmental review and will not be evaluated in this Environmental Impact Statement. They will be considered as common elements of all alternatives of the Trail Management Plan.

- *Park Sustainability Practices*. Cuyahoga Valley National Park's current sustainability practices for providing recycling, energy efficient lighting, energy efficient and pollution reduction operations practices will be continued and expanded where feasible under all alternatives. Identifying emerging practices and technologies to reduce energy demands of the park and enhance alternative energy generation are practices to explore for all alternatives.

- *Visitor Use Carrying Capacity*. User capacity guidance for the social and ecological changes on trails will be established to ensure the integrity of park resources is maintained. Development of user capacity standards will be part of the implementation phase of the Trail Plan.

- *Accessibility and Mobility*. Recommendations are outlined in the Plan, to address accessibility and power driven mobility devices and compliance with applicable laws, rules and guidelines.

- *Trail Signage.* The Park will continue to update its Sign Plan and utilize the UniGuide Sign Standard for the Trail Plan's selected alternative. The Park will evaluate the use of emerging technologies for trail orientation and information for visitor use.

- *Partnerships.* Partnerships between the public park agencies, local communities and the three primary Park Partners will continue as part of all Alternatives.

- *Implementation*. An implementation strategy will be important to accomplish the vision set forth in the Plan. NPS will conduct activities to implement the Trail Plan effectively. These include subsequent planning, prioritizing Trail Plan elements in the selected alternative for implementation, an Implementation Strategy Plan, and establishment of a progress report for Trail Plan completion.

Elements Common to All Action Alternatives

There are actions and policies that are being considered as part of each of the seven action alternatives (Alternatives 2A - 5). The actions common to all action alternatives include:

Sustainable Trail Guidelines. The NPS will establish Sustainable Trail Guidelines to guide the Park's planning and management of the trails related to the restoration of existing trails, planning and design for new trails and trail facilities, and maintenance and best management practices. The Action Alternatives and their trail elements are predicated on applying these Guidelines. The Guidelines will serve as the Standard Operating Procedure for trail management in the Park during implementation of the selected alternative of the Trail Plan. The Guidelines focus on the following topics:

- *Site Planning and Design of Trail*. The Guidelines outline the basic principles and practices to administer during the site assessment and design phases of trail development in the Park. Guidance includes the trail development process for trails in CVNP, identification of trail classes and types and their design and management criteria, site assessment and site design best practices, and program guidance for the development of trail facilities, signage and accessibility and mobility that is suitable to each trail's individual site conditions.

- *Trail Construction*. The Guidelines establish basic principles and best practices to administer during the physical construction and maintenance of a trail.

- *Management, Maintenance and Monitoring*. The Guidelines provide management policies that will sustain CVNP trails for future generations. Guidance is provided on annual and long term maintenance, trail closures, management of trails for Special Use Permit events, and trail monitoring.

Restoration of Existing Trail Network. A primary objective, common to all action alternatives, is the restoration of the existing trail network. Restoration may include rehabilitating trails in their present location, relocating or realigning trails, or removal and closure of trails. This will be accomplished through condition assessments, prioritization of restoration based upon trail use and resource quality, and monitoring.

Trail Facilities. The Trail Management Plan scoping process identified various uses and facilities that will complement and support the trail network and trail visitors. The facilities include water trails where paddle launch sites for non-motorized boat access to the Cuyahoga River and associated facilities would occur, trailside and riverside campsites, parking at trailheads, and trail amenities such as benches and drinking water. The facilities are considered and evaluated as part of all the action alternatives.

- *Water Trail Facilities*. The Plan sets forth criteria for paddle launch sites along the Cuyahoga River within the Park boundary. Nine sites are evaluated in the planning process.

- *Campsites*. The Plan sets forth criteria for trailside campsites and expansion of this use in the Park. Campsites under consideration within the Trail Plan are associated with non-motorized access through the Park's trail system. Dispersed and designated campsites were evaluated along primary trail corridors and primitive trails that travel across the entire length of the Park. Twelve campsites are evaluated in the planning process.

- *Parking*. Parking areas associated with trail access are considered and evaluated under four areas of implementation; expansion of an existing parking area, improvement or relocation of an existing parking area, expansion of an existing parking area for a new vehicle type, specifically horse-trailers, and the introduction of new parking areas associated with proposed trail elements. Parking considerations in the Plan, common to all action alternatives include expansion of six existing parking areas, relocation of two existing parking areas, expanded use for horse trailers at two existing parking areas, and two new parking areas including one for horse-trailers. Additional parking areas are considered as they are applicable to specific trail elements within each alternative.

The Alternatives

The National Park Service has developed eight alternatives for use, stewardship and management of the Trail system within Cuyahoga Valley National Park. The No-Action Alternative would continue current conditions. Alternatives 2, 3 and 4 focus on a specific aspect of the park's significance to develop the future Trail system. Alternatives 2A and 2B would focus on the protection of park resources and improvements to Towpath Trail circulation. Alternatives 3A and 3B would focus on expanding recreational opportunities and significant trail entry points and Alternatives 4A and 4B would focus on providing destination routes to park features and the primitive trail experience. Off-road bicycle use utilizing single-track design is the only new use identified that is not currently permitted in the park. As such, each alternative is evaluated with and without this new use. Trails identified as off-road bicycling will be shared with hikers and in some limited areas, cross-country skiers. The alternatives are paired into a version "A" that has no off-road bicycling and "B" that includes off-road bicycling. For all other elements other than off-road bicycle use and (in some cases) new off-road bicycle trails, paired "A" and "B" alternatives (e.g., 2A and 2B) are exactly the same. Alternative 5 combines the ideas from all of the other alternatives considered. Alternative 5 is the Preferred Alternative of the National Park Service to meet the Plan's purpose and need, and also the goals set forth in NEPA.

Alternative 1: No Action Alternative. Under Alternative 1, the trails, authorized uses and facilities addressed in this plan would remain as they currently exist. The Park would continue to implement the 1985 Trail Plan. The Park would continue trail management under current park policies, protocols and monitoring. A continuation of trail projects would occur on an individual basis and as opportunities arise with separate planning and compliance.

Alternative 2A: ReUse. In Alternative 2A, the Cuyahoga Valley Trail system would be developed and redeveloped with the concept of ReUse being its foundation. Alternative 2A emphasizes the importance of enhancing the existing trail system's sustainability for future generations with limited expansion. Alternative 2A adds a total of 17 miles of new trails to the park's trail system and removes 11 miles of existing trails. It includes one additional expansion of an existing parking area from the trail facilities common to all action alternatives.

Alternative 2B: ReUse with Off-Road Single Track Bicycle Use. Alternative 2B is the same as Alternative 2A with the addition of authorization of a linear bicycle trail on existing single track trails within the Park and Park Partner lands. The addition and removal of trail miles and facilities are the same as described in Alternative 2A with the addition of a change in use designation on 10 miles of existing trail for off-road bicycle use.

Alternative 3A: Recreation Focus. Alternative 3A is focused on the concept of utilizing areas as interchangeable recreational "trail hubs" that provide the full variety of trail experiences the Park has to offer. Trail hubs would be placed in a variety of locations throughout the park to establish activity centers for trail use and other activities. Alternative 3A would add a total of 30 miles of new trails and would remove 11 miles of existing trails. This alternative also includes almost 40 miles of roadways in the Park recommended for improvements for on-road bike use. Alternative 3A also includes two additional campsites, one additional new parking area and trailhead, and one additional expansion of an existing parking area.

Alternative 3B: Recreation Focus with Off-Road Single Track Bicycle Use. Alternative 3B is the same as Alternative 3A with the addition of new off-road single track bicycle trails consisting of two zones of loop routes. The proposed off-road bicycle trails would include two new trails on both sides of the Valley in the central region of the park totaling 17.7 miles. The proposed trails would include a linear longer distance segment and shorter loops on each end of the segments. One additional new parking area is proposed to accommodate the new off-road bicycle trail proposed in the west rim of the Park.

Alternative 4A: Destination Focus. Alternative 4A is focused on the destination rather than the journey of the Park's trail network. Park features and attractions are the focus of this alternative with the trail system serving as the main visitor access to these features. Expansion of the primitive hiking experience occurs to the greatest extent in Alternative 4A. Alternative 4A would add a total of 53 miles of new trails and removes 11 miles of existing trails. Alternative 4 adds one additional campsite and expansion of an existing parking area.

Alternative 4B: Destination Focus with Off-Road Single Track Bicycle Trails. Alternative 4B is the same as Alternative 4B with the addition of new off-road single track bicycle trails. The bike trail system consists of a long point-to-point trail with shorter loop trails to provide a variety of lengths and experiences to the off-road bike user. The East Rim Bike Trail would add nearly 21 miles of trail for off-road bicycle use on new proposed trails.

Alternative 5: ReUse, Recreation & Destination (Preferred Alternative). Alternative 5 combines trail elements from all of the Alternatives and proposed trail facilities that will best fit the park. The "hybrid" approach for Alternative 5, will include all elements common to all action alternatives, an increase of 37 miles of trails from existing conditions if fully implemented, including a new 10-mile off- road single track bicycle trail, trail facilities including expanded and new parking areas, introduction of launch sites for water trail access, and expansion of hike-in and paddle-in campsites.

Environmentally Preferable Alternative. The environmentally preferable alternative is the alternative required by 40 CFR 1505.2(b) to be identified that causes the least damage to the biological and physical environment and best protects, preserves and enhances historical, cultural and natural resources. Alternative 2A has been selected as the environmentally preferable alternative because it is the alternative that best protects the biological and physical environment within the park while meeting the purpose and need of the Plan. This is accomplished through the adoption of the Sustainable Trail Guidelines, restoration and removal of trails in sensitive areas, the limited expansion of trails, use of existing disturbed areas for trails, and connections to regional trail networks to serve a variety of users throughout all regions of the Park.

NPS Preferred Alternative. As a result of the impact analysis results summarized in Table 1, the Park assembled a 'hybrid' of trail elements that best meets the goals of the Plan and CEQ's criteria. The preferred 'hybrid" approach used Alternative 3B as its baseline concept. Alternative 5 was created by removing elements that were found to cause higher levels of impacts and combining of trail elements from all of the alternatives. Alternative 5 will best meet the mission of the Park, its resource conditions and visitor use, the Trail Plan purpose and goals, while fulfilling the criteria of NEPA.

Environmental Consequences

For the purpose of the Environmental Impact Statement (EIS), an issue or impact topic describes an environmental problem or relationship between a resource and an action or actions. Impact analysis predicts the degree to which the resource will be affected. The effects to be considered include direct, indirect and cumulative. Direct effects are caused by actions at the same time and place of the action. Indirect effects are actions and impacts caused by the alternatives that occur later in time or farther in distance than the action. The intensity of effects is identified as negligible, minor, moderate or major. The intensity of effects is determined for each issue and potential impacts by the proposed actions. Cumulative impacts are impacts to a particular resource and include impacts of actions in the past, present and the reasonable foreseeable future. These effects are both beneficial and adverse and will vary depending on the affected resource and the proposed action. Beneficial impacts are those that involve a positive change that moves the resource toward a desired condition. Adverse impacts involve a change that moves the resource away from a desired condition or detracts from its appearance and condition. A summary is provided in Table 1 that shows the type of impacts expected with each alternative.

Cumulative impacts are common to all alternatives, typically, long-term, minor and adverse or negligible and do not significantly change among alternatives the intensity of the adverse impact of the issue topics.

Impacts from trail facilities are also presented as common to all to action alternatives. While some individual facilities within these common facilities and additional facilities described within individual alternatives have specific site impacts, the intensity of the impacts do not change significantly among alternatives. The highest level of impact to park resources from trail facilities, are typically long-term, minor and adverse.

Table 1: Comparative Summary of Impacts

Impact Topic	General Analysis Results
Water Resources Imperviousness Riparian Buffers Stream Crossings Wetlands Floodplains Water Quality	Watershed imperviousness would not be impacted at greater than negligible levels by any alternatives parkwide or at subwatershed scales. Given that riparian areas, wetland buffer areas and streams are present throughout the park, these resources are largely impacted as trail miles increase. Some isolated trail elements that would require boardwalk systems may impact wetlands. Impacts to floodplains are largely limited to site specific trail elements, primarily interpretive trails systems adjacent to or providing access to the river that may require boardwalk systems. Impacts to water quality are related to the increase of trail miles in select (3) cold water or high quality watersheds and additional human activity associated with the river and campsites.
	Impacts to Water Resources among alternatives range from negligible adverse to minor to moderate adverse. Alternative 1: Long-term minor to moderate, adverse from current trails in close proximity to sensitive water resources and current alignment of trails in some locations where erosion occurs resulting in temporary increased sedimentation. Alternative 2A: Long-term, negligible to minor, adverse from limited new trail development. Alternative 2B: Long-term, negligible to moderate, adverse, from limited new trail development but increase of new use on existing natural surface trail in sensitive water resource area of the Park. Alternative 3A: Long-term, minor to moderate, adverse from moderate levels of trail development, stream crossings in sensitive watersheds and limited new trails within buffer areas of wetlands and floodplains. Alternative 3B: Long-term, minor to moderate, adverse from moderate levels of trail development, stream crossings in sensitive watersheds and limited new trails within buffer areas of wetlands and floodplains. Alternative 4A: Long-term, minor to moderate, adverse from moderate levels of trail development, stream crossings in sensitive watersheds and limited new trails within buffer areas of wetlands and floodplains. Alternative 4B: Long-term, minor to moderate, adverse from moderate levels of trail development, stream crossings in sensitive watersheds and limited new trails within buffer areas of wetlands and floodplains. Alternative 5 (Preferred Alternative): Long-term, minor to moderate, adverse from moderate levels of trail development, stream crossings in sensitive watersheds and limited new trails within buffer areas of wetlands and floodplains. Cumulative Impacts: Long-term negligible to moderate and adverse from suburban development activities outside of the Park where water resources may be modified or lost. Long-term beneficial impacts if restorative actions related to the Brecksville Dam and combined sewer overflows occur. Trail Facilities: Long-term, negligible adverse from minimal change in footprint within riparian zone and no required stream crossings. Long-term, negligible to minor adverse impacts from the proximity of three launch sites, three campsites and four parking areas.

Impact Topic	General Analysis Results
	Long-term negligible to minor adverse from presence of some facilities within floodplains. Long-term minor to moderate adverse impacts from increased human activity on the river, campsites, and runoff from additional parking surface areas.
Vegetation Habitat Fragmentation Invasive Plants	Impacts to vegetation involve the increased disturbance to vegetation from trail corridors ranging from 0.18 to 2.5 acres for bottomland forests, 2.6 to 6.5 acres in open areas, and 4 to 35 acres of upland forests. New trails and increased use in primitive areas will provide new entryways for invasive plant introduction.
	Impacts to Vegetation range from negligible to minor adverse to minor to moderate adverse. Alternative 1: Long-term, moderate and adverse from disturbance of existing trails within primary vegetation communities, presence of exotic plants along main trail corridors and trails in areas of rare and special plant species. Alternative 2A: Long-term, negligible to minor and adverse from an overall reduction of trails in primary vegetation communities and minimal development to limit spread of invasive plants. Alternative 2B: Long-term, minor and adverse from an overall reduction of trails in primary vegetation communities, increase of trail use by bicycles in one isolated upland forest areas, and minimal development to limit spread of invasive plants. Alternative 3A: Long-term, minor to moderate and adverse from an increase of trail miles within primary vegetation communities and new trail areas where spread of invasive plants may occur. Alternative 3B: Long-term, moderate and adverse from a greater increase of trail miles within primary vegetation communities, including new off-road bicycle trails in undisturbed areas of the park and new trail areas where spread of invasive plants may occur. Alternative 4A: Long-term, moderate and adverse. Long term, moderate and adverse from a greater increase of trail miles within primary vegetation communities and new trail areas where spread of invasive plants may occur. Alternative 4B: Long term, moderate and adverse from a greater increase of trail miles within primary vegetation communities, including new off-road bicycle trails in undisturbed areas and new trail areas where spread of invasive plants may occur. Alternative 5: (Preferred Alternative): Long-term minor to moderate and adverse from an increase of trail miles within primary vegetation communities and new trail areas where spread of invasive plants may occur. Cumulative Impacts: Long-term, negligible and adverse effects from continuing development projects within and near the Park boundary that may cause vegetation disturbance but the increase of future exotic management activities and habitat restoration on disturbed sites within the Park. Trail Facilities: Long-term, negligible to minor adverse impacts on the primary vegetation communities from minor ground disturbance in isolated regions of the park.

Impact Topic	General Analysis Results
Wildlife Habitat disturbance by human noise Habitat fragmentation	Fragmentation of wildlife movement, increased disturbance from human activity and increased corridors for potential movement of species, including predators may occur as trail miles and "footprint" increase within the various wildlife habitats, most notably in forests, the predominant habitat in the Park. Three trails are within close proximity to known nesting areas.
	Impacts to Wildlife among alternatives range from negligible and minor adverse to moderate, adverse. Alternative 1: Long-term, minor and adverse due primarily to the overall continued fragmentation of forest habitats in the Park. Alternative 2A: Long-term, minor, adverse from limited habitat fragmentation of minimal trail expansion. Alternative 2B: Long-term, minor, adverse from limited habitat fragmentation of minimal trail expansion. Alternative 3A: Long-term, minor to moderate, adverse from increased habitat fragmentation of trail expansion. Alternative 3B: Long-term, minor to moderate, adverse from increased habitat fragmentation of trail expansion including mountain trails in undisturbed areas. Alternative 4A: Long-term, moderate, adverse from significant habitat fragmentation of trail expansion. Alternative 4B: Long-term, moderate, adverse from significant habitat fragmentation of trail expansion, including new off-road bicycle trails. Alternative 5 (Preferred Alternative): Long-term, minor to moderate, adverse from increased habitat fragmentation, including new off-road bicycle trails in a limited area. Cumulative Impacts: Short-term and long-term minor and adverse from emerging development, increased loss of habitat, temporary disturbance from construction projects and potential changes associated with climate change. Future wildlife management plans currently in development will affect local wildlife populations beneficially. Trail Facilities: Long-term negligible to minor and adverse from the position of trail facilities on the edge of forest blocks, minimal footprint and minimal localized disturbance from new or expanded uses.

Impact Topic	General Analysis Results
Soils Recreation Use Compatibility Slope of Trail	Impacts are associated with the increase of trail miles within areas that have limitations for recreational trails that would require stabilization infrastructure to be sustainable. Additional impacts are associated with the number of trail miles where steep terrain is present that will create conditions that may lead to increased erosion.
	Impacts to soils range from negligible to moderate and major adverse largely from increase in trail miles within the system. Alternative 1: Long-term, minor to moderate, adverse from trails located in limited soil conditions and in areas with trail grades that exceed 15%. Alternative 2A: Long-term, negligible, adverse, from a limited increase of trails and no additional trails on steep grades. Alternative 2B: Long-term, negligible to minor, adverse from a limited increase of trails, new use increasing trail use on a natural surface trail, and no additional trails on steep grades. Alternative 3A: Long-term, minor, adverse from a moderate increase of trail miles and minor increase of trails on steep grades. Alternative 3B: Long-term, minor to moderate, adverse from a moderate increase of trail miles, increase of trail use types and minor increase of trails on steep grades. Alternative 4A: Long-term, moderate, adverse, from a moderate increase of trail miles and moderate increase of trails on steep grades. Alternative 4B: Long-term, moderate, adverse from a moderate increase of trail miles, increase of trail use types and moderate increase of trails on steep grades Alternative 5: (Preferred Alternative) Long-term minor to moderate, adverse from a moderate increase of trails miles, new trail use types and minor increase of trails on steep grades. Cumulative Impacts: Short-term and long-term minor to moderate adverse impacts to soil conditions during construction projects inside and outside of the Park and continued soil compaction and soil loss from ongoing urbanization. Trail Facilities: Short-term and long-term negligible to minor adverse effects on soil resources are expected from temporary disturbance during construction and minimal areas of disturbance from access and use of launch sites, campsites, and new and expanded parking areas.
Cultural Resources Archeological National Register of Historic Places Rural Landscapes & Scenic Values	Overall Cultural Resources are not affected by the proposed trail elements or have negligible to minor effects. Two areas where adverse impacts are identified are the removal of a portion of Lake Trail and the proposed off-road bicycle trail segment adjacent to the Duffy Farm. The general scale of the plan will require site evaluation on selected alternative elements for archeological resources.
	Impacts to Cultural Resources range from negligible to minor adverse and minor to moderate adverse from resource impacts within limited areas of the park.

Impact Topic	General Analysis Results
	Alternative 1: Long-term, negligible to minor, adverse from increased ground disturbance in high use areas and use on unmanaged social trails. Alternative 2A: Long-term, negligible to minor, adverse from limited expansion of trails near Cultural Resources. Alternative 2B: Long-term, negligible to minor, adverse from limited expansion of trails near Cultural Resources. Alternative 3A: Long-term, negligible to moderate, adverse from a moderate expansion of trails near Cultural Resources. Alternative 3B: Long-term, negligible to moderate, adverse from a moderate expansion of trails near Cultural Resources. Alternative 4A: Long-term, negligible to minor, adverse from a minor expansion of trails near Cultural resources. Alternative 4B: Long-term, negligible to moderate, adverse from a moderate expansion of trails near Cultural Resources. Alternative 5: (Preferred Alternative) Long-term negligible to moderate, adverse from a moderate expansion of trails near Cultural Resources. Cumulative Impacts: Continued use of neighborhood social trails will continue under this alternative, resulting in long-term, negligible to minor and adverse impacts on cultural resources. Impacts resulting from the Boston Mills Area Development Plan/Environmental Assessment may occur. Trail Facilities: Long-term, negligible to minor adverse impacts on NRHP properties, Countryside Initiative program elements and archeological resources. Impacts to archeological resources will need to be evaluated through site-specific surveys to ensure mitigation of impacts.
Visitor Experience Visitation Trail User Experience Trail User Conflict Education/ Interpretation Public Health/ Safety	Impacts on visitor experience are largely beneficial to the visitor providing new and a wider variety of trail experiences in the park. Increased trail user conflicts may occur from an increase in shared trail use, new trail uses and the proximity of select new trails to existing high use areas. New trail facilities with limited access or associated resource issues, may affect the public health and safety of trail users.
	Impacts to visitor experience include beneficial impacts for new and expanded trail use experiences and opportunities for interpretation and education, and negligible to minor adverse impacts in some instances on trail use and experience, trail user conflict, and public health and safety. Alternative 1: Long-term, minor to moderate, adverse from trail user conflicts in high use areas and limited connections to regional trail networks. Alternative 2A: Long-term, beneficial from limited new trails and regional trail connections and long-term, minor to moderate adverse from minimum changes in visitor experiences. Alternative 2B: Long-term, beneficial from limited new trails and regional trail connections and long-term, minor to moderate adverse from minimum changes in visitor experiences. Alternative 3A: Long-term, beneficial from moderate increase of new trails and regional trail connections and long term, minor to moderate adverse from potential increase in trail visitation.

Impact Topic	General Analysis Results
	Alternative 3B: Long-term, beneficial from moderate increase of new trails, regional trail connections and new uses and long term, minor to moderate adverse from a potential increase in trail visitation and trail user conflicts with new trail uses. Alternative 4A: Long-term, beneficial from moderate increase of new trails and regional trail connections and long term, minor to moderate adverse from a potential increase in trail visitation. Alternative 4B: Long-term, beneficial from moderate increase of new trails and regional trail connections and long term, minor to moderate adverse from a potential increase in trail visitation. Alternative 5: (Preferred Alternative) Long-term, beneficial from a moderate increase of new trails and regional trail connections and long-term, minor to moderate adverse from potential increase in trail visitation. Cumulative Impacts: Long-term beneficial impacts from regional trail and trail facility expansion and improvements on the Cuyahoga River that improve water resource conditions for recreational use.
	Trail Facilities: Trail facilities and amenities will provide long-term beneficial impacts to visitor use experience by improving facilities for visitation, new and expanded trail user experiences and new opportunities for education and interpretation. Long-term minor to moderate impacts to visitor use and experience from potential trail user conflict in high use areas from new uses, and public safety and health issues associated with river conditions and human waste management at campsites.
Socioeconomic Land Ownership and Proximity to Other Adjacent Lands Public Roads Increased Visitation Commercial Business Construction Activities	The expansion of trails will result in some areas of adjacent lands within close proximity to projected low use primitive trails and medium to high seasonal use of new multi-use connector trails and some alternatives (3B, limited 4B) of off-road bicycle trails. Increased trail crossings on public roads and utilization of selected roads for bike lanes will likely require additional information regarding multiple uses in proximity to public roads. New uses offer potential beneficial impacts to business opportunities.
	Impacts to Socioeconomic conditions range from beneficial for increased and new business opportunities, new and expanded facilities to accommodate visitation, and new construction activities, to minor to moderate adverse from varying increases of select trails on other jurisdictional lands, select trails near adjacent lands and varying increases of non-motorized use on public roads. Alternative 1: No effect and long-term, minor to moderate, adverse from no changes to socioeconomic conditions. Alternative 2A: Long-term, beneficial impacts from limited opportunities to expand trail-based business opportunities and long term, minor and adverse from limited expanded trail system and its proximity to adjacent landowners, crossing of public roads. Alternative 2B: Long-term, beneficial for business opportunities and long-term, minor to moderate, adverse from limited expanded trail systems, use of other jurisdictional lands, proximity of new trails to adjacent landowners, and crossing of public roads. Alternative 3A: Long-term, beneficial for business opportunities and long-term, minor to moderate, adverse from expanded trail systems, use of other jurisdictional lands, proximity

Impact Topic	General Analysis Results
	of new trails to adjacent landowners, and crossing of public roads. Alternative 3B: Long-term, beneficial for business opportunities and long-term, minor to moderate, adverse from expanded trail systems, use of other jurisdictional lands, proximity of new trails to adjacent landowners, and crossing of public roads. Alternative 4A: Long-term, beneficial for business opportunities and long-term, moderate, adverse from expanded trail systems, use of other jurisdictional lands, proximity of new trails to adjacent landowners, and crossing of public roads. Alternative 4B: Long-term, beneficial for business opportunities and long-term, moderate, adverse from expanded trail systems, use of other jurisdictional lands, proximity of new trails to adjacent landowners, and crossing of public roads. Alternative 5: (Preferred Alternative) Long-term, beneficial for business opportunities and long-term, minor to moderate, adverse from expanded trail systems, use of other jurisdictional lands, proximity of new trails to adjacent landowners, and crossing of public roads. Cumulative Impacts: Long-term beneficial impacts from potential increased business opportunities spurred by regional trail development. Long-term, minor and adverse impacts on local governments for additional services potential required on future regional and local greenways and trails. Trail Facilities: Trail facilities will have long-term negligible and adverse impacts on costs to visitors for marginal costs for water trail use permits, long-term minor and adverse impacts from noise associated with some facilities and their proximity to non-NPS lands, long-term negligible and adverse impacts from increase uses and additional entry points from public roads for expanded trail facility uses from public roads, and short-term and long-term beneficial impacts on business for new opportunities for business and construction activities associated with expanded trail facilities and uses.
Park Operations Staffing Facilities Partner Operations Other Jurisdiction Operations	Park Operations increase as number of trail miles increase. Designated river access and associated increase in river use and expansion of campsites will require additional operations. Capacity to support the development and stewardship of trails will increase as trail miles increase.
	Impacts to park operations range from no change, less than a 5 percent increase, a 5-8 percent increase and greater than a 10 percent increase in staffing from current operations and identified as negligible up to major on the need for increased park operation, partner operations and other jurisdiction operations required to build, sustain and operate, proposed actions. Alternative 1: No effect and long-term, negligible to minor, adverse impacts from limited staff to meet current operations of trail management, no new facilities and ongoing support from park partners and local jurisdictions. Alternative 2A: Long-term, negligible to minor, adverse impacts from a minor increase of additional staff and partnership support from current operating levels. Alternative 2B: Long-term, negligible to moderate, adverse from minor additional staff and partnership support from current operating levels. Alternative 3A: Long-term, minor to moderate, adverse impacts from a moderate increase of additional staff and partnership support from current operating levels.

Impact Topic	General Analysis Results
	Alternative 3B: Long-term, minor to moderate, adverse impacts from a moderate increase of additional staff and partnership support from current operating levels. Alternative 4A: Long-term, moderate to major, adverse impacts from a major increase of additional staff and partnership support from current operating levels. Alternative 4B: Long-term, moderate to major, adverse impacts from a major increase of additional staff and partnership support from current operating levels. Alternative 5: (Preferred Alternative) Long-term minor to moderate, adverse impacts from a moderate increase of additional staff and partnership support from current operating levels. Cumulative Impacts: Expanding residential and commercial development or redevelopment surrounding the Park may increase visitation and undesignated entry points into the Park, resulting in minor adverse, long-term impacts to park operations and management. Long-term minor adverse impacts from increased river use from expansion of river use access facilities outside of park, and potential water quality improvements from Route 82 dam and reduction of combined sewer overflows. Trail Facilities: Short-term and long-term, minor to moderate adverse, from its increase for staffing and operations required for new facilities and long-term negligible to minor adverse from, increased design and contract service coordination, increased construction and ongoing maintenance for trail facilities, increased coordination with local jurisdictions on new facilities, particularly river use.

Next Steps

The Final Trail Management Plan and Environmental Impact Statement was on public review from June 22, 2012 to August 20, 2012. The NPS project team evaluated comments received during the public review period, and appropriate changes were included in the Final Trail Management Plan and Environmental Impact Statement. Appendix D of this document includes letters from government agencies, comments from individuals and organizations with responses to substantive comments. Following the distribution of the final plan and a 30-day no-action period, a record of decision approving the final plan will be signed by the NPS Midwest regional director. The record of decision will document the NPS selection of an alternative for implementation. Once the record of decision is signed, the plan can then be implemented.

The approved plan sets a vision and framework for the future of trails and associated facilities in Cuyahoga Valley National Park. However, the completion of the plan does not ensure that all actions will occur or that funding will be available. As the plan is implemented, public involvement opportunities will occur for associated actions. Some actions may require additional compliance or agency review prior to implementation, subject to federal and park regulations.

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Chapter 1: Purpose and Need for Action

1.1 Introduction

Cuyahoga Valley National Park (CVNP, Park) was designated as a unit of the National Park Service (NPS) in 1974 as a National Recreation Area, and subsequently redesignated as a National Park in 2000. Since the Park's establishment, the NPS and partners have transformed the Cuyahoga River Valley region with restored, thriving landscapes and retained and celebrated the cultural heritage and landscapes of the Ohio & Erie Canal Corridor, while creating a centerpiece for the region and beyond for outdoor recreation. These accomplishments are particularly significant, given the Park's location within a large metropolitan area boasting a human population of over 3 million people within 25 miles. The consequences of this transformation and urban proximity present new challenges of increased visitation in expanded high quality ecosystems, new trends in recreation and changes in how people use their leisure time for recreation and tourism activities.

The Park's *General Management Plan* (GMP; NPS 1977) noted that one of the significant purposes of the park is that "it preserves a landscape reminiscent of simpler times, a place where recreation can be a gradual process of perceiving and appreciating the roots of our contemporary existence (NPS 1977)." The GMP established the overall concept for management and development of the CVNP; resource preservation for compatible recreational use. In 1985, the Park's first Trail Management Plan (NPS 1985) was developed and served as the primary document to initiate many trails in the Park including the Towpath Trail and its completion in 1993. Today, 174 miles of trail within the Park boundary provide for biking, hiking, equestrian and cross-country skiing recreation opportunities.

Twenty-five years after the first Trail Plan, the NPS, in cooperation with local metropolitan park districts Cleveland Metroparks and Metro Parks, Serving Summit County, has developed an updated Trail Management Plan and Environmental Impact Statement for the Park. This ongoing planning process is in accordance with the requirements of the Council of Environmental Quality's "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" and NPS Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision-making. Because of the Park's unique qualities of property ownership, proximity to human populations and opportunities for emerging ecological restoration of the Cuyahoga Valley, the Plan proposes a trail management strategy that meets these opportunities and challenges while maintaining the mission and resource values of CVNP.

Public involvement was and continues to be a critical component in every step of the *Trail Management Plan* process. The Park was established in part by the citizenry of its community. The spirit of public involvement tradition carries on in the Trail Management Plan and its ultimate implementation.

1.1.1 Purpose of the Plan/EIS

The purpose of the updated *Trail Management Plan and Environmental Impact Statement* is to develop a blueprint that will guide the expansion, restoration, management, operations and use of the trail system and its associated amenities, while keeping with the purpose, mission and significance of the Park, over the next 15 years.

1.1.2 Need for Action

The updated *Trail Management Plan* is needed as a strategic tool to guide the future management and development of the trail system in the Park, for the following reasons:

- The Park's 1985 Trail Plan is outdated;
- Regional trail networks have blossomed across Northeast Ohio near or adjacent to the Park over the past 15 years;
- Recreation trends have emerged that the park currently does not provide for nor permit;
- The Park's trail system is a significant recreation feature in the Park and is the predominant purpose of park visits;
- The Park's destinations, features, and programming have evolved since the development of the 1985 Trail Plan;
- Trails within the Park cause increased operational investment as a result of factors such as their historical placement and current use patterns; and
- The Park has been ranked as one of the top ten most visited National Parks in the country the past five years. Annual park visitation has increased by 1.5 million since the introduction of the 1985 Trail Plan.

1.1.3 Goals and Objectives

Goals and objectives assist in determining if the proposed actions being considered are successful in meeting the purpose of the plan. The goals and objectives for the Trail Management Plan have been developed with consideration of the park's purpose and significance, NPS policies and mission, and input from park staff, park partners, park stakeholders and the general public. The alternatives identified for analysis will need to meet the goals and objectives set forth for the Plan. The goals of the Trail Management Plan are to develop a trail network that:

- provides experiences for a variety of trail users;
- shares the historic, scenic, natural and recreational significance of the Park;
- minimizes its impact to the park's historic, scenic, natural and recreational resources;
- can be sustained; and
- engages cooperative partnerships that contribute to the success of the Park's trail network.

Objectives have been developed and outlined for each goal and outlined in the following section.

<u>Goal 1: A trail network that provides experiences for a variety of trail users.</u>

- Create a trail network with a variety of distances and difficulties.
- Provide a variety of trail uses based on current and expected future demand.
- Facilitate accessible trails where feasible.
- Maintain and enhance the primitive trail experiences distinctive to the regional trail system.
- Create connections for trail users where feasible.
- Utilize the trail network to provide new park experiences.
- Support current and future trail use with compatible park facilities including the expansion of campsites and river access.
- Provide information on trail use and orientation of the trail system in a consistent format.

Goal 2: A trail network that shares the historic, scenic, natural and recreational significance of the Park.

- Integrate the trail network with features of park significance, where appropriate, and associated interpretive information.
- Provide trail experiences through the variety of natural and cultural landscapes of the Park.
- Integrate the trail network with park programs.
- Create trails that provide access to views of natural and cultural features.

Goal 3: A trail network that minimizes its footprint on the Park's historical, scenic, natural and recreational resource.

- Design the trail network utilizing sustainable design practices.
- Minimize and/or mitigate impacts to sensitive resources.
- Contribute to park and NPS overall environmental sustainability goals.
- Minimize unofficial "social" trails.
- Maintain and/or enhance "trail-less" areas in larger, sensitive landscapes of the park.

Goal 4: A trail network that can be sustained.

- Establish park management operations to provide monitoring, trail condition assessment and maintenance of the trail network efficiently.
- Identify funding opportunities for the management and maintenance of the trail network.
- Establish, monitor and manage the carrying capacity of the trail system.
- Provide a safe environment for the trail user and minimize user conflicts.

Goal 5: Cooperative partnerships that contribute to the success of the Cuyahoga Valley National Park trail network.

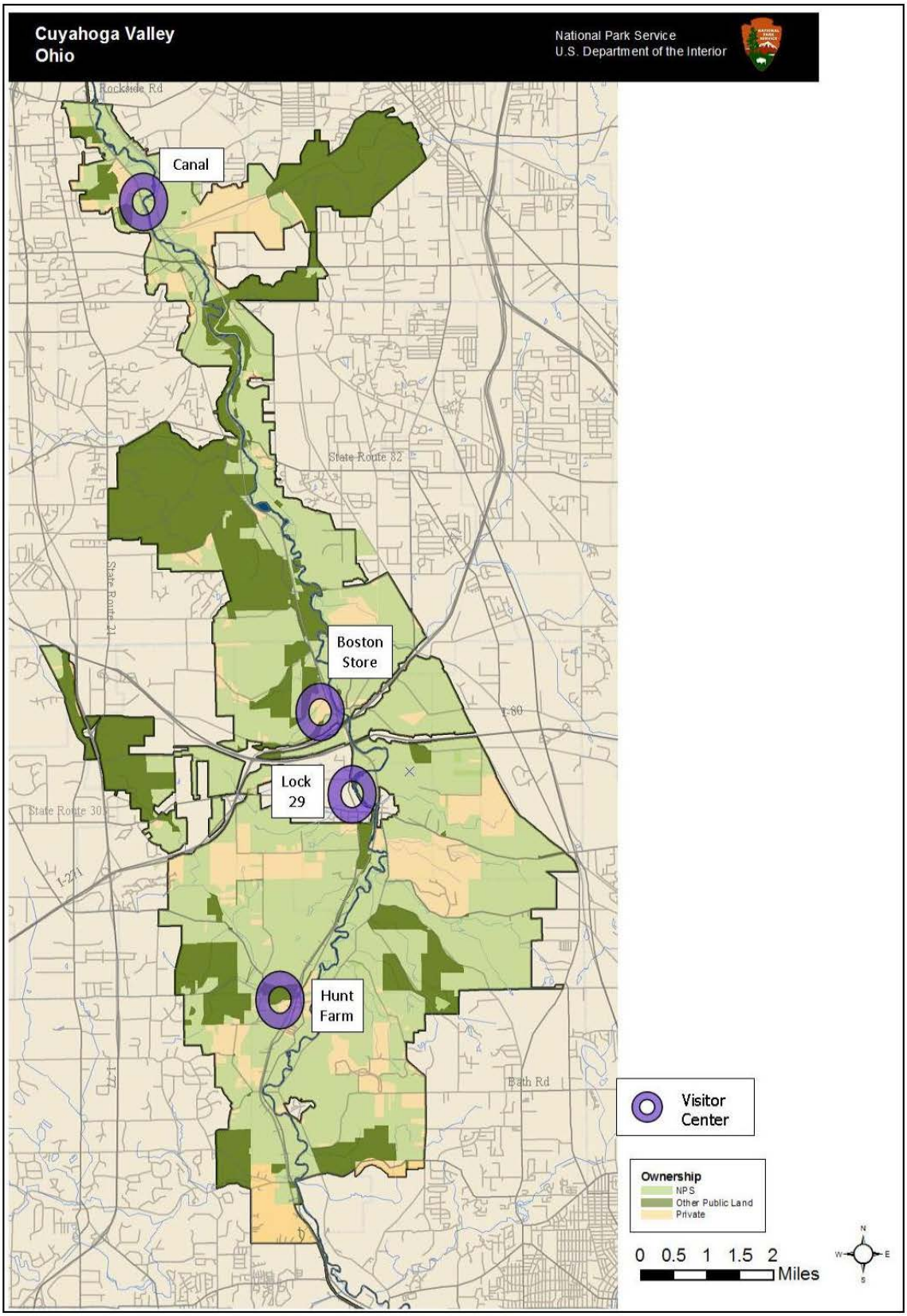
- Create viable connections to neighborhoods and community destinations where appropriate.
- Enhance and expand the Park's alternative transportation opportunities where feasible.
- Utilize current and new Trail Volunteer programs effectively.
- Utilize existing and new partnerships to implement the *Trail Management Plan.*

1.2 Background

1.2.1 Project Location and Brief Description of the Park

The Park is one of 397 park units in the NPS, one of 58 National Parks, and one of only 12 National Parks east of the Mississippi River. The Park encompasses approximately 33,000 acres in the Cuyahoga River Valley between the metropolitan areas of Cleveland and Akron, Ohio. The Park lies within Cuyahoga and Summit counties and part of 15 local municipalities. Within the legislative boundary, the NPS owns approximately 19,000 acres. The remainder of land is owned and under management by other public entities, quasi-public entities or under private ownership. Two primary owners include land managed by regional park districts of the Cleveland Metroparks and the Metro Parks, Serving Summit County.

Figure 1: Cuyahoga Valley National Park



Due to the distribution of trails throughout the entire Park and its adjacent land owners, the Trail Management Plan outlines a comprehensive park-wide vision for its trails. Therefore, project location for the purpose of this plan, is the entire Park with areas of focus identified for trail specific locations in the alternatives.

1.2.2 Purpose and Significance of Cuyahoga Valley National Park

In December 1974, President Gerald Ford signed legislation (Public Law 93-555) creating Cuyahoga Valley National Recreation Area. In 2000, the park was designated as a National Park. Its purpose as stated in the founding legislation:

"To preserve and protect for public use and enjoyment, the historic, scenic, natural and recreational values of the Cuyahoga River and the adjacent lands of the Cuyahoga Valley and for the purpose of providing for the maintenance of needed recreational open space necessary to the urban environment."

The enabling legislation described the Park's objective as "utilizing park resources in a manner which will preserve its scenic, natural and historic setting while providing for the recreational and educational needs of the visiting public."

The Park was established during the era of the emerging importance of urban recreation. The NPS and the federal government had launched the "Legacy of Parks Program" designating urban "gateway" parks in New York (Gateway, NRA) and San Francisco, (Golden Gate NRA). During the process for the Park of becoming part of the NPS, Cuyahoga Valley was often referred to as the opportunity for a "Midwest Gateway Park" (Cockrell, 1992).

The Park contains three significant features; the Cuyahoga River Valley and its associated ecological functions, its cultural resources and landscapes, and its recreational history and outdoor use opportunities.

The Cuyahoga River is the ecological centerpiece of the Park with 22 miles of river traveling in Park boundaries. The Cuyahoga River is known globally for the widely publicized burning of the Cuyahoga River in 1969 which moved the country toward the birth and establishment of the Clean Water Act. The river valley, within the Park boundary, is biologically unique, a "botanical crossroads" situated in the transition zone between the Central Lowlands to the west and Appalachian Plateau to the east. The Park contains a diverse landscape including forests and wetlands which include over 1,300 plant species and 500 animal species (NPS, 2008b).

Primary cultural resource features of the Cuyahoga Valley include the Ohio & Erie Canal, Native American settlements and the works of the Conservation Civilian Corps. The Ohio & Erie Canal and its features symbolize early 19th century settlement and the westward expansion remains include the locks, towpath, and other structures associated with the canal; the Cuyahoga Valley railroad, the pastoral landscapes throughout the valley, three small villages along the canal and dozens of individual farmsteads and miscellaneous commercial and industrial sites (NPS, 2008b). Today, the Park continues to celebrate these cultural features through park programs, successful park partnerships, access to significant areas, and use of interpretive media and signage.

The recreational significance of the Cuyahoga Valley was recognized by many of the early park planners and landscape architects establishing parks in the region and throughout the nation in the early 20th century. Frederick Law Olmsted, a renowned landscape architect described the Cuyahoga Valley as "an impressive landscape with the many and varied wooded ravines running up from this main valley to the plateau land on either side, and large stretches of gently rolling pastoral landscape, streams and lakes, occasional gorges and picturesque ravines and some hills commanding broad outlooks over the countryside." Olmsted, in 1925 as part of his study presented to the Akron Metropolitan Park Board, had identified the value and opportunities for recreation in the Valley. This vision of the Cuyahoga Valley as a passive recreational refuge has been an underlying thread over the past century. Today, the Park provides nearly 175 miles of trails for a variety of recreational experiences that draws visitors locally and nationally to a landscape distinctive from its nearby metropolitan cities (Cockrell, 1992).

1.2.3 History of Trails in Cuyahoga Valley National Park

The value of trails and recreational use in the park dates back to before 1900. Indeed, "by the dawning of the twentieth century recreation in the Cuyahoga Valley was an established tradition. Beginning in the 1870's, city dwellers were venturing out to the countryside picnicking, boating, hiking and for nature study" (Cockeell, 1992).

By the 1930's the Cuyahoga Valley was already an active respite for urban dwellers from Cleveland and Akron visiting places like Virginia Kendall State Park for hiking and sunbathing. During this time period, private estates in the Cuyahoga Valley had established trails and carriage roads for their private recreational enjoyment, that include places like Old Carriage trail area and the Wetmore trails. Over the years, these lands and other park units were incorporated in the Cleveland Metroparks and Metro Parks, Serving Summit County, and eventually part of the designated CVNP. Two significant trail corridors established that accelerated the recreational connections to the Valley included the conversion of an abandoned railroad bed to the Bike and Hike Trail in 1970 and the work of the Towpath Trail in the late 1980's and early 1990's.

Many of the trails from the earliest days of Cuyahoga Valley as a recreation destination remain today for today's visitors to enjoy and share the experience that has remained for over a century.

1.2.4 General Management Plan & Other Relevant Plans

General Management Plan (1977). The General Management Plan (GMP) for Cuyahoga Valley National Park provides guidance for park management during the Park's initial implementation stage. The overall concept for management and development of the Park is that of resource preservation for compatible recreational use. This was met by establishing three strategies for natural resource management; preservation, protection and maintenance and enhancement. The plan recognized the Park's significant role of providing passive recreation within a large metropolitan region. The Park "preserves a landscape reminiscent of simpler times, a place where recreation can be a gradual process of perceiving and appreciating the roots of our contemporary existence" (NPS, 1977).

The GMP outlines general planning concepts for the Park and its recreational use. While created in the early stages of the Park's existence, the following management guidance identified elements that are part of the Trail Management Plan being evaluated in this document (NPS, 1977).

- In a gradually deteriorating environment where fewer and fewer places allow us time and space to rediscover the beauty of nature, the peace of the countryside, or the substance of our past, the need to protect the landscapes that refresh the spirit and restore our perceptions has become one of the basic requirements of recreational planning. (p. 3)
- The visitor-use concept for the nation (park) stressed the expanded use of existing facilities, ranging from primitive hiking to golf courses – as well as opening of additional use areas to encourage people to disperse throughout the park and seek new recreational settings. Proposals are intended to promote uses that harmonize with the valley landscape and to provide opportunities that generally cannot be duplicated in the more urbanized surrounding region. Numerous recreational activities will be accommodated – hiking, biking, horseback riding, picnicking, camping – and many sites will be designed to encourage spontaneous recreation such as kite flying and impromptu concerts.(p.4)
- Primitive walk-in campgrounds and hostels designed to provide experiences rather than conveniences will be developed.(p.7)
- Inherent in the (visitor use/interpretation) concept, is the idea of providing unstructured open space and recreational settings that encourage people to disperse and explore further rather than concentrating in a few developed areas. (p.41)
- The concept of use is based on the natural separation of activities in the valley as determined by the landscape. To determine compatible uses, the GMP identified "visitor-use zones" to reflect the landscape capabilities and resource characteristics. (p.43)
- An important element in the successful implementation of the visitor-use/interpretive concept will be an internal transportation system adequate to permit circulation throughout the park's core area without the need for an automobile. (p.55)

Primary Interpretive Themes. The Primary Interpretive Themes outlined in the Long Range Interpretive Plan, 2003 for the Park include the following (NPS, 2003a):

- *Parks to People.* Cuyahoga Valley National Park is a product of a national movement for the establishment of parks for use by people in an urban environment.
- *Cultural and Natural Interplay.* Understanding human interaction with the valley environment from prehistoric to present times can serve to generate inspiration and encourage discussion of a modern land ethic.
- *Watershed Connections.* The Cuyahoga River connects Cuyahoga Valley National Park to the largest system of freshwater in the world.
- *Natural Diversity.* The Park's location in a transition zone between major regions of the country, combined with its glacial history and varied topography makes it home to a unique species composition.
- *Evolution of Transportation*. People have used the Cuyahoga Valley as a transportation corridor from prehistoric to modern times.
- *Impact of the Canal.* As part of the 19th century transportation infrastructure, the Ohio & Erie Canal was among the most successful of America's canals. During the period, canals contributed to the growth of the nation.

Transportation Plan (1983). Because of the complex ownership and road network within the Park, one of the subsequent plans of the General Management Plan was a Transportation Plan *(NPS, 1983). T*he Plan's focus was on three transportation issues, establishing concepts for 1) a hierarchy of road development and use within the park, 2) alternative mass transportation, such as the rail, and 3) the establishment of a bicycle trail network. The 1983 Transportation Plan developed the ideas derived in the GMP further and identified categories for management. The Transportation Plan identified initial bike routes.

Trail Plan (1985). The *Trail Plan and Environmental Assessment* (NPS 1985) was led by a Citizens Advisory Commission and outlined a plan to flesh out the general recommendations in the GMP and other previous general studies. The Commission included individuals representing a wide variety of outdoor recreational trail uses. The recommendations developed by the Commission were submitted to the Park staff and formed the foundation of the Plan.

The Trail Plan identified 105 miles of existing trails and 27 existing trailheads in 1985 and proposed an additional 115 miles of trail and 19 new trailheads for parking and trail facilities. An additional 46 miles of trails were identified in the Plan for future consideration but were not evaluated in the 1985 Trail Plan. The trails proposed focusing on four primary uses: hiking, horse-riding, cross-country skiing and bicycling on roads and primary long distance trails (NPS, 1985).

As part of the 2012 trail planning process, an evaluation of the implementation of the 1985 Trail Plan was performed. In 2012, 54 miles of 1985 proposed trails and 10 miles of the future trails proposed had been implemented. Thirteen of the nineteen proposed trailheads exist today as part of the Park's trail infrastructure. This includes the completion of the 22 miles of the Towpath Trail within the Park, completed in 1993 (NPS, 1985).

Some trails proposed in the 1985 Trail Plan but not yet implemented are part of the evaluation in this *Trail Management Plan*.

Survey of Potential Linkages to the Ohio & Erie Canal Towpath Trail and Cuyahoga Valley Scenic Railroad in the Cuyahoga Valley National Park (2002). A bike trail linkage report was developed by the Park in 2002 to survey potential bike trail linkages to the Towpath Trail and Cuyahoga Valley Scenic Railroad. The Plan identified 11 bike trail linkages, their classification of development, feasibility, priority and estimates of costs. The Hemlock Road linkage in Independence is the only bike trail linkage identified in the plan that has proceeded with more detailed planning and environmental review (*in process*).

River Use/Water Trails Studies. Over the past 15 years, interest in expanding the recreational use of the Cuyahoga River has continued to grow. This is due in part to improved water quality in the river the past two decades and expanding recreational use of the river north and south of the park.

In 1991, the Park developed a draft River Use Plan outlining a basic framework for recreational boating along the Cuyahoga River. The plan outlined conditions in 1991 of the river and "actions that must precede the encouragement of recreational boating in Cuyahoga Valley National Recreation Area" (NPS, 1991). The actions included issues related to water quality, river use limits, permitted vessels, physical facilities and other complementary operational items, such as camping, canoe livery and river use operational responsibilities.

In 1992, a survey of kayak and canoe owners was conducted within a ten county region of CVNP. Two findings of this study included that canoeing activity occurs relatively close to a user's residence and a typical outing consists of a single day visit. Of 24 Ohio rivers evaluated in the survey, the Lower Cuyahoga, including the portion within CVNP, was ranked 5th in the number of days survey respondents paddled in the selected rivers. Additionally, the survey asked respondents about barriers to the use of the Cuyahoga River between Akron and Cleveland. Barriers identified include not having enough information on paddling the river, poor water quality and lack of public access (Anderson, et al, 1992).

America's Great Outdoors Initiative. In 2011, President Obama released a vision to develop a conservation and recreation agenda for the 21st century. The vision for the nation included 1) Connecting Americans to the Great Outdoors, 2) Conserving and Restoring America's Great Outdoors and 3) Working together for America's Great Outdoors (NPS, 2011f). This Trail Management Plan embraces this vision.

Healthy Parks, Healthy People. In 2011, the NPS initiated the Healthy Parks, Healthy People Strategic Plan to serve as a blueprint for the role of the National Park System to promote health and well-being (NPS, 2011g). This plan assists in bringing the guiding principles and vision of this national initiative to the park level for implementation.

Call to Action. In 2011, the NPS embarked on initiating a strategy to prepare for a second century of stewardship and engagement. Call to Action identifies 36 actions to advance the mission of the National Park Service in its second century. The Trail Plan embodies many of these actions and will demonstrate their applicability through its implementation (NPS, 2011h).

1.2.5 Current Status of Trails and Associated Facilities

Today, the Park contains 175 miles of trails, of which approximately 97 miles are managed by NPS. The trails provide for various uses including 64 miles for hiking and trail running only, 42 miles for multipurpose biking and hiking, 16 miles for cross-country skiing and 52 miles for equestrian riding. The NPS trail system is comprised of three long distance trails, the Towpath Trail, Buckeye Trail and Valley Bridle Trail, and eleven smaller localized trail systems with separate access points. The park currently has one limited community connector through the Old Carriage Trail connector trail in the northern portion of the park and has some portions of the primary roadways improved for bike use. NPS' Metropark partners provide five additional trail systems within their park units of CVNP. The Buckeye Trail, within CVNP, is managed by the non-profit partner, the Buckeye Trail Association. Currently, the Park provides access to all its trails through 25 trailheads and from the four primary Visitor Contact Centers.

1.2.6 Current or Recent Trail Planning by Other Organizations

Cleveland Metroparks Master Plan. In 2010, Cleveland Metroparks kicked off a two year planning effort to update its Master Plan for the Park District. The Plan will inventory existing conditions, evaluate issues and trends, identify strategic commitments, update Park reservation "Concept Value Plans" and develop strategies to monitor plan implementation. The Master Plan, referred as The Emerald Necklace Centennial Plan, is aimed to "set forth a vision to guide future decision-making and priorities for the Park District to 2020" (Cleveland Metroparks, 2011).

Summit Metroparks Trail and Greenways Plan. In 2000, Summit County developed the Trail and Greenway Plan, which provided a vision for proposed trails and greenways in the county. The vision included networks of trails providing linkages among communities, to the Towpath Trail and to other local and regional trails. The plan identified trails representing over 500 miles of proposed trails and greenways in the county (Ohio & Erie Canal Association, 2010). In 2011, an update to the plan was initiated.

Village of Richfield Land Use Study. In 2011, the Village of Richfield embarked on the Crossroads of Commerce & Community Study. The Study will include the development of bike and pedestrian plans that promote access to public transportation along Brecksville Road and safe connections across the interstates to reconnect areas of the community. There are also proposals for trail and street improvements to connect Richfield's Historic District, its school campus and the Park (AMATS, 2010).

Bath Greenway Plan. The Township of Bath has worked on identifying trail and greenway connections as part of its Comprehensive Planning efforts over the years.

Hudson Master Plan. In 2000, the City of Hudson completed its Comprehensive Master Plan that included goals for a trail network in the community and connections beyond (City of Hudson, 2000).

AMATS/NOACA Bike Plans. In 2008, the Akron Metropolitan Transportation Study (AMATS) developed the Bicycle and Pedestrian Needs Report in 2008 to identify and evaluate the bikeway and pedestrian needs for its planning region that includes Summit County. In 2011 and 2012, AMATS embarked on the development of a bike users map to establish "bikeability" scores for the region's roadways and established a regional Bike Plan. In 2008, the Northeast Ohio Regional Coordinating Agency (NOACA) developed a Regional Bicycle Plan for its region, including Cuyahoga County, identifying bikeway projects.

Cuyahoga Water Trail Plan. In 2010, a Cuyahoga River Water Trail Group was formed to collaborate among the various Cuyahoga River users and stakeholders to establish a state-designated water trail. In early 2011, the group held its first Water Trail workshop to discuss the opportunities and challenges for the water trail designation.

1.2.7 Special Designations

The Park has a number of designations established outside of its enabling legislation as a National Park. These designations identify unique resources within the Park and its affiliation with park and other associated federal programs.

National Recreational Trail. The National Trail System Act of 1968 (Public Law 90-543) authorized creation of a national trail system. National Recreation Trails, designated by the Secretary of Interior or the Secretary of Agriculture, recognize exemplary trails of local and regional significance. Through designation, these trails are recognized as part of America's national system of trails (NPS, 2009e). The Park contains two segments recognized as National Recreation Trails.

- 2.8 miles along the Towpath Trail (Station Road north to Canal Road)
- 0.50 miles Harriet Keeler Woodland Trail located in Brecksville Reservation.

Ohio & Erie Canal National Heritage Canalway. The Park is located within the Ohio & Erie Canal National Heritage Canalway. As part of the NPS National Heritage Areas Program, Canalway was designated through Public Law 104-333. The legislation states that the Canalway will "preserve and interpret for the education and inspirational benefit of present and future generations the unique and significant contribution to our national heritage of certain historic and cultural lands, waterways, and structures within the 87-mile Ohio & Erie Canal Corridor between Cleveland and Zoar" (OECA, 2000).

American Heritage River. The Park contains a section of the Cuyahoga River that is designated as an American Heritage River. Established under Executive Order, 13061, 1997, the American Heritage River Program recognizes rivers with distinctive characteristics and strong community involvement.

Nationwide Rivers Inventory. In partial fulfillment of Section 5(d) requirements of the National Wild and Scenic Rivers Act (16 U.S.C 1271_1287), the NPS has compiled and maintains a Nationwide Rivers Inventory (NRI) to register river segments that potentially qualify as national wild, scenic or recreational river areas. A portion of the Cuyahoga River in the Park is identified in the National Rivers Inventory.

National Scenic Byways. Established under the Intermodal Surface Transportation Efficiency Act of 1991, the U.S. Transportation Secretary recognizes certain roads as National Scenic byways due to their distinctive qualities. The Park contains approximately 18 miles of the Ohio & Erie Canal National Scenic Byway, including sections on Canal Road between Rockside Road and Pleasant Valley Road, and Riverview Road between Pleasant Valley Road and the southern boundary of the Park.

Area of Concern. The Park contains a segment of the Cuyahoga River that is included in the Area of Concern, under Annex 2, of the Great Lakes Water Quality Agreement, administered by the International Joint Commission. Annex 2 "directs Canada and the United States, working with state and provincial governments to develop plans that embody a systemic and comprehensive ecosystem approach to restore and protect beneficial uses in areas of persistent pollution as defined in Annex 3 of the Agreement, as Areas of Concern" (International Joint Commission, 2011).

National Historic Landmarks and Historic Districts. Inside the boundary of the Park, 34 sites are designated as National Historic Districts or landmarks as authorized by the National Historic Preservation Act of 1966. These sites are described further in the Cultural Resources section of Chapter 3.

Natural Study Area. In 2005, the Park designated 164 acres known as Terra Vista as a Natural Study Area. The Terra Vista Study area was established to recognize Terra Vista's monitoring and visitor use management needs (NPS, 2005b).

1.2.8 National Park Service Laws, Management Policies and Regulations

Public Law 93-555. Cuyahoga Valley National Park Enabling Legislation and Amendments. Congress created the park in December, 1974. The Park's legislation was amended from a national recreation area to a national park in 2000. The project and this Environmental Impact Statement are consistent with all acts of Congress that govern the management of the Park.

NPS Organic Act of 1916. The NPS Organic Act directs the NPS to manage the parks "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The Redwood National Park Expansion Act of 1978 reiterated this by stating that NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16-USC 1 a-1).

The resources of CVNP are protected under the authorities of the NPS Organic Act of 1916 (16 U.S.C. 1), the National Park System General Authorities Act (16 U.S.C. 1a-1 et seq.), Part 36 of the Code of Federal Regulations (CFR), and the Park's enabling legislation. (Public Law 93-555).

National Environmental Policy Act of 1969, *as Amended*. NEPA is implemented through the regulations of the Council of Environmental Quality (CEQ) [40 CFR 1500-1508] that requires detailed and documented environmental analysis of proposed federal actions that may affect the human environment.

NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*. Director's Order 12 provides a planning process for NPS compliance with the National Environmental Policy Act (NEPA).

NPS Director's Order 42. *Accessibility for Park Visitors*. Director's Order 42 goal is to ensure the implementation of the highest level of accessibility that is reasonable to NPS programs, facilities and services through planning, construction and renovation of buildings and facilities and in provision of programs and services to the public and to NPS employees.

NPS Director's Order 52C. *Park Signs*. Director's Order 52C provides guiding principles for a consistent and effective sign program throughout all NPS units. The Order and its companion Sign Standards Reference Manual, sets forth standards for planning, design, fabrication, installation, inventory and maintenance of outdoor signs for national parks.

NPS Director's Order 83 Public Health. Director's Order 83 outlines what NPS will do to ensure compliance with prescribed public health policies, practices and procedures. Its companion guidance manuals, Reference Manual 83B1, Wastewater Systems and Reference Manual 83F, Backcountry Operations are pertinent to this Plan.

NPS Director's Order 77. Natural Resource Protection, Reference Manual. Director's Order 77 sets forth guidance to NPS employees responsible for managing, conserving and protecting natural resources found in NPS units.

Part 36 of the Code of Federal Regulations (CFR) provides for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the NPS.

The following sections of Part 36 of the CFR apply specifically to Trail Plan elements in the alternatives being considered.

36 CFR 2 Resource Protection, Public Use and Recreation

- 2.1 Preservation of natural, cultural and archeological resources.
- 2.2 Wildlife Protection
- 2.10 Camping and food storage.
- 2.14 Sanitation and refuse.
- 2.16 Horses and pack animals.

36 CFR 3. Boating and Water Use Activities. This section provides applicability, regulations and requirements of boating and water use in park waters.

36 CFR 4. Vehicles and Traffic Safety, 4.30 Bicycles (b) Except for routes designated in developed areas and special use zones, routes designated for bicycle use shall be promulgated as special regulations.

36 CFR 7. Special Regulations, Areas of the National Park System. The NPS requires an issuance of a special regulation to designate routes for bicycle use when it will be off park roads and outside developed areas. If the selected alternative includes new off-road or reauthorized trails for bicycling, and then chooses to proceed on the action, the Park will need to proceed with the established rulemaking process set forth by the NPS.

Part 40. of the Code of Federal Regulations (CFR). 1500-1508 (Council of Environmental Quality, NEPA regulations of 1978). This section provides regulations for implementing the Procedural Provisions of NEPA.

Part 43 Code of Federal Regulations (CFR) 3 (Antiquities Act) This section establishes procedures to be followed for permitting the excavation or collection of prehistoric objects of federal lands.

Part 43 CFR 46 Implementation of the National Environmental Policy Act of 1969. A bureau proposed action is subject to the procedural requirements of NEPS if it would cause effects on the human environment and is subject to bureau control and responsibility.

National Historic Preservation Act of 1966, as Amended Through 2000. (16 USC 470), The Act declared historic preservation as a national policy and authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places that would include properties of national, state and local historic significance. The Act recommends that federal agencies proposing action consult with the State Historic Preservation Office regarding the existence and significance of cultural and historical resource sites.

Clean Water Act of 1972. The Act requires water quality standards and prohibits any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.

Endangered Species Act of 1978. As amended, the Act prohibits federal actions from jeopardizing the existence of federally-listed threatened or endangered species or adversely affecting designated critical habitat. Federal agencies must consult with the U.S. Fish and Wildlife Service to determine the potential for adverse effects.

Archeological Resources Protection Act (ARPA) of 1979. (P.L. 96-95; 93 Stat.712). The Act defines archeological resources, their excavation or removal regulations, preservation policies, cooperation with other parties and the development of plans for surveying public lands for archeological resources.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. The Order directs actions of federal departments and agencies to implement the Migratory Bird Treaty Act.

Architectural Barriers Act of 1968 (ABA), the 1984 Uniform Federal Accessibility Standards (UFAS) and the American with Disabilities Act (ADA) of 1990. The Acts establish the requirements that buildings, facilities and programs be made accessible to people with disabilities. The set standards for NPS design and architectural access is the ADA-ABA Accessibility Guideline for Building and Facilities.

Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. The Act requires federal agencies and institutions that receive federal funds to provide information about Native American human remains, funerary objects, sacred objects and objects of cultural patrimony to lineal descendants, Indian tribes and native Hawaiian organizations and, upon presentation of a valid request, dispose of or repatriate these objects to them.

NPS Management Policies, 2006. The basic Service-wide policy document of the NPS provides guidance and interpretation of laws, regulations, executive orders and directives.

1.2.9 Appropriate Use

According to NPS Management Policies (2006, Section 1.5) the NPS must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on park resources and values. Section 8.1.1 of the NPS Management Policies outlines appropriate uses in the National Parks: "appropriate forms of visitor enjoyment emphasize appropriate recreation consistent with the protection of the park. In exercising its discretionary authority, the Service will allow only uses that are 1) appropriate to the purpose for which the park was established, and 2) can be sustained without causing unacceptable impacts."

1.3 Scoping Process and Public Participation

As defined in NPS Director's Order 12, "scoping is an early and open process to determine the scope of environmental issues and alternatives to be addressed in an EIS." This section outlines the general activities and outcomes of the public involvement that were part of the planning process for the Plan. Detailed information on the scoping process and public participation is provided in Appendix B of this document.

1.3.1 Internal Scoping

Internal scoping involves the interdisciplinary participation and input from NPS staff to define issues, alternatives and data needs.

Interdisciplinary Team (IDT). An IDT was formed in 2009 including the Park, NPS Rivers, Trails, and Conservation Assistance (RTCA) staff and representatives from Cleveland Metroparks and Metro Parks, Serving Summit County. The IDT members, who served as the primary advisors to the development of the Plan, met throughout the planning process. Additionally, a subset of the IDT, the CORE team met regularly to advise and prepare materials for the IDT. A list of members for both of these teams is provided in Chapter 5 of this document.

Cooperating Agencies. Under NEPA, a cooperating agency is "any Federal agency other than the lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal." In addition, a state or local agency of similar qualifications may also become a cooperating agency.

In 2009, the Park signed a Memorandum of Understanding with Cleveland Metroparks and Metro Parks, Serving Summit County to outline collaboration on the Trail Management Plan. Both of these regional park entities were part of the IDT and coordinated with the Park on all aspects of the Plan.

1.3.2 External Scoping – Public Involvement

External Scoping for the Trail Management Plan involved a variety of activities for the public to participate in the planning process. Activities included a stakeholder survey, public meetings, public outreach, and newsletters. Information on the specific public involvement activities is provided in Chapter 5 of this document.

1.3.3 Public Scoping

Through the public scoping process, five primary issues were identified for the Plan: park resources, visitor uses, facility uses, maintenance and administrative operations. Appendix B outlines general items for these issues that were identified during the scoping period.

1.4 Scope of Environmental Impact Statement

As required under NEPA, the Environmental Impact Statement must identify issues that may be affected by the proposed actions.

Impact topics were identified that may be 1) impacted by the proposed action 2) have an impact on the proposed actions in this Plan or 3) not relevant or impacted by the proposed action. Determination of topics for impact evaluations were identified based upon the following:

- Federal laws, regulations and executive orders, including NEPA guidance documents
- NPS Management Policies (NPS, 2006a)
- Public Scoping input
- Relevance of proposed actions to park resources.

1.4.1 Impact Topics Retained for Impact Analysis

The impact topics identified that may be impacted or have an impact on the proposed actions are listed below. Each impact topic is described further in Chapter 3 and impacts on each topic associated with the Trail Plan alternatives are described and analyzed in Chapter 4.

Water Resources. The presence of the Cuyahoga River system and its associated water resources may be affected by the location, use, construction and management of trails. Specifically trails and their associated facilities may affect watershed imperviousness, water quality, riparian buffers, floodplains and wetlands.

Vegetation and Invasive Plants. The Cuyahoga River Valley continues to transform itself with restored landscapes, but is continually challenged by its proximity to the urban environment. Trail impacts to vegetation communities can vary based upon trail location, resource sensitivity and level of trail development and its designated uses. These impacts may occur by changes in vegetative habitats through disturbance and fragmentation, and the introduction or spread of exotic invasive plants that limits native ecological diversity.

Wildlife. The diversity of wildlife and their use of the Cuyahoga Valley continue to evolve as the landscape continues to be restored. Disturbance of wildlife habitat can occur due to trail proximity to sensitive features and the level of noise and motion from trail users, causing changes in movement, distribution and composition of wildlife. Based upon their location and use levels, trails may change the size of habitats, create edge effects to sensitive species and create new movement corridors for new species interactions.

Soils. The steep valley walls and valley floor pose challenges to any suitable uses within the Park. Trails may affect soils and the terrain by their placement and design, causing soil erosion and compaction which can increase sedimentation and unstable conditions. The suitability of the soils and its terrain for trails placement will affect the investment and management of the trails and protection of soil resources.

Cultural Resources. The type and level of visitation to cultural resources can affect the quality of that resource. Cultural resources in CVNP include National Register Historic sites, cultural and scenic landscapes, and archeological resources. Trails can affect these specific cultural resources if the circulation of visitors is not designed properly, the level of visitor use creates impact to the resource, or the integrity of the cultural resource is minimized by a trail or trail facility.

Visitor Use and Experience. The Park's proximity within a large metropolitan area, poses it for recreational use by a wide variety of visitors. Trails can serve as one vehicle to experience the wide variety of park resources upon which the Park was created. Trails can also affect those experiences at varying levels for the visitor by the following issues; orientation, education and interpretation, visitor accessibility, visitor use conflict, human health and safety and noise caused by human use.

Socioeconomic. The Park boundary reflects a dynamic integration into the community and region. The mosaic of ownership and local governmental roles may be affected by trails and their proximity to other lands, their transportation connections to communities and their opportunities or impacts to the local and regional economies.

Park Operations. Without the proper Park operations in place, conditions may occur where trails become degraded, trail user conflicts increase, Park resources are impacted from their desired conditions and visitor safety is compromised. Park operations that may affect trails include the staffing for all divisions of the park, operation of park facilities, and staffing and coordination with Park partners and local jurisdictions.

1.4.2 Impact Topics Dismissed from Further Consideration

Director's Orders 12 requires an initial screening of a wide variety of resources and potential effects on park resources proposed actions may have. Through this initial screening, some impact topics were dismissed from further analysis as a result of a) the proposed alternatives would have negligible or no effects on the particular resource or b) the resource does not occur in the national park. The following resource topics were dismissed for further analysis for the reasons stated below.

Geohazards. NPS Management Policies (2006a) states the NPS will strive to avoid placing new visitor and other facilities in geologically hazardous areas that pose hazardous to humans and park infrastructure such as earthquakes, volcanic eruptions, mudflows, landslides, floods, shoreline processes, tsunamis and avalanches. While the park has experienced park facility closing and infrastructure damage from flooding occurrences, the proposed actions will not exasperate the flooding occurring or its frequency. During any new facility site planning, the park will adhere to NPS Management Policies (Section 9.1.1.5) and "strive to site facilities where they will not be damaged or destroyed by natural physical processes and where dynamic natural processes cannot be avoided, developed facilities should be sustainably designed."

Groundwater Resources. The Park is not located within the limits of a designated U.S. Environmental Protection Agency Sole Source Aquifer.

National Natural Landmarks. The National Natural Landmarks Program was established by the Secretary of the Interior in 1962 under the authority of the Historic Sites Act of 1935 (16 U.S.C 461 et seq.) to identify and encourage the preservation of a full range of geological and biological features that are determined to represent nationally significant examples of the Nation's natural heritage. Once a landmark is determined nationally significant, designation is recommended and if designated included on the National Registry of Natural Landmarks. The Park contains one National Natural Landmark, Tinkers Creek Gorge within the Cleveland Metroparks Bedford Reservation. None of the alternatives involve any action at this location and will not effect this designation as a result (NPS, 2009c).

Streamflow Characteristics. The NPS has established a Streambank Stabilization Program Management Plan for the Cuyahoga River. In addition, the Ohio EPA has established goals for the water quality of the river and its associated tributaries. Trails and trail facilities, specifically water trails will have interactions with the River and its tributaries but will not alter or change the stream flow characteristics of these natural water systems.

Lakes and Ponds. The Park contains approximately 70 lakes and ponds ranging in size from less than one-tenth of an acre to 10 acres. The Park's largest lake is Virginia Kendall Lake of 10 acres. Fifteen of the ponds are managed for visitor use within the Park's Pond Management Plan (NPS, 1993). While the proposed alternatives will have trails near or adjacent to four lakes and ponds, including Horseshoe Pond, Indigo Lake, Virginia Kendall Lake and Armington Pond, the lakes and ponds will not be altered or modified that would cause an effect to these resources.

Nationwide Rivers Inventory (NRI). In partial fulfillment of Section 5(d) requirements of the National Wild and Scenic Rivers Act (16 U.S.C 1271_1287), the NPS has compiled and maintains a Nationwide Rivers Inventory (NRI) to register river segments that potentially qualify as national wild, scenic or recreational river areas. In 1982, an eight mile reach of the Cuyahoga River from the vicinity of the confluence of Chippewa Creek upstream to Peninsula was listed on the Nationwide Rivers Inventory (NRI) with "Outstanding Remarkable Values (ORVs)" for Scenery, Recreation and Fish (NPS, 2009b). The proposed trails in all alternatives will not affect the scenic values or resources conditions recognized in the NRI designation for the Cuyahoga River. Existing and proposed trails in the NRI designated section will not be along the River, with the exception of the current Towpath Trail. Two paddle launch sites are proposed within the NRI, which will enhance access for river use. No effect will occur on the Nationwide Rivers Inventory designation.

Air Quality. The Clean Air Act of 1963 (42 U.S.C. 7401 et seq.) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with NPS units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. The proposed actions in the Trail Plan promote non-motorized outdoor recreation activities and will not contribute to air quality conditions and potentially will be beneficial in the Park.

Marine and Estuarine resources. Due to its location, no marine or estuarine resources are present within the Park.

Unique ecosystems. The Park does not contain any biosphere reserves or World Heritage sites.

Ethnographic resources. NPS Director's Order 28, Cultural Resource Management Guidelines, defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. According to DO-28 and Executive Order 13007 on sacred sites, the NPS should try to preserve and protect ethnographic resources.

Ethnographic resources are not known to exist in the Park. In addition, Native American tribes traditionally associated with the Park were apprised of the proposed project during scoping and response was received from an affiliated tribe. This response confirmed their cultural affiliations with the area, but indicated that no impacts to significant ethnographic resources are expected.

Museum collections. No museum collections are involved in the proposed alternatives.

Prime and Unique Farmlands. As a result of a substantial decrease in the amount of open farmland, Congress enacted the Farmland Protection Policy Act (FPPA) (Public Law 97-98). In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on prime or unique farmland soils classified by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, timber, and oil seed. Unique farmland soils are those that produce specialty crops such as fruits, vegetables, and nuts. Prime and unique farmland soils are those that are actively being developed and could be converted from existing agricultural uses to nonagricultural purposes, as described above. Urban or built-up land, public land and water areas cannot be considered prime farmland. Soils inside the Park cannot be considered prime and unique farmland soils because they are public lands unavailable for food or fiber production. Because there are no prime or unique farmlands in the Park, this topic was dismissed from further analysis.

Lightscape Management. NPS Management Policies (2006a) require the NPS to preserve the natural lightscapes within a park which include natural resources and the values that exist in the absence of human-cause light. The Park maintains minimum lighting within its park facilities to maintain the safety of park visitors and security of park facilities. The Park utilizes LED lighting, has designated areas of night closure and maintains lighting facilities that are sensored on time restrictions to minimize the amount of artificial lighting within the park. The proposed actions may result in new or improved areas that may require lighting, but are minimal and will adhere to park lighting design practices identified in this section with the goal of continuing to maintain limited artificial lightscaping within the park. Due to the minimal or negligible impact to park resources and the park management practices in place, the lightscape and night sky impact is dismissed for detailed analysis.

Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior 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 American Indian and Alaska Native tribes.

There are no Indian trust resources at the Park. The lands comprising the Park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Because there are no Indian trust resources, this topic is dismissed from further analysis in this document.

Energy Resources. NPS Management Policies requires that Park resources and values will not be degraded to provide energy for NPS purposes and that all facilities, vehicles, and equipment will be operated and managed to minimize the consumption of energy, water, and non-renewable fuels. Alternative transportation programs will be encouraged where appropriate. The Trail Plan alternatives will have a negligible or minor impact on energy use within the park and may reduce energy demands within the park through energy efficiency updates to new and existing facilities and opportunities for alternative transportation for park operations and park visitors. Where energy resources are required for trail maintenance vehicles or trail facilities, the park will adhere to NPS sustainable energy design and energy management requirements and its Climate Friendly Parks program in compliance with Park's EMS program under Director's Order 13A.

Climate Change. The Council of Environmental Quality Draft Guidance on Consideration of Effects of Climate Change and Greenhouse Gas Emissions sets forth general guidance for proposed actions. Because the proposed actions will not contribute to the carbon footprint or increase greenhouse gas emissions, due to its non-motorized use and expansion to reduce greenhouse gas emissions through alternative transportation use, this issue is dismissed for further consideration.

Environmental Justice/Minority and low Income populations. 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 disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The Park is not located within or adjacent to neighborhoods with high minority and/or low income populations. The proposed alternatives will not displace or travel through or near any low income populations due to their absence within or adjacent to the park boundaries. The proposed action would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1997). Therefore, environmental justice was dismissed from further analysis.

Chapter 2: Alternatives

This chapter describes various alternatives or actions that could be implemented as part of the trail system in the Park. The National Environmental Policy Act (NEPA) governs the process of decision-making when a federal agency proposes any action that has the potential to affect the human environment. In the Environmental Impact Statement (EIS) process, alternatives will form the basis for the analysis of environmental impacts. NEPA requires that the process include the consideration of a range of alternatives. In addition, NPS must consider a No Action Alternative, along with any Action Alternatives. This chapter describes the development of the Alternatives and description of the alternatives that were evaluated for the EIS.

2. 1 Development of Alternatives (Methodology)

The alternatives reflect information and input from a variety of sources during the planning process. The following factors were considered in the development of all the alternatives.

Goals and Objectives. Alternatives were designed to meet the goals and objectives of the Plan. The goals and objectives are outlined in Chapter 1.

GMP Management Zones. The Park's General Management Plan (NPS 1977) designated Natural Resource Management Zones to guide overall management of natural environment and identified general suitability and prescriptions for park management. The Zones were identified as Preservation Management, Protection/Maintenance Management and Enhancement Management. These Zones fit closely to the Park's major physiographic regions of floodplain, steep terrain and plateau. These general management zones and physiographic regions were a component in the development of the alternatives.

Park Resources. The proximity of potential trails to sensitive resources was considered during development of the alternatives. Sensitive resources included the presence of water resources, terrain conditions, cultural resources, and plant and animal habitats.

Program Elements Identified during Public Scoping. Alternatives address five primary categories of trail design development that were identified during public scoping. They include improvements to existing trails, new trails of varying distances and challenges, new trail uses, a variety of trail user experiences, including connections, and facility improvements that serve the trail network.

Cuyahoga Valley National Park's role in Outdoor Recreation and Resource Stewardship. The alternatives include the consideration of the Park's role in outdoor recreation experiences and resource stewardship within a metropolitan region. The Park's distinctive and leading role to both of these activities are considered in the development of the alternatives.

General Planning Considerations. Physical and social factors were examined as part of the development of the trail alternatives including but not limited to: conditions of existing trails, property ownership, trail user patterns, and visitor safety trends. These planning considerations are outlined further in the Affected Environment and Environmental Consequences Chapters of this document.

2.2 Actions Common to All Alternatives

The following actions and policies will apply to all alternatives.

2.2.1 NPS Policies, Protocols and Monitoring

All alternatives will adhere to the policies, protocols and monitoring described in Chapter 1 of this document and any others set forth by the NPS and Department of Interior that are applicable to the Park.

2.2.2. Special Designations

All alternatives will adhere to the requirements and policies set forth for the Special Designations within the Park as described in Chapter 1 of this document.

2.2.3 Trail Projects Completed, Currently Planned or Underway

The Park is currently managing trail-related projects that are in various stages of planning and development. These projects have completed or will soon undergo environmental review and will therefore not be evaluated in this Environmental Impact Statement. They are considered as common elements of all alternatives of the Trail Management Plan.

2.2.3.1 Planning and Environmental Compliance Completed

Planning and compliance have been completed on four trail projects. One project was completed in 2012.

Rockside Station to Towpath Pedestrian Connector Bridge. A pedestrian and bike bridge is proposed to connect Rockside Boarding station to Lock 39 trailhead, which then connects to the Towpath Trail. Environmental compliance and design are completed and the Park received funding in 2012 for implementation.

Bike & Hike Trail and Brandywine Parking Lot Improvements. In 2011, Metro Parks, Serving Summit County initiated the construction phase of providing an off-road bike route for the Bike and Hike trail near Brandywine Falls, expanding the Brandywine Falls parking lot and making improvements to the Brandywine trailhead. The project will include 1.4 miles of new off-road multi-use trail of the Bike and Hike trail, connection to the Stanford Trail, and expanded parking with a total of 90 car spaces and one bus parking space. This project was completed in 2012.

Happy Days Lodge Parking Expansion. Due to events and programs offered at the Happy Days Lodge, the Park has proposed the expansion of the existing parking area adjacent to the Boston Run trailhead. The addition of 70 parking spaces is being proposed in preliminary drawings.

2.2.3.2 Planning and Environmental Compliance Underway

Hemlock Connector Trail. A separate Environmental Assessment is underway by the City of Independence evaluating alternatives for the development of a 1.5 mile multi-use connector trail from Brecksville Road, following primarily along Stone Road, to the Towpath Trail. The project includes construction of a pedestrian/bike bridge across the Cuyahoga River and connection to the Towpath near Stone Road, approximately one mile south of Rockside Station and one mile north of Canal Visitor Center.

Old Carriage Trail Repair/Rehabilitation. In 2009, the bridges on the Old Carriage Trail were closed due to unsafe conditions. In 2012, the Park will be working towards a design if funding becomes available for the bridges. Design options may include repair of existing bridges, replacement with new bridges, re-routing of trail, and other options that may be developed. Options will be evaluated based upon many factors, including feasibility, sustainability, support of the park's mission and environmental impacts. Estimated costs of different options will also be determined.

Old Carriage Trail Connector Repair. Slumping of the hillside has caused the connector trail to fall in disrepair and adverse conditions for visitor use. In 2010, park staff improved the surface of the trail sections that were in poor condition. Additional stabilization work will be evaluated and developed in 2012 as funding becomes available.

Boston Mills Area Conceptual Development Plan. The Park is currently working on a plan and Environmental Assessment for the Boston Mills area to improve parking, circulation and visitor services. Nothing in that Plan is expected to conflict with the proposals within this Trail Plan for the Boston Mills Area (i.e., river access and new trail connections).

Stanford Road New Parking Area. In 2011, the Stanford House was reopened as a new facility for overnight accommodations in the Park. With its new use and the adjacent campsites, current parking is inadequate to address the new use while minimizing conflicts. As part of the Boston Mills Area Conceptual Development Plan, a new parking area near Stanford House is being considered and evaluated to partly address this issue.

Peninsula Pedestrian Planning. The Park continues to work to improve pedestrian safety and circulation of park visitors between park facilities and non-park facilities of the Lock 29 area in Peninsula.

2.2.4 Park Sustainability Practices

The Park's current sustainability practices for providing recycling, energy efficient lighting, and energy efficient and pollution reduction operations practices will be continued and expanded where feasible under all alternatives. Identifying emerging practices and technologies to reduce energy demands of the park and enhance alternative energy generation are practices to explore for all alternatives.

2.2.5 User Carrying Capacity Standards for Trails

The NPS defines user capacity as the type and level of visitor use that can be accommodated while sustaining the quality of park resources and visitor opportunities consistent with the purposes of the park (NPS, 2006a). The Park's GMP outlined general user capacity levels for park areas (NPS 1977).

These, however, are largely outdated and predate the current trail system. User capacity guidance for the social and ecological changes on trails will be established to ensure the integrity of park resources is maintained. Preliminary development of user capacity standards is outlined in the Sustainable Trail Guidelines (Appendix C). . The implementation phase of the Trail Plan will include the review and possible update of these preliminary standards, to protect park resources and improve applicability of the guidelines for park management.

2.2.6 Accessibility and Use of Personal Mobility Devices

The Park will provide accessibility and use of personal mobility devices to its trails and trail facilities to the highest level of compliance under the applicable laws, rules and guidelines. Appendix C outlines recommendations to address accessibility and power driven mobility devices and compliance with applicable laws, rules and guidelines.

2.2.7 Trail Signage

The Park will continue to update its Sign Plan and upgrade park and trail signs utilizing the UniGuide Sign Standards that includes identity signs, motorist guidance signs and the visitor information system. As trail signs are updated, trail accessibility information for each trail will occur. The update will also include evaluating the use of alternative technology applications to enhance visitor experience and orientation such as mobile applications. General guidance for Trail Signage is provided in Appendix C, Sustainable Trail Guidelines. Updating trail maps and other trail orientation tools for visitors and content management will be required as implementation of the Selected Alternative occurs.

2.2.8 Partnerships

Partnerships between the public park agencies, local communities and the three primary Park Partners will continue as part of all alternatives. Proposed actions involving partners, especially public park agencies are described in the Operations Sections of Chapters 3 and 4 of this document.

Public Park Partnership Land Ownership and Management. The Cleveland Metroparks and Metro Parks, Serving Summit County have served as cooperative partners and advisors throughout the Trail Planning process. In accordance with the park's legislation regarding activities on land not owned in fee title by the NPS, any trail recommendations included in the Preferred Alternative that are located on non-NPS owned lands may be implemented at the discretion of the public property owner.

Local Jurisdiction for Trail Elements. Trail elements including connector trails and bike lane improvements identified in some alternatives are recommendations to create a system-wide experience for trail users and visitors to the Park and region. As with the Metroparks organizations, the proposed trail elements on land owned by local jurisdictions within the boundaries of the Park may be implemented at the discretion of the public property owner with the opportunity to enhance cooperative partnerships with the Park.

Trails Forever. One of the significant aspects of Partnerships that will be common among all of the alternatives will be the Trails Forever Program administered by the Park in partnership with the Conservancy for Cuyahoga Valley National Park. The program is focused on five primary activities; providing trail experiences, volunteer stewardship, planning, trail system enhancement and establishing

an endowment as part of the TRAILS FOREVER Legacy Fund. The Trails Forever program is further described in Section 3.8.3.1 of the Plan. The Trails Forever Program will be a critical component in the development, implementation and sustainability of the trails in the Park. While the levels of funding may differ among the alternatives, the role of the Trails Forever Program will not differ. The Trails Forever Program will advance its role in the coming years as a primary component for Trail Plan funding. The Trails Forever program will prioritize trail projects annually and identify applicable funding sources, both private and public. As part of the initial implementation phase of the Trail Plan, the Park will evaluate the Trails Forever program for staffing, program coordination, and program direction to ensure its future success and its alignment with the goals of the Trail Plan.

*Use of Volunteers***.** Volunteers for trail work at the Park will continue to be a vital component of trail stewardship in the Park and will remain under all alternatives. Management and coordination of volunteers will continue through the joint Volunteer program office of the Park and the Conservancy for Cuyahoga Valley National Park. This will include direct coordination with the Division of Maintenance through a Trails Volunteer Coordinator position. Each alternative may identify different priorities, new opportunities for additional volunteer groups, and new trail stewardship tasks, practices, and training. The use of the existing volunteer trail groups will continue.

2.2.9 Implementation

Under all alternatives, the NPS will conduct the following activities to implement the Trail Plan effectively. Upon the approval of the Plan, the Superintendent shall assemble a Trail Plan Implementation Team to lead and coordinate these activities.

- *Additional Planning*. The Park will develop additional plans and standards within initial years of the Trail Plan implementation including but not limited to an updated signage strategy for visitor accessibility information and the establishment of a comprehensive monitoring program. The utilization of expertise from user groups during site planning and design will be identified and invited as necessary for individual projects.

- *Prioritization and Review of Trail Projects and Park Facility Management System Rankings*. The Park will establish a committee of Park staff and Park partners to identify and rank Trail Plan elements for implementation. Ranking criteria will be developed to assist with the decision-making process.

- *Implementation Strategy Plan*. An Implementation Strategy Plan will be developed to prioritize trail projects and assemble the additional planning, funding, staffing, project management and monitoring that will be needed to accomplish them successfully.

- *Progress Report*. The Park will develop a progress report in cooperation with the Trails Forever Program every five years on the status of the Trail Plan implementation. Interim updates may be provided to the at-large community if necessary as implementation proceeds.

2.3 Alternative 1: No Action

Under the No Action Alternative, the trails, authorized uses and facilities addressed in this plan would remain as they currently exist. The Park would continue evaluating the implementation of the 1985 Trail Plan (NPS, 1985). The Park would continue trail management under current park policies, protocols and monitoring as described in Chapter 1. A continuation of trail projects would occur on an individual basis and as opportunities arise with separate planning and compliance. The future of trails and trail facilities would continue to be developed but without the benefit of a comprehensive plan for the Park's entire trail system.

Alternative 1 is depicted in Figure 4. Four trail categories designated in the 2001 Park's Trail Standards are identified in this alternative (NPS, 2001). These include Multi-Use, Hiking only, Equestrian-Hiking and Cross-Country Ski-Hiking. The Park and its Park Partners would maintain, repair and manage the 175 miles of trail within the Park as they currently exist as generally described in Chapter 1 and further detailed in Chapter 3, Section 3.6 of this document. In addition, the trails common to all including the Hemlock Connector and Hike and Bike Connector are included in total existing trail miles.

2.4 Actions Common to All Action Alternatives

The following actions and policies will be part of all the Action Alternatives.

2.4.1 Sustainable Trail Guidelines

The Trail Management Plan provides an opportunity to step back and review the current trail system and evaluate its sustainability for user enjoyment, resource protection and park management operations. One of the primary objectives identified during public scoping of the Trail Plan was to establish a Trail Program that will be systemic in providing stewardship of the CVNP trails for years to come. To ensure that the implementation of the Trail Plan is accomplished successfully, the Park would establish Sustainable Trail Guidelines. The Sustainable Trail Guidelines will serve as the primary ***Standard Operating Procedure*** document for trails management in CVNP and their long-term sustainability. The Guidelines focus on the following topics to incorporate best planning, design and management practices for trail sustainability among all trails in the Park:

- *Site Planning and Design of Trail*. The guidelines outline the basic principles and practices to administer during the site assessment and design phases of trail development in the Park. Guidance includes the trail development process for trails in CVNP, identifying trail classes and types and their design and management criteria, site assessment and site design best practices, and program guidance for the development of trail facilities, signage and accessibility and mobility that is suitable to each trail's individual site conditions.

- *Trail Construction*. The Guidelines establish basic principles and best practices to administer during the physical construction and maintenance of a trail.

- *Management, Maintenance and Monitoring*. The Guidelines recommend management policies that will sustain CVNP trails for future generations. Guidance is provided on annual and long

term maintenance, trail closures, management of trails for Special Use Permit events, and trail monitoring.

The Sustainable Trail Guidelines are included in Appendix C of the Trail Management Plan and will be available as a separate document for field use. The Action Alternatives and their trail elements are predicated on applying these Guidelines during implementation.

2.4.2 Restoration of Existing Trail Network

The historical practice of converting old carriage trails, farm roads and informal paths to trails, their subsequent overuse, and insufficient trail maintenance staffing have diminished trail quality and sustainability in some areas of the park. These challenges result in a less-than optimal visitor experience, increased resource damage, and increasing demands on park staffing and funding. Therefore, a primary objective common to all action alternatives is the restoration of the existing trail network. Restoration may include rehabilitating trails in their present location, relocating or realigning trails, or removal and closure of trails. This will be accomplished through condition assessments, prioritization of restoration based upon trail use and resource quality, and monitoring.

Two primary resource issues were identified during scoping that correlate with highly damaged trail areas; 1) the proximity of trails to water resources such as floodplains, streams or wetlands, and 2) trails located on steep terrain or their placement on fall lines which are typically the paths of least resistance for water flow (IMBA, 2004). Other resource damage issues relate to specific trail uses, seasonal trail conditions, and the proximity of trails to sensitive species and habitats.

In addition, social trails (trails not designated or created by the Park) are causing resource damage. These are prevalent in all parts of the Park but not documented or comprehensively mapped. The proposed Sustainable Trail Guidelines (Appendix C) will establish recommendations to evaluate actions to restore or eliminate existing trails and manage non-designated trails in the Park where conditions are adverse to park resources and the long-term sustainability of the trail system.

The NPS has identified some site specific actions where conditions are known to be problematic or exist within a sensitive resource and proposes alternative routes or alternative trail management actions. Additionally, some trails are redundant or run parallel to one another while also having little use and the NPS proposes to change or close such segments to reduce the overall footprint of trails where possible. These proposed actions are identified on Figure 2 and listed below. These actions may differ slightly among alternatives, but they do not change significantly. Where these conditions exist, priority target areas for trail removal or re-routing have been identified. If upon closer field evaluation, the specific trail can be maintained without adverse impacts to park resources, the Park will evaluate the option of maintaining the trail.

Existing Trails that would be removed or rerouted due to sensitive resource and siting concerns include the following:

- *Ledges Trails.* Removal of 0.10 miles where trails currently exist near rare plant species and where alternative parallel routes are present.
- *Lake Trail portion*: Removal of 0.17 miles of trail where rare plant species have been identified.

- *Dickerson Trail:* Removal 1.17 miles of trail due to its current location along an existing stream with multiple stream crossings.
- *Tabletop Trail:* Reroute of 0.70 miles of trail due to its current location along steep slopes.
- *Perkins Trail portion*: Removal of 1.0 miles of trail due to its current location along a streambed and its traversing of trail grades greater than 15 percent. This section is proposed for rerouting.
- *Riding Run Trail portion*: Removal of 0.5 miles of trail due to its location on steep grades and proposed for rerouting on sustainable conditions where feasible.
- *Buckeye/Trail Valley Trail portion near Brecksville Reservation*: Both the Buckeye Trail and Valley Trail cross through an identified wetland and the Buckeye Trail is routed on multiple fall line and steep slope runs. This section is proposed for removal and rerouting.
- *Buckeye reroute north of Snowville Road*: Reroute 1.0 miles of the Buckeye Trail due to its current location in identified wetlands.
- *Reroute of Valley Bridle Trail near Ohio Turnpike*. Reroute approximately 0.5 miles of the Valley Bridle Trail in conjunction with the consolidation of the Valley and Buckeye Trails above the Stumpy Basin region. This section is proposed for rerouting due to its current location on steep terrain and proximity to the interstate that can distract horses.

Existing trails that would be removed due to redundancy or parallel placement with low trail use include the following. The remaining trail will become a shared-use trail between hikers and equestrian users.

- *Buckeye Trail duplicate of Valley Bridle in lower Bedford Reservation.* Removal of 2.0 miles of the Buckeye Trail or Valley Bridle Trail. The specific trail use removed from this segment would be reassigned as a permitted trail use type on the segment that remains.
- *Buckeye Trail duplicate of Valley Bridle Trail in Brecksville Reservation.* Removal of 3.3 miles of the Buckeye Trail where it parallels the Valley Bridle Trail and reassigned as a permitted trail use type on remaining trail segment.
- *Buckeye duplicate of Valley Bridle Trail north of Old Akron Peninsula Road and Ohio Turnpike Bridge*: Removal of 0.30 miles of the Buckeye Trail where it parallels the Valley Bridle Trail. The Buckeye Trail would be reassigned as a permitted trail use type on the Valley Bridle Trail segment.

2.4.3 New Trails

Several proposed trails are common to all Action Alternatives because they provide improvements to the existing trail network under all circumstances. These include:

New Interpretive Hike Trails

- *Horseshoe Pond Perimeter Loop Trail at Tree Farm Unit.* 0.20 miles of accessible trail around Horseshoe Pond connecting to the Tree Farm loop.
- *Ira River Trail*: Utilize existing undesignated trail from Towpath Trail at Ira Trailhead access to the Cuyahoga River. The trail would be approximately 0.15 miles. Boardwalks and river overlook may potentially be part of trail features.

New Hiking Trails

- *Connector trail from Towpath Trail to Valley Picnic area and Plateau-Oak Hill Trail system.* 0.10 miles of connector trail utilizing existing road bed from Towpath Trail crossing Riverview and add new trail from the road bed to Valley Picnic Trailhead.
- *Connect Valley Bridle Trail with Salt Run Trail.* A 0.20 mile connection of Salt Run Trail to Valley Bridle trail to provide link for long-distance hiking trail experience from Happy Days to Hunt Farm.

New Multi-Use Connectors

- *Sagamore Connector Trail from Canal Road to Bike and Hike Trail.* Examine closing and vacating 1.2 miles of existing Sagamore Road that includes a portion for conversion to a multi-use path and a portion for off road multi-use path to the Bike and Hike on Cleveland Metroparks land.
- *Stanford Connector Trail from Brandywine Falls to Stanford-Towpath Connector.* Utilize the newly vacated portion of Stanford Road from Brandywine Falls to the existing lower gate, east of Latta Lane and examine the closing of Stanford Road from the current vacated section to the Stanford-Towpath Connector Trail for a 1.0 mile multi-use connector trail, when residential uses on this portion of Stanford Road no longer exist. If road closure is not feasible, consideration of a trail along the road right of way is considered.

New Cross-Country Ski Trails

- *Armington Trail:* New loop from Cross-Country Trail to Little Meadow Trailhead of 1.2 miles of trail utilizing, where feasible, existing service roads for an outer loop connection between the existing Cross-Country trail and Little Meadow parking with access to Quick Road.

2.4.4 New Trail Facilities

The scoping process identified various uses and associated facilities that will complement and support the trail network and trail visitors. The facilities include water trails, including paddle launch sites for non-motorized boat access to the Cuyahoga River and associated facilities, trailside and riverside campsites, parking at trailheads, and trail amenities such as benches and drinking water. This section outlines the general guidance and policy for each type of facility. Potential locations are provided in Figure 3. The trail facilities are presented as a suite of sites that were considered under all action alternatives with minor additions or changes among the alternatives. The changes among the action alternatives are described under each alternative.

Applicable NPS Management Policies (2006) include:

> *9.2.2.5 Water trails.* Water access and use may be provided when consistent with resource protection needs. Appropriate locations and levels of use will be determined in the Park's general management plan.
>
> *9.2.4 Parking Areas*. Parking areas and overlooks will be located to not unacceptably intrude, by sight, sound, or other impact on park resources and values. Permanent parking areas will be sized for the use anticipated on the average weekend day during peak season of use.

9.3.2.1 Campgrounds. Boating campgrounds may be provided in parks with waters used for recreational boating. The need for campgrounds and their sizes, locations and numbers, will be determined by 1) the type of water body, 2) availability and resiliency of potential campsites, 3) feasibility of providing and maintaining docking, camping and sanitary facilities, and 4) the potential for unacceptable impacts on park resources and values.

9.3.2.2 Backcountry and wilderness campsites. Backcountry and wilderness campsites may be permitted but only within the acceptable limits of use determined by the park's wilderness management plan, resource management plan or other pertinent planning document.

2.4.4.1 Water Trail

General Description

A water trail would be established and designated as part of the Cuyahoga River Water Trail system. The segment in the Park would be defined from the Bath Road bridge to the Rockside Road bridge, consisting of 22 river miles on the main stem of the Cuyahoga River.

Guidelines for Water Trails

The following guidance is recommended for the water trail and associated facilities and recreational use of the Cuyahoga River. These guidelines were developed in consideration of local conditions, need for facilities, safety, resource protection and visitor experiences.

- River Use Management Plan. Additional planning and development of the water trail may be directed through the development of a River Use Management Plan by the Park.
- Regulations. The NPS would establish regulations for river use activities. Regulations may include items related to safety, permitting, use restrictions, water level conditions, waste management and carrying capacity.
- Use. Water Trail designation for the purpose of this Plan is associated with use of non-motorized boats including kayaks and canoes. Additional non-motorized boats will be reviewed by the Superintendent for consideration.
- State of Ohio Regulations. Adherence to all Ohio Boating regulations would be required.
- Water Quality Monitoring and Reporting: Water Quality monitoring will most likely continue at several sites on the mainstem of the Cuyahoga River during the recreation season. (May-October). Additional water quality monitoring sites on the river will be evaluated. Improvements to public education and information regarding water quality conditions will continue.
- Exotic aquatic species monitoring: Best Management Practices and monitoring for exotic aquatic species from boats will be evaluated and established as necessary.
- Evaluation of Dams. The Park will identify steps for evaluation of existing dams pertaining to safety, portages and removal or modification.
- Skill Classification. The water trail segment within the Park is considered Class I and II skill levels of river difficulty as defined by the American version of the International Scale of River Difficulty. However, a final skill classification would be determined prior to establishment of the water trail. Class II level is defined as "straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-size

waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful is seldom needed. Rapids that are at the upper end of this difficulty range are designated "Class II+" (American Whitewater, 2005).

- Hazard Evaluation Plan. The Park will review the need for an updated River Hazard Survey Plan.
- Site Planning. Site-specific resource evaluations, planning and design of any paddle launch site included in the selected alternative will be conducted prior to construction.
- Livery or Other Commercial Operations. The NPS would establish an initial set of paddle launch sites to evaluate use patterns and demand. Should use and demand be significant, a feasibility study and Environmental Assessment for a commercial canoe livery or other commercial operation on the Cuyahoga River within the National Park boundary may be considered.
- Visitor Map. The NPS will develop a Water Trail Map in cooperation with regional and state water trail partners.

Paddle Access Sites. Designated paddle access sites would provide access for non-motorized boat use on the main stem of the Cuyahoga River. Potential river access sites were selected based upon general review of locations, conditions, river access, visitor facilities, river conditions, and park resources, as well as input received during public scoping.

Ten sites within the Park are being evaluated for paddling access sites. The site locations are approximate with the potential area of construction 200' feet upstream or downstream of the proposed locations. The launch facility will consist of an access path from a designated parking area, signage on water resource conditions and safety information, and an improved area, including structures (e.g., steps) where required, at the river's edge to accommodate launching or taking out a canoe or kayak. Extensive paddle access site structures are not preferred, due to the high fluctuation of river levels annually. The site would typically be no greater than 2,500 square feet but may vary by length of access path and local terrain. Because of the high fluctuations of river levels, no landing structures will be utilized as part of the design. Railings to launch vessel into river may be included in the design. The launch sites will utilize existing parking areas including some areas recommended for expansion or relocation. One new parking facility for the Ira launch site is recommended. The ten sites are described generally below and identified in Figure 4 of this document. The location descriptions also include the approximate river mile.

While any of these launch sites could be developed in the future under the correct conditions, the impact analysis in Chapter 4 has allowed us to characterize these sites based on their potential for development. River Paddling Access sites were characterized as Primary, Secondary and Future Potential based on their ease of implementation, level of impacts, distance between access points, and potential obstacles for development. Primary sites would be developed first, Secondary sites developed next, and the Future Potential sites may or may not ever be developed, depending on future needs and conditions. Recommended phasing of implementation may change depending on conditions and further site evaluation of each site and the implementation of a water trail system within the Park and beyond Park boundaries. These levels of development implementation are included in the description below which is organized geographically along the River within the Park boundary from south to north.

South Region of the Park (Boston Store to South Park Boundary near Bath Road)

- Lock 29, RM (River Mile) 29 Future Potential Access Site: Provide a facility on the east side of the River, downstream of the existing lowhead dam, adjacent to the Lock 29 Parking Area and

trailhead, to serve as a put-in for paddlers. The Lock 29 trailhead would serve as the parking area. A portage would be required at this site due to the existing lowhead dam.

- Hunt Farm, RM 33.0, Future Potential Access Site: Provide a facility on west side of the river along the public road right of way of Bolanz Road, to serve as a put-in or takeout for paddlers. The Hunt Farm trailhead would serve as the parking area.

- Ira I, RM 35.0, Secondary Access Site Provide a facility on the west side of the River, with access from the existing Ira trail head.

- Ira II, RM 35.5, Primary Access Site. Provide a facility on the east side of the River adjacent to Ira Road with a new proposed parking area, exclusively for paddle users.

Central Region of the Park (Frazee to Boston Store)

- Station Road, RM 21.0, Primary Access Site: Provide a facility upstream of the existing lowhead Brecksville dam, south of the Station Road Bridge, adjacent to the Station Road Bridge and adjacent to the Station Road Parking lot, as a paddle access site. A portage will need to be identified, if the Brecksville Dam remains or is modified in a way that limits river passage for recreational use.

- Red Lock, RM 24.0, Future Potential Access Site: Provide a facility on the west side of the River, opposite side of the river from the Towpath Trail and Red Lock trailhead to serve as a put-in and take-out for paddlers.

- Boston Mills, RM 26.5, Secondary Access Site: Provide a facility on the east side of the River, southwest of the Boston Store Visitor Center parking area, to serve as an access site for paddlers.

North Region of the Park, (North Park Boundary at Rockside Road to Frazee)

- Rockside Station, RM 13.0, Primary Access Site: Provide a facility adjacent to the Rockside Station boarding parking area on the west side of the river. The Lock 39 trailhead may also serve as a parking area for access. This facility can serve as a put-in and take-out for paddlers.

- Canal Visitor Center, RM 15.5, Secondary Access Site: Provide a facility adjacent to the Canal Visitor Center on the east side of the river. This facility can serve as a put-in and take-out for paddlers.

- Fitzwater, RM 17.0, Future Potential Access Site: Provide a facility adjacent to the Fitzwater Bridge on Fitzwater Road, located on the west side of the river. This facility can serve as a put-in and take-out for paddlers.

2.4.4.2 Campsites

General Description
Trailside and riverside campsites would provide an opportunity for a new and expanded experience in the Park. For the purpose of this plan, campsites are defined as facilities connected to the Park's trail network and that are accessible for designated use by paddlers, hikers and bicycle users. Campsites would not have any associated parking and are intended for single-day or multi-day trail use along the longer trail systems within Ohio & Erie Canal Corridor and the Buckeye Trail.

The Park is evaluating two types of campsite types:

- Dispersed camping. Dispersed camping areas are being considered for less developed trails along the Buckeye Trail. Dispersed camping would create campsite zones, but no designated tent-pads in primitive areas of the Park. Campsite zone areas of no greater than 10 acres would be delineated along the Buckeye Trail. No facilities would be provided at these sites. Campsite areas within each zone would be rotated and monitored for change in conditions. Two to three campsites would be permitted within each zone during the designated seasonal use period of May through October.

- Designated campsites. Designated campsites would have defined tent-pads and are located within more developed portions of the Park near or adjacent to the Cuyahoga River and the Towpath Trail. These sites would comprise facilities with 2-3 tent-pads for each campsite (1,500 square feet per campsite). Each site would have connector paths from the river or adjacent trail corridor with a tread width of 3 feet and basic signage for direction to the campsite. All riverside and trail side campsites would be set back a minimum of 100 feet from the river's edge or Towpath Trail and the riverside campsites would include overnight boat tie-ups.

Proposed campsite locations were selected based on appropriate terrain, avoidance of sensitive resources, proximity to existing or proposed trails, prior history of disturbance, and distance from existing roads, park facilities and private lands.

Three types of campsites are considered under the action alternatives based upon their use and access; riverside developed, trail-side developed and trail-side dispersed.

Guidelines for Campsites

The NPS would follow the following guidelines for any campsites. This guidance was prepared to address local conditions, facilities, safety, resource protection and visitor experiences.

- Site-specific Planning: Site-specific evaluation, planning and design for any campsite will be conducted prior to construction.
- Firewood: Firewood would not be provided nor collection of firewood allowed, except for at the current Stanford camping area.
- Campfires: Fires would be permitted only in designated camping areas where grills or fire rings and firewood are provided. Personal, self-contained portable grills/stoves may be used off the ground and away from overhanging vegetation.

- Water: No water will be provided for the sites. Only water available for park visitors obtained from park water systems can be assumed safe to drink. All water from streams, lakes or other natural sources must adhere to guidance set forth in NPS Visitor & Resource Protection Directorate, Reference Manual 83F (NPS, 2008c).
- Permit: Use of the campsites will require a permit with defined length of stay per site, group size limits, season of use, and other applicable policies from the Park and/or its Park Partner, Conservancy for CVNP.
- Leave No Trace: All campsite users would be required to follow, where applicable, Leave No Trace program principles that provide guidance on minimizing impacts from outdoor recreational use (Leave No Trace, 2008a).
- Human waste: Human waste management would be determined for each site prior to any campsite installation. Developed campsites would identify existing restroom facility access or new vault toilets. Campers at dispersed campsites would have to utilize a portable toilet or adhere to the "Leave No Trace" Front Country Program guidance where applicable (Leave No Trace, 2008b).
- General Campsite Regulations: The NPS would review and revise its existing park policies for campsite use as applicable. The NPS would complete any revisions prior to the implementation of any campsites in the Selected Alternative including but not limited to Leave No Trace practices, maximum number of campers per site, length of stay, human waste management, pets, noise and safety precautions.
- General Park Maintenance: The NPS would establish a maintenance and management program for the campsites including staffing levels, budgetary requests, and maintenance activities on an annual basis.
- Public Education: Park maps would identify campsite locations, directions to each campsite from significant trail corridors, and rules and guidelines for camping in the Park. Additional signage would be developed to provide direction to the campsites and would be designed to provide a positive camping experience in the Park.

Campsite Locations

The following campsite locations are proposed under all action alternatives. Some alternatives may establish conditions for their development (e.g., type of campsite, user demand). Additional sites are added under some of the alternatives. All proposed campsites Common to All Action Alternatives, are identified on Figure 3.

Riverside Campsites Developed. Two sites are proposed as developed riverside campsites. These sites would be accessible for paddlers, hikers and bicyclists.

North Park Region

- Frazee- East side of River. Trail access would be provided from the Towpath Trail near Frazee House and the Cuyahoga River near River Mile 17.75.

South Park Region

- North of Hunt Farm - West Side of River. Trail access would be provided from the Towpath Trail near River Mile 32.

Trailside Campsites Developed. Two sites are considered for developed trailside campsites. These sites would be accessible to hikers and bicyclists.

Central Park Region

- Old Carriage North. A campsite located between Old Carriage Trail and the Station Road Trailhead on the east side of the Towpath Trail.

South Park Region

- Robinson Field. Robinson Field will remain as a Special Use Permit staging area for equestrian use and other events as directed by the Superintendent.

Trailside Campsites Dispersed. Three areas are proposed for dispersed trailside camping areas. These sites would be accessible by hikers only on the Buckeye Trail.

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- Buckeye Trail - West: between Boston Mills Road and Columbia Road.
- Buckeye Trail - Dugway: between Old AP Road and I-271/I-80 highway bridges.
- Buckeye Trail - O'Neill Woods: between Bath Road and Ira Road.

2.4.4.3 Parking

General Description

The NPS proposes new parking areas, relocation of existing parking areas, new uses at existing parking areas, or expansion of existing parking areas to serve trail users in this Trail Plan. Parking was considered for all types of motor vehicles, including cars, buses, recreational vehicles, and vehicles that pull horse trailers. Potential new parking areas were proposed after considering the following conditions:

- New parking areas would be sized and located to serve new trail users or trail areas.
- New parking would be similar to existing trailhead parking areas within the Park.
- The current level of use during peak season and program events. Goals and objectives of the Trail Plan and the location of proposed trails in the action alternatives.
- Improving visitor experience for trail users through facility design.
- Connection to or augmentation of existing parking areas.
- The presence of past disturbed land in proximity to potential new parking areas or existing parking areas.
- The proposed expansion of existing parking areas is based upon existing parking area use, areas where roadside parking occurs during peak use periods, where parking lots are now typically full during average weekend summer days, or where significant proposed changes in use may occur.

Guidelines for Parking Areas

The following guidance is recommended for any of the parking areas that become part of the Selected Alternative.

- Site-specific resource evaluations, planning and design would be performed for all parking areas prior to construction.
- General design guidelines for parking areas are outlined in the Sustainable Trail Guidelines in Appendix C.
- Parking area use and design parameters would be monitored and determined by trail user carrying capacity measures and use monitoring during average peak seasonal use.

New Parking

Eleven new, expanded or relocated parking areas are proposed for all action alternatives (Table 2). This includes expansion of six existing parking areas, relocation/redesign of two parking areas, one new parking area, and two areas for expansion or new equestrian parking. These areas are depicted on Figure 4.

<u>Expansion of existing parking areas.</u>

- *Canal Visitor Center.* Expansion and redesign for an additional 10 spaces along the south side of the existing parking area would be evaluated.
- *Coliseum*. Expansion and improvement of the existing parking area for 10 spaces is proposed.
- *Lock 39 Overflow*. Expansion along the northern section of the existing parking area for an additional maximum 40 spaces is proposed.
- *Jaite Wayside*. Expansion along the eastern section of the existing parking area.
- *Horseshoe Pond*. Expansion along the eastern section of the existing parking near the current trailhead entrance.
- *Hunt Farm*. Expansion along the eastern section of the existing parking area.

<u>Relocation/Re-Design.</u>

- *Blue Hen*. The Blue Hen parking area will be relocated and redesigned for a single and expanded parking area on the north side of Boston Mills Road. The current parking areas would be removed and restored.
- *Indigo Lake*. The Indigo Lake Parking area would be redesigned north of the existing parking area.

<u>New Equestrian Parking</u>

- *Pine Lane*. Designate equestrian trailer parking area, south of the existing trailhead entrance drive.
- *Old Orchard*. Designate a new equestrian trailer parking area in the Riding Run park unit north of Everett Road, in an existing open field area. The use of parking for equestrian use at the Everett trailhead would be redesignated to the Old Orchard parking area.

Table 2. Proposed Parking Common to All Action Alternatives

Parking	Expand or New	Additional Car Parking Spaces	Equestrian Spaces	Approximate Number of Acres of Disturbance
Canal Visitor Center	Expand	10	-	0.25
Blue Hen	New/Relocate	15	-	0.35
Coliseum	Expand	10	-	0.35
Lock 39 Overflow	Expand	40	-	1.0
Pine Lane	Expand for Equestrian Use	-	10	0.50
Jaite Wayside	Expand for Vehicle	20	-	0.5
Old Orchard Equestrian Trailer Parking	New		10	1.0
Horseshoe Pond	Expand	20	-	0.50
Hunt Farm	Expand	40	-	0.50
Indigo Lake	Expand/Relocate	12	-	0.50
Ira Paddle	New	10	-	0.25

2.4.4.4 New Trail Amenities

General Description

New or improved trail amenities to serve trail users are proposed in the plan, including restrooms, lighting, parking gates for night closure, water for drinking (where feasible), bicycle racks (where bicycles are permitted) and horse hitching posts (where equestrians are permitted). Specific trail amenities for each trailhead location will be identified during detailed site planning and design for all areas. Specific locations for such amenities are not outlined in this Plan, with the following exception:

Environmental Education Center Trail Shelters. To support the growing environmental education experiences on the Park's Environmental Education Center (EEC) trails and the adjacent Oak Hill and Plateau trails, all Action Alternatives will consider the inclusion of overhead trail structures at 2-4 locations along the existing EEC trails where feasible and one small shelter adjacent to the existing Oak Hill-Plateau Trailhead. The EEC shelters shall be designed to accommodate groups of 15 and provide an overhead feature to protect groups from adverse weather conditions on the non-public trails within the EEC facility. The Oak Hill shelter would accommodate groups of 30 and provide seating for programming activities. Site-specific resource evaluation, siting and design would be conducted according to the Sustainable Trail Guidelines prior to implementation.

Any additional shelters in the Park will need to be identified and considered in a separate compliance process as trail demand and park programming require additional areas for facilities.

Guidelines for Trail Amenities

The following guidance is recommended for any of the trail amenities that become part of the Selected Alternative.

- Site-specific resource evaluation, planning and detailed design will be conducted on all trail amenities prior to construction.
- Design guidelines for trail amenities are outlined in the Sustainable Trail Guidelines in Appendix C.

2.5 Action Alternatives

2.5.1 General Description

The NPS has developed seven action alternatives for the use, stewardship and management of the Trail system within the Park.

In addition to the No Action Alternative (Alternative 1) which represents maintaining the status quo, action alternatives provide different approaches to meet the goals and objectives of this Plan. Initially, three action alternatives were proposed and organized by three trail experience themes: ReUse, Recreation, and Destination. Many elements of each alternative would meet all or more than one of these themes. The alternatives were designed to include all trail elements suitable for the Park as identified during public scoping.

Off-Road Single Track Bicycling. Off-road bicycling is the only proposed new use being evaluated that is not currently permitted in the Park. For the purposes of this Plan, off-road bicycling is defined as cross-country off-road bicycle use on a single-track natural surface trail located in undeveloped areas of the Park. Single-track is referred as a narrow width path on natural surfaces. This type of use is often referred to as mountain biking. Downhill and freeride bicycling is not included in this use. In accordance with the Code of Federal Regulations (36 CFR 4), new trails for bicycle use outside developed areas require a special regulation to authorize its implementation.

Multi-Use Trails. For the purpose of the Plan, multi-use trails described in the Plan are off-road trails located in developed park areas or vacated road corridors, utilized by multiple trail uses, and are typically designed with a wider tread width and improved surface material.

Each action alternative was evaluated both with and without this new use. The alternatives are paired into a version “A” that has no off-road bicycling and “B” that includes off-road bicycling (e.g., 2A and 2B). All other elements are generally the same for paired “A” and “B” alternatives (any exceptions are noted in the descriptions).

After completing an impact analysis for the No Action Alternative (Alternative 1) and the initial set of six action alternatives (Alternatives 2A & B, 3A & B, and 4A & B), a hybrid Preferred Alternative (Alternative 5) was developed and evaluated which combines trail elements from the other alternatives that best fit the Park while reducing impacts on park resources.

Trail types proposed in the action alternatives are an expansion of the Park’s existing types with the addition of off-road single track bicycle trails. These trail types are defined and described in the proposed Sustainable Trail Guidelines for all action alternatives.

The trail names utilized for this Plan reflect geographic or historical features. Final names of trails will be chosen as part of the site planning and design process for each proposed trail within the Preferred Alternative.

Estimated mileages and layout of proposed trails were calculated and developed from an NPS geographic information system (GIS) database. All proposed trails are conceptual and only provide a general alignment. Given the general layout of proposed trails, impact analysis for proposed trails reflects a corridor width of 50 feet around proposed trails. Site-specific resource evaluation, planning and design for each trail identified in the Preferred Alternative will occur prior to construction.

A brief summary of the alternatives is presented below. Details of each alternative follow the brief summary.

Alternative 2A - ReUse (*Environmentally Preferable Alternative)*: In Alternative 2A, the trail system would be developed and redeveloped with the concept of ReUse, using existing trail system elements, being its foundation. Alternative 2 emphasizes the importance of enhancing the existing trail system's sustainability for future generations.

Alternative 2B - ReUse with Off-Road Single Track Bicycle Use: Alternative 2B is the same as Alternative 2A with the addition of authorization of a linear off-road bicycle trail on existing trails within the Park and Park Partner lands.

Alternative 3A - Recreation Focus: Alternative 3A is focused on the concept of utilizing areas as interchangeable recreational "trail hubs" that provide the full variety of trail experiences the Park has to offer. Trail hubs would be placed in a variety of locations throughout the Park to establish activity centers for trail use and other activities.

Alternative 3B - Recreation Focus with Off-Road Single Track Bicycle Use: Alternative 3B is the same as Alternative 3A with the addition of new off-road bicycle trails consisting of two zones of short loop routes.

Alternative 4A- Destination Focus: Alternative 4A is focused on the destination rather than the journey of the Park's trail network. Park features and attractions are the focus of this alternative with the trail system serving as the main visitor access to these features.

Alternative 4B - Destination Focus with Off-Road Single Track Bicycle Trails: Alternative 4B is the same as Alternative 4B with the addition of new off-road bicycle trails. The off-road bike trail system consists of a long point-to-point trail with shorter loop trails to provide a variety of lengths and experiences to the off-road bike user.

Alternative 5 - ReUse, Recreation & Destination (Preferred Alternative): Alternative 5 (Preferred Alternative) combines the best elements of all of the alternatives and proposed trail facilities that will best fit the park, provide a world class trail system, and can be sustained for generations.

2.5.2 Alternative 2A - ReUse

In Alternative 2A, the Park trail system would be developed and redeveloped with the concept of ReUse, use of existing trail elements as its foundation. Alternative 2 emphasizes the importance of enhancing the existing trail system and its ability to be sustained for future generations to enjoy. Trails in this alternative are focused on four items; 1) Eliminating existing trails that are in sensitive natural resource areas that include wetlands, streams and habitat for rare plant species, 2) Eliminating redundant parallel trails, where trail use is low and resource damage has occurred. 3) Utilizing existing trail routes that are not officially designated by the Park, and 4) Improving connections between the Bike and Hike trail and the Towpath Trail for hikers and bicyclists. Alternative 2A is depicted in Figure 5.

Trails. Alternative 2A would add a total of 17 miles of new trails to the park's trail system and removes 11 miles of existing trails. This alternative would add 183 parking spaces requiring approximately 6.0 acres of land for construction. Alternative 2A would include a net increase of the amount of developed land for trails and trail facilities by approximately 12 acres.

Alternative 2A (including the Common to All actions described earlier) would include the general actions summarized below.

- 11 miles of existing trail removed from sensitive resources or removed due to the presence of duplicate/parallel trails that are have low visitor use.
- 2.3 miles of new Interpretive hiking trails
- 1.1 miles of new hiking trails
- 2.9 miles of new equestrian trails
- 4.5 miles of new cross-country ski trails
- 5.9 miles of new multi-use trails
- 183 expanded and new parking spaces including 10 new equestrian trailer parking spaces
- new paddle launch sites
- new riverside campsites
- new trailside campsites.

New Interpretive Hike Trails

- *Terra Vista Loop Trail with connection to the Towpath Trail at Tinkers Creek Road.* A 1.75 mile hike trail that would utilize the existing trail routes that are used currently for access for scientific study, where feasible. Additionally, a hike connector trail from Terra Vista to the Towpath Trail along Tinkers Creek road would connect the two trail systems.
- *Coliseum Birding Boardwalk Trail: 0.25 miles of new boardwalk trail for bird view*ing along southern edge of Coliseum site.

New Multi-Use Connectors

- *Fitzwater Road Connector Trail from Towpath to Riverview Road.* Designate multi-use on existing Fitzwater Road from Towpath to its end near the maintenance yard and construct 0.25 mile of additional multi-use path to Riverview Road.
- *Old Carriage Road Connector Extension to Bike and Hike Trail.* Extend existing Old Carriage Road connector 0.35 miles to existing Bike and Hike Trail.
- *Old AP Road Connector Trail from Peninsula-Lock 29 to Bike and Hike at Boston Mills Road.* Utilize abandoned road section where feasible and new off-road or shared-path trail.

New Cross-Country Ski Trails

- *South Carriage Trail, south of existing Old Carriage Trail.* Utilize existing undesignated trails for 3.0 mile loop connecting off of proposed Old Carriage Trail Connector extension where feasible.
- *Boston Run Trail reroute and connection to Hike and Bike Trail.* Reroute 0.3 miles of trail away from Route 303 and construct 350 feet of a connector trail between existing Bike and Hike and Boston Run Trail.

Campsites. Three additional campsites aside from the sites common to all Action Alternatives, are proposed under Alternative 2A:

- *North of Stone Road*. East side of River. Trail access would be provided from the proposed Hemlock Connector Trail via the abandoned section of Stone Road.

- *Ira Road*. West Side of River, 0.10 miles from the Towpath Trail and the Ira Trailhead. Trail access would be provided by a trail from the Towpath Trail across from the existing Ira Parking Trailhead access. This site would be accessible for paddlers, hikers and bicyclists.

- *Lock 29 North*. A campsite located north of the Lock 29 trailhead and accessed from the Towpath Trail in the area on a plateau south of the railroad bridge tunnel. This site would be accessible to hikers and bicyclists.

Parking. Table 3 outlines proposed new and expanded parking areas specific to Alternative 2A. Parking areas specific to Alternative 2A include:

- Terra Vista. Improve and expand where existing parking area exists.
- Red Lock. Expand and redesign along the western section of the existing parking area.
- Jaite Wayside. Expand and redesign the existing parking area to accommodate equestrian trailers.

Table 3: Additional Proposed Parking Alternative 2A

Parking	Expand or New	Additional Car Parking Spaces	Equestrian Spaces	Approximate Number of Acres of Disturbance
Terra Vista	Improve/Expand	10	-	0.25
Red Lock	Expand	16	-	0.50
Jaite Wayside	Expand for Equestrian Use	-	5	0.5

2.5.3 Alternative 2B - ReUse with Off- Road Single Track Bicycle Trails

Alternative 2B would include all proposed elements described in Alternative 2A with the addition of authorizing off-road bicycle use in designated areas. Alternative 2B is depicted in Figure 6.

Off-Road Single Track Bicycle Trails. Alternative 2B proposes to ReUse existing trails and authorize use of off-road bicycling on a segment of the Buckeye Trail between Boston Mills Road and Station Road that consists of approximately 10 miles. This designation would prescribe for improvements and reroutes within 200 feet of the existing Buckeye Trail where opportunities exist to improve the sustainability of the trail for hike and mountain bike use. The proposed bike route is a point to point linear route between existing trailheads with no loop options included in the route. The authorized trail uses proposed under Alternative 2B includes 4.5 miles on Cleveland Metroparks property, 0.40 miles on Metro Parks, Serving Summit County property and 5.20 miles on NPS property. The amount of net increase of developed land for trails would be the same as Alternative 2A, twelve acres.

2.5.4 Alternative 3A - Recreation Focus

Alternative 3A expands the trail network to reach new locations within the Park. The emphasis of Alternative 3A is to provide trail hubs to serve as centers for multiple recreational trail options, including small loop trails off of the Towpath Trail, longer distance primitive trails between trailheads, and new loop trails adjoining existing trails for expanded recreational experiences. Existing trailheads or visitor centers will serve as the trail hubs. Facilities at trail hubs will not change significantly but will be considered for facility improvements to enhance visitor experience. Alternative 3A includes many of the restorative recommendations in Alternative 2A and 2B, and connector trails, but expands on interpretive trails, distance trails and new loop trails off of existing trails. Alternative 3A is depicted in Figure 7.

Trails. Alternative 3A would add a total of 30 miles of new trails and would remove 11 miles of existing trails. This alternative also includes almost 40 miles of recommended improvements of roadways in the Park for on-road bike use. It would add 208 parking spaces requiring six acres of land for construction. Alternative 3A would include a net increase of the amount of developed land for trails and trail facilities of approximately 25.0 acres.

Alternative 3A (including the Common to All actions described earlier) would include the general actions summarized below.

- 11 miles of existing trail would be removed from sensitive resources due to the presence of duplicate/parallel trails that have low visitor use.
- Addition of 4.75 miles of Interpretive hiking trails
- Addition of 11.75 miles of hiking trails
- Addition of 8.0 miles of equestrian trails
- Addition of 10.5 miles of cross-country ski trails
- Addition of 8.0 miles of multi-use trails
- Addition of 35 miles of bike lanes on existing roadways within Park boundary
- 208 additional parking spaces within the expanded and/or new parking areas and trailheads.
- New paddle launch sites
- New riverside campsites

- New trailside campsites

New Interpretive Hike Trails

- *Rockside Boarding Station Walking Loop Trail:* 0.40 mile trail connecting at proposed Rockside Connector to Towpath Path and around perimeter of Rockside Boarding Station site. The trail would be accessible and may require a boardwalk adjacent to wetlands.
- *Canal Visitor Center Upper Loop Trail*: 0.50 miles of a wilderness loop hiking trail starting at Canal Visitor Center, crossing the Scenic Railroad along Hillside Road and establishing a new trail south of Hillside.
- *Reroute Jaite Loop Trail:* Provide a connection from the Towpath Trail utilizing the existing Jaite Bridge or new bridge across Cuyahoga River and realign the existing trail as a loop trail to the Jaite Historic District. The trail loop and connection would total approximately 1.0 miles.
- *Hines Hill Trail:* Establishes 0.50 miles of hiking trail from existing Stanford Trail along Hines Hill Road and returning to the Stanford House to establish a new loop that connects into the Hines Hill Conference Center facilities and the Stanford House.
- *Re-design of Blue Hen Falls Trail*. Provide a 0.5 mile hiking trail loop at Blue Hen Falls through a re-design of the current trail. The re-design will respond to the current trail's increasing popularity of viewing Blue Hen Falls. Boardwalks may be utilized.
- *Lock 29 Hike Loop Trail*: Provides a .75 mile hiking trail loop north of Lock 29 and south of Stumpy Basin between the Towpath Trail and the Scenic Railroad.
- *Hunt Farm River Loop Trail*: Provides a 0.30 mile hiking trail from Hunt Farm to the Cuyahoga River south of the Furnace Run stream. This would provide a small loop near the River and single route for the remainder of the trail.

New Hiking Trails.

- *Rockside to Hemlock Loop Trail*: Provides 2.70 miles of hiking trail connecting Rockside Station-Towpath to proposed Hemlock trail and new small hiking loop adjacent to Hemlock trail. Portions of the proposed trail are located on Independence School Board and City of Independence owned property.
- *West Rim Trail*: This trail was identified in the 1985 Trail Plan. The proposed five mile trail would begin at Canal Visitor Center and travel between the Scenic Railroad tracks and Riverview Road on NPS and Cleveland Metroparks property to Station Road Trailhead.
- *Five Falls Trail*: This 1.5 mile hiking trail was recommended in the 1985 Trail Plan and would provide a multiple loop option connection to Brandywine Falls and the proposed Highland Connector Trail to the Bike and Hike and the Towpath Trail.
- *Coordinate improvements with Village of Peninsula to connect trail users from Lock 29:* Towpath Trail to Upper Dugway Trail through, improved sidewalks, off-street trails, vacating Old AP Road near the Village maintenance building and improving for trail use.
- *Lower Furnace Run Trail:* Provides a trail from Everett Trailhead to existing Furnace Run trail west of Oak Hill Road.
- *Reroute Buckeye Trail:* With an addition of 0.7 miles to Buckeye Trail north of Bath Road, remove current on-road route to off-road to connect to existing trail north of Ira Road.

New Equestrian Trails

- Utilize proposed route for Jaite Loop trail and extend for equestrian use to cross Highland Road and connect to existing Valley Bridle near the Jaite Wayside Parking area. (0.5 mile)

- Establish 4.5 miles of new equestrian trail north of the Old Akron Peninsula and south of Boston Mills Road. This would be connected to the existing Valley Bridle Trail.
- *Everett to Hale-Howe Trail:* A new trail between Everett Covered Bridge and the Hale Connector Trail and improvements to existing natural surface trails to Howe Meadow. (0.5 mile)

New Multi-Use Connectors

- *Highland Road Connector Trail:* New multi-use connector from Bike and Hike to Towpath on south side of Highland Road. Extend on north side of Highland Road from Towpath to Vaughn overflow parking area.
- *Gateway Trail*: A multi-use trail adjacent to Route 303 on the north side of the road, between the Bike and Hike Trail and the Towpath Trail through connection at the Pine Lane Trailhead. This would provide 2.50 miles of new multi-use trail to the Park. The connector would be a separate path from the roadway.
- Change use designation of Old Carriage Connector Trail to Ski-Hike Only.

New Cross-Country Ski Trails

- *High Meadow Trail:* As recommended in the 1985 Trail Plan, a new trail to provide 5-kilometers (3.1 miles) for cross-country training and competitive purposes would be located west of Blue Hen Falls, near the existing Kurowski fields. The trail would link to the Buckeye Trail for hike connections.
- *Tree Farm Trail expansion:* Provide an additional 2.75 miles of trail west of the existing Tree Farm trail.
- *South Carriage Trail:* As described for Alternative 2A.

Bike Lanes

A network of bike lanes and routes would be recommended on roadways within the Park for bicyclists riding at higher speed. This network would include bike lanes as shared lanes, paved shoulders or established bicycle lanes as defined by AASHTO and meeting the specifications required for individual roadways as directed by the county, state and federal transportation agencies (AASHTO, 2010).

The following existing roads are considered for improvements for bike lane routes amounting to approximately 38 miles of improved roadway within CVNP for bicycle use. Bike lane options may include designated bike lane in existing roadway or adjacent separated bike multi-use path within road right of way. Options will be evaluated through technical guidance set forth in the *AASHTO Guide for the Development of Bicycle Facilities, 4th Edition, 2012.* Because these roads are largely not owned by NPS, coordination with local, county and state agencies for these improvements will be necessary. Additionally any current law or legislation pertaining to transportation enhancement policy and funding will be adhered to. Consideration of these options will be determined on designated routes included in the Preferred Alternative.

- Riverview Road – North of Route 303
- Riverview Road – South of Route 303
- Akron Peninsula Road – South of Peninsula to Bath Road
- Snowville Road - Western Park boundary to Riverview Road.
- Highland-Vaughn Road - Riverview Road to eastern Park Boundary, near Boyden Road intersection and, Bike and Hike crossing.
- Pleasant Valley Road – Western Park Boundary to Eastern Park Boundary.

- Truxell Road – Eastern Park boundary to Akron Peninsula Road
- Brush Road from Furnace Run Metropark to Black Road to Route 303 to Major Road to Riverview Road.
- Wheatley Road- West Park Boundary to Riverview Road
- Everett Road - Western Park boundary to Wheatley Road
- Bath Road – Yellow Creek Road to Akron Peninsula Road.
- Steele's Corners Road from Akron Peninsula Road to Chart Road.

Campsites. The campsites for Alternative 3A are the same as described in Alternative 2A with the addition of two sites with access from the West Rim Trail.

- *West Rim - Upper CVC*: A campsite approximately 0.75 miles from CVC Visitor Center. The campsite would be located near the proposed West Rim Trail. This would be accessible to hikers only.
- *West Rim*: A campsite near the historic Hrabak House adjacent to the proposed West Rim Trail between Route 82 and Pleasant Valley Road.

Parking. New, expanded or relocated parking areas for Alternative 3A are generally the same as what is described for Alternative 2A, except for the omission of the Terra Vista proposed parking area, and the addition of one new parking area and the expansion of an existing area.

Table 4 outlines proposed new and expanded parking areas specific to Alternative 3A. Parking areas specific to Alternative 3A include: a new parking area for the proposed High Meadow Trail and a new equestrian parking area, Old Orchard, near Riding Run trail.

New Parking. High Meadow. A new parking area for the new trails proposed in this area. Access would be proposed near existing unpaved park access roads.

Expanded Parking. Bike and Hike Trail. Expand the existing parking area on Boston Mills Road, adjacent to the Bike and Hike Trail. This lot is managed by Metroparks, Serving Summit County.

Table 4. Additional Proposed Parking Areas 3A

Parking	Expand or New	Additional Car Parking Spaces	Equestrian Spaces	Approximate Number of Acres of Disturbance
High Meadow	New	20	-	0.50
Boston Mills – Bike & Hike	Expand	20	-	0.50

2.5.5 Alternative 3B - Recreation Focus with Off-Road Single Track Bicycling Trails

Alternative 3B includes all of the trail elements identified in Alternative 3A with the exception of the following additional off-road single-track bicycle trails and changes in their uses. Alternative 3B is depicted in Figure 8.

Trails. The proposed off-road, single-track bicycle trails would include two new trails on both sides of the Valley in the central region of the park totaling 17.7 miles. The proposed trails would include a linear longer distance segment and shorter loops on each end of the segments.

- *West Rim Loop Trail:* 7.5 miles of off-road single-track bike trail use would be established utilizing portions of proposed trail elements in Alternative 3A and the addition of new trails for off-road bicycle use. The West Rim Loop trail would utilize the proposed High Meadow Trail (3.1 miles) as its southern point, then run north on a newly established 4.4 mile trail loop between Columbia Road and Snowville Road. New trailheads on each end of the system would be recommended to accommodate off-road bike trails users. This Loop would provide approximately 5.25 miles of new trail for off-road biking and hiking, and 2.25 miles for cross-country skiing on the High Meadow portion.

- *East Rim Loop Trail*: The East Rim loop would be established utilizing portions of proposed trails in Alternative 3A and additional proposed trails off-road bicycle use. The East Rim would utilize the proposed Five Falls Trail and South Carriage Trail and extend south parallel to the Bike and Hike Trail near Hines Hill Road. A newly established loop trail of approximately four miles, around the perimeter of the east portion of the former Krejci Dump site would be proposed for this trail system. Approximately 10 miles of new off-road single-track bicycle trail would be provided that would also include hiking on all sections and-country skiing use on the South Carriage Trail section.

Campsites. The campsites for Alternative 3B are the same as described in Alternative 3A.

Parking. Parking areas are the same as described for Alternative 3A with the addition of a parking area on Snowville Road on an existing disturbed site. The parking would serve as a north trailhead for the West Rim trail. The Snowville parking area proposes 20 new spaces and 0.50 acres in an existing disturbed area on the south side of Snowville Road, on NPS lands.

2.5.6 Alternative 4A - Destination Focus

Alternative 4A would provide the most comprehensive trail expansion of all of the alternatives. The focus would be on utilizing trails to provide visitors access to the Park's unique scenic, historic and/or experiential features. These destinations are focused on two components: 1) emphasis of the unique trail experience the Park provides for primitive long-distance trails, and 2) shorter trails that provide a "single-stop" destination. Alternative 4A is depicted in Figure 9.

Trails. Alternative 4A would add a total of 53 miles of new trails and remove 11 miles of existing trails covering 36 trail acres and also proposes improvements to 39 miles of roadways for bicycle use within the Park boundary. It adds 213 parking spaces requiring 6.5 acres of land for new construction.

Alternative 4A (including the Common to All actions described earlier) would include the general actions summarized below.

- 11 miles of existing trail removed from sensitive resources or removal of trails that duplicate trails with lower visitor use.
- Addition of 6.5 miles of Interpretive hiking trails
- Addition of 40.7 miles of hiking trails
- Addition of 5.4 miles of equestrian trails
- Addition of 11.5 miles of cross-country ski trails
- Addition of 8 miles of multi-use trails
- 35 miles of improvement for bikes on existing roads within Park boundary.
- Addition of 213 parking spaces with either expanded or new parking areas/trailheads.
- new paddle launch sites
- new riverside campsites
- new trailside campsites

New Interpretive Hike Trails

- *Canal Visitor Center Boardwalk Loop:* 0.60 miles of a riverside loop hiking trail starting at Canal Visitor Center, adjacent to the Cuyahoga River on the east side of the river and linking into the Towpath at Tinkers Creek Road. Due to the proximity to the river, a boardwalk system would be utilized.
- *Reroute Jaite Loop Trail*: As described in Alternative 3A.
- *Hines Hill Loop:* As described in Alternative 3A.
- *Blue Hen Falls Loop Trail:* As described in Alternative 3A.
- *Lock 29 Hike Loop trail:* As described in Alternative 3A.
- *Hunt Farm River Loop Trail:* As described in Alternative 3A.
- *Buttermilk Falls Trail* –A 0.3 mile hiking trail between Blue Hen Falls and Buttermilk Falls along the perimeter of the riparian area. Boardwalks may be required.
- *Maplewood Overlook Trail:* This one mile trail would travel from the existing Maplewood picnic Area along the ridge east of the picnic area to an overlook area. The site would travel adjacent or near Camp Mueller.
- *Shady Grove Trail:* This trail would provide 0.30 miles of a small loop hiking trail from the Shady Grove picnic area, to the rim of the Boston Run and back to the parking area.

New Hiking Trails

- *West Rim Trail* - As described in Alternative 3A.
- *Five Falls Trail* - As described in Alternative 3A.
- *Upper Dugway Hiking Trail*: As described in Alternative 3A as a bridle trail.
- *Coordinate improvements with the Village of Peninsula to connect trail users from Lock 29*: Towpath Trail to Upper Dugway Trail as described in Alternative 3A.
- *Sagamore Hiking Loop Trail:* A 2.4 mile hiking loop south of Sagamore Road.
- *Mudcatcher Hiking Loop Trail:* A 3.0 mile hiking loop west of Chaffee Road, north of Route 82 and south of Valley View/Canal Road.
- Connector trail utilizing the existing roadway between Station Road trailhead to Route 82.
- 0.60 miles of hiking trail from Station Road Connector Trail to Towpath Trail, near Greenwood Village proposed connector trail.

- *Columbia Hiking Trail*: A 1.3 mile hiking trail from Columbia Picnic area to the Buckeye Trail and Blue Hen-Buttermilk Trail units.
- *Everett to Plateau Hiking Trail*: A 0.45 mile trail along east side of Oak Hill Road connecting the two trail systems.
- *Plateau to Tree Farm Hiking Trail:* A 1.20 mile trail between Plateau and Tree Farm connecting the two trail systems.
- *Tree Farm trail to Daffodil Trail Connector Trail*– Hiking trail connecting Tree Farm to Daffodil trail in Furnace Run Unit of MPSSC. The trail would travel north of Major Road cross at Route 303, travel the perimeter of the former Coliseum site, cross Black Road, travel along the south side of Brush Road on NPS and MPSSC property and into Daffodil trailhead.
- *Gateway Hiking Trail:* A 3.70 mile hiking trail between Pine Lane and Happy Days Lodge along the north side of Route 303.
- *Reroute of the Buckeye Trail*: Reroute the Buckeye trail from its existing on-road location to an off-road alignment starting north of Bath Road at the Towpath Trail and connecting to the existing Buckeye Trail, east of the O'Neil Woods Metropark. This reroute would be approximately 0.70 miles.
- *Ira-Howe Trail*: Establish a new hiking trail of 1.35 miles extending the primitive trail from the Buckeye Trail at Martin Road, west of Ira, crossing Ira south of Hale Farm and connecting to the Hale Farm Connector.
- *Ira-Hampton Trail*: Establish 2.50 miles of new hiking trail between the Towpath Trail and Hampton Hills Unit of MPSSC. The trail would run from the Towpath Trail, along Ira Road, either adjacent or vacating Ira Road, across to the Brown-Bender Barn site up onto the plateau above, heading south to the Grether Farm, then crossing Steele Corners Road to the north Hampton Hills MPSSC parking area.
- *Lower Furnace Run Trail*: As described in Alternative 3A.

New Equestrian Trails

- *Everett to Hale-Howe Trail* as described in Alternative 3A.
- *Reroute of trail from Covered Bridge Trailhead* to Riding Run Trail to north side of Furnace Run along Everett Road. A bridge would be required to cross Furnace run near the existing Riding Run Trail access point on Everett Road.
- *New loop west of existing Riding Run trail* for an additional 1.85 miles.

New Multi-Use Connectors

- *Old Carriage Road Connector Extension:* As described in Alternative 2A.
- *Old AP Road Connector Trail from Peninsula-Lock 29 to Bike and Hike at Boston Mills Road*: As described in Alternative 2A.

New Cross-Country Ski

- *South Carriage Trail*: As described in Alternative 2A.
- *High Meadow Trail:* As described in Alternative 3A.

Neighborhood Connectors

- *Greenwood Village Hike Connector Trail:* Will provide an additional 0.10 mile hike route to the Towpath Trail from a common access point of Greenwood Village.
- *Echo Hills Connector trails*: Two trails including a 0.25 mile of hiking trail to existing Buckeye Trail and 0.50 miles of Multi-Use to Whaley Lane and crossing Parkview road and to existing

Equestrian Center trails in Brecksville Reservation. These would both be on Cleveland Metroparks land and municipal roadways connecting into common areas of the Echo Hills Neighborhood.

- *Chart Road Connector Trail:* A 0.75 mile hiking trail beginning at Chart Road connecting to Hampton Hills Trails.

Bike Lanes. Recommendations for new or improved conditions for Bike Lanes within the Park would be the same as described in Alternative 3A.

Campsites. The campsites for Alternative 4A are the same as described in Alternative 2A with the addition of one additional site.

- South Truxell. A campsite located between Truxell Road and Quick Road east of the Lake and Kendall Lake cross-country trail systems. The site would be accessed from the proposed East Rim Trail in Alternative 4B. The site would be accessible for hikers and bicyclists.

Parking. New, expanded and relocated areas would be the same as described for Alternative 3A plus the expansion of the Cancasi parking area, near the intersections of Route 82 and Chafee Road at the existing NPS facilities. The Cancasi parking area expansion would serve as the Mudcatcher trailhead facility as outlined in Table 5.

Table 5. Additional Park Areas, Alternative 4A

Parking	Expand or New	Additional Car Parking Spaces	Equestrian Spaces	Approximate Number of Acres of Disturbance
Mudcatcher at Cancasi	New/Expand	15	-	0.50

2.5.7 Alternative 4B - Destination Focus with Off-Road Single-Track Bicycle Trails

Alternative 4B would include all trail elements that are proposed in Alternative 4A with the addition of off-road single track bike trail routes and an additional parking area expansion. Alternative 4B is depicted in Figure 10.

Trails. Off-road, single-track bicycle trails are proposed on the east rim of the valley. The East Rim Trail would provide 20.68 miles of trail for off-road bicycle use. The route would include a long distance option along the east boundary of the Park with smaller loops for shorter riding experiences within the route. The route would include a section adjacent to the Krejci restoration site, the Dugway Trail loop, approximately one mile of the existing and proposed rerouted Buckeye Trail north of Route 303, the proposed Gateway trail, approximately 4 miles between Route 303 and Quick Road and a portion of the proposed Armington Trail. The proposed alignment would add approximately 10 miles of trail from Alternative 4A. Three small loops of varying distances would be provided north of Armington Pond, on the Upper Dugway Trail portion and east of the Krecji restoration site. An additional trailhead would be developed near Hines Hill road to accommodate an increase in trail users. This alternative would create

a new trail between Pine Lane and the Old Akron Peninsula Road and eliminate either the Buckeye Trail or Valley Bridle Trail to reduce duplicate trails, particularly where steep terrain and wet conditions exist.

Parking. New, expanded or relocated parking areas for Alternative 4B includes the 17 areas proposed in Alternative 4A. In addition, one new parking area is proposed to accommodate the proposed off-road bicycle trails. This is the expansion of the existing lot located at Boston Mills Road and Akron-Peninsula Road, near the existing Bike and Hike Trailhead. In addition, the existing Little Meadow parking area would be utilized as the south trail head for the East Rim Trail.

2.5.8 Alternative 5 - ReUse, Recreation and Destination (Preferred Alternative)

As a result of the impact analysis, the park assembled a "hybrid" of trail elements that best meets the goals of the plan and minimizes impacts to park resources. This preferred "hybrid" approach used Alternative 3B as its baseline concept. Elements causing significant impacts were removed and trail elements from all of the alternatives were combined to create the alternative that best suits the Park, its resource conditions and visitor use. Alternative 5 is depicted in Figure 11.

Trail elements were established in Alternative 5 based upon the following goals; 1) limit the increase of new trails to 30-35 miles, 2) establish a suite of new trail facilities, 3) establish a limited off-road, single-track bicycle trail area of approximately 10 miles, 4) limit expansion of equestrian trail, while improving facilities and existing trails for this use, and 5) provide trails that limit their overall impact to park resources. Alternative 5 would increase total trail miles within CVNP by 37 miles from existing conditions if fully implemented. Trail elements included in the Preferred Alternative are listed below. "Conditional" trails are subject to the development of other facilities or activities conducted prior to implementation. These activities are described under each individual conditional trail.

- All Restoration Trail Elements described under Common to All Action Alternatives with the exception of the Lake Trail removal. The removal of a portion of Lake Trail will not occur under this plan.
- Adoption of the Sustainable Trail Guidelines as described under Common to All Action Alternatives and provided in detail in Appendix C.

Trails. The following types of trails would be developed.

New Interpretive Hike Trails

- *Horseshoe Pond Perimeter Loop Trail at Tree Farm Unit*: 0.20 miles of accessible trail around Horseshoe Pond connecting to the Tree Farm loop, as identified in Common to All Action Alternatives.
- *Ira River Trail*: Utilize existing undesignated trail from Towpath Trail at Ira Trailhead as access to the Cuyahoga River. The trail would be approximately 0.15 miles. Boardwalks and river overlook may potentially be part of trail features, as identified in Common to All Action Alternatives.
- *Terra Vista Trail*: Use of the existing trail routes used currently for access for scientific study, where feasible, would occur for a 1.75 mile loop and hike only trail connector to the Towpath Trail as identified in Alternative 2a.
- *Canal Visitor Center River Trail*: 0.60 miles of a riverside loop hiking trail starting at Canal Visitor Center, adjacent to the Cuyahoga River on the east side of the river and linking into the Towpath at Tinkers Creek Road as identified in Alternative 4A.

- *Canal Visitor Center Upper Loop Trail*: A new trail loop crossing the Scenic Railroad along Hillside Road and utilizing the NPS lands south of Hillside as identified in Alternative 3A.
- *Jaite Loop Trail* (including new equestrian link to Highland Road and Valley Bridle): Provide a connection from the Towpath Trail utilizing the existing Jaite Bridge or new bridge across Cuyahoga River and realign the existing trail as a loop trail to the Jaite Historic District. The trail loop and connection would total approximately 1.0 miles as identified in Alternative 3A
- *Stanford-Hines Hill Loop Trail*: Establishes 0.50 miles of hiking trail from existing Stanford Trail along Hines Hill Road and returning to the Stanford House to establish a new loop that connects into the Hines Hill Conference Center facilities and the Stanford House as identified in Alternative 3A.
- *Blue Hen Loop Trail*: Provide a 0.5 mile hiking trail loop at Blue Hen Falls, through a re-design of the current trail as identified in Alternative 3A.
- *Buttermilk Falls Trail*: A 0.3 mile hiking trail between Blue Hen Falls and Buttermilk Falls along the perimeter of the riparian area. Boardwalks may be required as identified in Alternative 4A.
- *Lock 29 Loop Trail*: Provides a .75 mile hiking trail loop north of Lock 29 and south of Stumpy Basin between the Towpath Trail and the Scenic Railroad as identified in Alternative 3A.
- *Coliseum Boardwalk Trail*: 0.25 miles of new boardwalk trail for bird viewing along southern edge of Coliseum site as identified in Alternative 2A.
- *Hunt Farm River Trail*: Provide a 0.30 mile hiking trail from Hunt Farm to the Cuyahoga River south of the Furnace Run stream as identified in Alternative 3A.

New Hiking Trails

- *Connector trail from Towpath Trail to Valley Picnic area and Plateau-Oak Hill Trail system*: 0.10 miles of connector trail utilizing existing road bed from Towpath Trail crossing Riverview and add new trail from the road bed to Valley Picnic Trailhead as identified in Common to all Action Alternatives.
- *Connect Valley Bridle Trail with Salt Run Trail:* A 0.20 mile connection of Salt Run Trail to Valley Bridle trail to provide link for long-distance hiking trail experience from Happy Days to Hunt Farm as identified in Common to all Action Alternatives.
- *Mudcatcher Loop Trail(Conditional)*: A 3.0 mile hiking loop west of Chaffee Road, north of Route 82 and south of Valley View/Canal Road as identified in Alternative 4A. Prior to implementation of this trail, additional public outreach and community involvement will be conducted in coordination with local jurisdictions and adjacent private property owners during planning and design. If the design concludes that the trail cannot be realized without undesirable impacts to adjacent property owners, the trail element will not be implemented.
- *South Carriage Loop Trail*: Utilize existing undesignated trails for 3.0 mile loop connecting off of proposed Old Carriage Trail Connector extension where feasible as identified in Alternative 2A.
- Five Falls Trail: A 1.5 mile hiking trail and connection to Brandywine Falls, the proposed Highland Connector Trail, Bike and Hike Trail, and Towpath Trail as identified in Alternative 3A.
- *Columbia Hike Trail*: A 1.3 mile hiking trail from Columbia Picnic area to the Buckeye Trail and Blue Hen- Buttermilk Trail units as identified in Alternative 3A.
- *Everett–Plateau Connector Trail*: A 0.45 mile trail along east side of Oak Hill Road connecting the two trail systems as identified in Alternative 4A.
- *Lower Furnace Run Loop Trail*: Provide a trail from Everett Trailhead to existing Furnace Run trail west of Oak Hill Road as identified in Alternative 3A.

- *Off-Road Buckeye north at Bath Road:* A 0.45 mile trail along east side of Oak Hill Road connecting the two trail systems as identified in Alternative 4A.
- *Ira-Howe* (Conditional, Subject to the future facility use at Cranz House): Establish a new hiking trail of 1.35 miles extending the primitive trail from the Buckeye Trail at Martin Road, west of Ira, crossing Ira south of Hale Farm and connecting to the Hale Farm Connector as identified in Alternative 4A.
- *Ira- Hampton* (Conditional, Subject to the future facility use at Brown-Bender House): Establish 2.50 miles of new hiking trail between the Towpath Trail and Hampton Hills Unit of MPSSC as identified in Alternative 4A.

New Equestrian Trails

- *Howe-Everett Connector Trail*: A new trail between Everett Covered Bridge and the Hale Connector Trail and improvements to existing natural surface trails to Howe Meadow as identified in Alternative 3A. (0.5 mile)
- *Jaite Connector Trail*: Utilize proposed route for Jaite Loop trail and extend for equestrian use to cross Highland Road and connect to existing Valley Bridle near the Jaite Wayside Parking area as identified in Alternative 3A. (0.5 mile)
- *Reroute of Valley Bridle Trail near Brecksville Reservation*: 0.10 miles of new trail to replace trail removed out of existing wetland area as identified Common to All Action Alternatives.

New Multi-Use Trails

- *Sagamore Connector Trail from Canal Road to Bike and Hike Trail*: Examine closing and vacating 1.2 miles of existing Sagamore Road that includes a portion for conversion to a multi-use path and a portion for off-road multi-use path to the Bike and Hike on Cleveland Metroparks land as identified in common to all action alternatives.
- *Stanford Connector Trail from Brandywine Falls to Stanford-Towpath Connector:* A 1.0 multi-use connector trail between Brandywine Falls and the Stanford Connector as identified in Common to all action alternatives.
- *Old Carriage Connector Extension*: Extend existing Old Carriage Road connector 0.35 miles to existing Bike and Hike Trail as identified in Alternative 2A.
- *Highland Connector Trail (Conditional)*: New multi-use connector from Bike and Hike to Towpath on south side of Highland Road. Extend on north side of Highland Road from Towpath to Vaughn overflow parking area as identified in Alternative 3A. Additional public outreach and community involvement will be conducted in coordination with local jurisdictions and with adjacent private property owners during planning and design of the trail. If the design concludes that the trail cannot be realized without undesirable impacts to adjacent property owners, the trail element will not be implemented.
- *Old Akron-Peninsula Connector Trail*: Utilization of abandoned road section and new off-road or shared-road trail as identified in Alternative 2A.

New Cross-Country Trails

- *High Meadow Trail*: A new 5-kilometer (3.1 miles) trail located west of Blue Hen Falls, near the existing Kurowski fields as identified in Alternative 3A.
- *Armington Trail Connector Loop*: A new loop from Cross-Country Trail to Little Meadow Trailhead of 1.2 miles of trail utilizing, where feasible, existing service roads for an outer loop connection between the existing Cross-Country trail and Little Meadow parking with access to Quick Road as identified in Common to all action alternatives.

New Off-Road, Single-Track Bicycle Trails

- *East Rim Central Trail:* A portion of the Dugway section of the route described in Alternative 4B route combined with Krejci Loop section identified in Alternative 3B. (approximately 10 miles)
- *High Meadow Loop + ReUse/Reroute of Buckeye Trail from Boston Mills to Station Road*(*Conditional*): This is a combination of a portion of the West Rim Loop described in Alternative 3A and the reuse portion described in Alternative 2B. Conditional, subject to evaluation by the Park of the following activities: implementation of the proposed 10 mile trail (above) and its success to meet the goals and objectives of the Trail Plan, connections to off-roadbike trail systems as a result of potential expansion on other Metroparks lands in other Park units, Metroparks implementation of shared use on the Buckeye trail portion owned by them that may terminate at NPS lands, identification of existing or proposed trail routes for alternative through-hiking only trail experiences, evaluation of the utilization of a shared use schedule for limited off-road bicycle use on designated days of the week, and the institution of an education initiative for shared-use, best practices. Upon evaluation of these activities and conditions, the Park will determine the viability to proceed with this trail element.

Bike Lanes

- All described in Alternative 3A except Wheatley Road.

Neighborhood Connectors as described in Alternative 4A.

- *Greenwood Village Hike Connector Trail*: Will provide an additional 0.10 mile hike route to the Towpath Trail from a common access point of Greenwood Village.
- *Echo Hills Connector Trail*: 0.50 miles of Multi-Use Trail on Cleveland Metroparks lands to Whaley Lane and crossing Parkview road and to existing Equestrian Center trails in Brecksville Reservation
- *Chart Road Connector Trail*: A 0.75 mile hiking trail beginning at Chart Road connecting to Hampton Hills Trails.

Trail Facilities

Paddle Launch Sites: Alternative 5 would include the three Primary paddle access sites (Ira II, Station Road and Rockside). The secondary paddle access sites would be conditional to the successful management and determination of visitor use from the implementation of the primary paddle access sites.

Campsites: Campsites in Alternative 5 would include sites described under Actions Common to All Alternatives and Alternative 3A. Given the expansion of a new use throughout the park, Alternative 5 contains primary sites and secondary sites. Secondary sites would be implemented upon the completion and subsequent evaluation of management and visitor use at the primary sites. Additionally, all campsites would be designated campsites with defined tent-pads. All campsites described as dispersed would be proposed in Alternative 5 as designated. Alternative 5 proposes three primary campsites with a total of six to nine camping tent-pads and four secondary campsites with an additional eight to twelve camping tent-pads.

Primary Campsites (as described in Actions Common to All Alternatives):

Frazee: Riverside and Towpath Trail-side campsite.
North of Hunt Farm: Riverside and Towpath-trail side campsite.
Buckeye Trail West – Trail-side campsite

Secondary Campsites (subject to operations and demand of use from primary campsite implementation) All secondary campsites are described under Actions Common to All Action Alternatives unless otherwise noted.

Upper CVC campsites (trail) as described in Alternative 3A.
Old Carriage North (trail)
Buckeye – Dugway (trail)
Buckeye – O'Neil (trail)

Parking. Alternative 5 proposes the expansion, improvements and additions of parking areas as described in Actions Common to All Alternatives and individual parking areas described in Alternatives 2A, 3A and 4A. Alternative 5 identifies 15 parking areas that include the expansion of existing parking spaces with 175 additional spaces, redesign of two parking areas with 27 parking spaces, three new parking areas with a total of 40 spaces, and two new equestrian parking areas with 20 horse-trail parking spaces. The parking lot totals are predicated on all proposed lots being completely built to maximum recommended capacity. Monitoring of parking area carrying capacity will be continued to determine final number of parking spaces for each lot.

Parking Areas Common to All Action Alternatives identified in Alternative 5.
Expand Jaite Wayside (no equestrian parking expansion included)
Expand/Relocate Blue Hen
Expand Lock 29 Overflow
Expand Hunt Farm
Expand/Relocate Indigo Lake
Expand Pine Lane for Equestrian Use
Expand/Improve Coliseum
Expand Tree Farm
New Ira Paddle
New Old Orchard Equestrian Only Parking Area.
Expand Canal Visitor Center (conditional on use demand increasing)

Parking Areas as described in Alternative 2A identified in Alternative 5.
Improve/Expand Terra Vista

Parking Areas as described in Alternative 3A identified in Alternative 5.
Expand Bike & Hike – Boston Mills Lot (MPSSC)
New High Meadow

Parking Areas as described in Alternative 4A identified in Alternative 5.
Expand Cancasi (as Mudcatcher trailhead)

2.5.9 Alternatives Considered but Dismissed

The public scoping planning process described in Chapter 1 generated many proposed elements and modifications of the trail system. All proposals were examined and evaluated as part of the development of the alternatives. Some elements or alternatives were considered but dismissed due to one or more of the following factors.

Property ownership. During public scoping, trails were proposed within the CVNP boundary on lands not owned by NPS or the two metropolitan park districts. Additionally, there were trails brought forth to re-evaluate from the 1985 Trail Plan which in 2012, have a variety of private or otherwise incompatible ownership for trail development, limiting their feasibility. Many of these trails would require the assemblage of multiple land parcels for acquisition. As the Park moves towards investing in the improvements of its existing lands, land acquisition for the sole purpose of recreational use is a limited priority. These are largely removed for consideration in the alternatives due to the current private or public use of the lands and additional acquisition costs that would be required in these locations.

Shared Trail Uses. The concept of shared trail use among all trail user groups was considered and evaluated. Input from users that could potentially have conflicting uses was sought. Due to the lack of applicable locations and to provide the best quality visitor experience for all trail user groups, shared use between two groups that may experience particularly high conflict levels (equestrians and off-road bike users) was considered, but dismissed in the alternatives.

Trails in Sensitive Areas. Trails were proposed in high quality large forested areas, particularly in the upper Furnace Run region, managed and owned by Metro Parks, Serving Summit County, and the newly acquired Blossom Music Center property. Given the challenging terrain, very limited connectivity to other elements in the Park, size, current level of undisturbed land, and their high resource sensitivity, these areas were considered but dismissed for trail development.

Significant Expansions of Trails for Specific Uses. During public scoping, many of the trail user groups, particularly the mountain bike and equestrian trail users, desired significantly expanded trail miles within CVNP for their particular use. Given the current use, limitations of land ownership and resource conditions, and current, planned or projected regional trail systems available to these user groups, significant expansions were not included in the final alternatives. Additions and moderate expansions of some uses were included in some of the alternatives.

Other New Uses. During the public scoping period, the public was invited to provide ideas regarding the future trail system in the Park. Some proposals are prohibited by NPS Management Policies (off-road motorized vehicles) or are outside the scope of a Trail Plan (i.e., rock-climbing; all-terrain and gravity-oriented/downhill bike areas). These will not be considered further.

2.5.10 Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative required by 40 CFR 1505.2(b) to be identified that causes the least damage to the biological and physical environment and best protects, preserve and enhances historical, cultural and natural resources. Alternative 2A has been selected as the environmentally preferable alternative because it is the alternative that best meets this guidance. This is accomplished through the adoption of the Sustainable Trail Guidelines, restoration and removal

of trails in sensitive areas, and the limited expansion of trails, use of existing disturbed areas for trails and connections to regional trail networks to serve a variety of users throughout all regions of the park.

2.6. Comparison of Alternatives

The alternatives provide opportunities to examine the trail options in the Park for a variety of visitor experiences on the trails and their impacts to Park resources and relationships to activities within or adjacent to the Park boundary. A comparison of alternatives was conducted for their level of development, environmental consequences, Plan goals, and NEPA goals. This section provides a summary of these comparisons.

Comparison of Trail Development

Table 6 provides a comparison of the alternatives by trail miles by trail use. Total trail mileage includes all trails within CVNP including trails owned and managed by NPS, Cleveland Metroparks, Metroparks, Serving Summit County, and the Buckeye Trail Association.

Comparison of Cost Estimates/Budget

As part of the Trail Management Plan, conceptual cost estimates were developed for the alternatives (Table 7). NPS and industry cost estimating were used as the general guidance. The cost estimates are intended to demonstrate the relative change in costs by the change in levels of trail development. Once a plan is approved, specific costs should be determined as part of detailed planning and design of each trail element in the approved plan. The approval of the plan will not guarantee funding. Staffing will be dependent on NPS funding levels, park and service wide priorities and partnership funding initiatives. Costs may be reduced by site conditions, sustainable practice methods and use of volunteers and other partnerships for the Trails Program. Conceptual costs estimates outline costs for the two core activities: 1) Planning, design, construction, and implementation costs for the alternatives and their various trail elements and 2) Operations and long term maintenance to sustain the trails on an annual basis.

Comparison of Alternatives by Environmental Consequences

For the purpose of the Environmental Impact Statement (EIS), an issue or impact topic describes an environmental problem or relationship between a resource and an action or actions. Impact analysis predicts the degree to which the resource will be affected, with direct, indirect and cumulative effects considered. Intensity and duration of effects are also considered in the analysis. Effects are both adverse and beneficial and will vary depending on the affected resource and the proposed action. Chapter 4, Environmental Consequences, includes the impact analysis methodology and findings for each issue topic identified for this Plan. Table 8, provides a summary comparison that shows the type of impacts expected with each alternative by impact topic.

Comparison of Alternatives by Plan Goals

Utilizing the goals and objectives established for the Plan outlined in Section 1.1.3, a general comparison of the alternatives and how they meet the Plan's five primary goals is summarized in Table 9.

Comparison of Alternatives by NEPA Goals

The alternatives were evaluated on how they meet the goals stated in section 101 of the National Environmental Policy Act. Table10 summarizes a general comparison of the alternatives by NEPA goals.

Table 6. Comparison of Trail Miles

Trails Subtotals	Alt 1	Alt 2A	Alt 2B	Alt 3A	Alt 3B	Alt 4A	Alt 4B	Alt 5
Total Existing Trails	174.9	174.9	174.9	174.9	174.9	174.9	174.9	174.9
Total Common to All	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
New Trails Total	-	17.05	17.05	30.76	40.53	64.03	77.90	46.05
Trails Removed	-	-11.06	-11.06	-11.06	-11.06	-11.06	-12.80	-12.63
Net Additional Trails	-	6.0	6.0	19.7	29.47	52.97	65.10	37.65.
Bike Lanes	-	-	-	38.0	38.0	38.0	38.0	37.0
Total CVNP Boundary Trails	176.63	180.59 (3.5% increase)	180.59 (3.5%)	195.44 (11.5%)	205.21 (16%)	228.68 (30%)	240.81 (37%)	213.36 (21%)
NPS	107.1	112.08 (+5)	112.08 (+5)	126.93 (+19.84)	136.7 (+29.61)	160.17 (+53.08)	172.3 (+65.21)	138.22 (+31.13)
Trail Acres (trail miles x trail type tread width)	112	120 (+8)	120 (+8)	137 (+25)	134 (+22)	148 (+36)	153 (+41)	133 (+21)
Trail Parking Areas (in acres)	20.82	24.97	24.97	26.42	26.92	26.92	27.42	28.77

Table 7. Cost Estimates

	Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Planning, Design and Construction Costs								
Proposed Removal-Revegetation	-	$144,521	$144,521	$144,521	$144,521	$144,521	$144,521	$144,521
Proposed Trails Installation	-	$1,814,805	$2,130,705	$3,629,458	$3,754,858	$4,162,231	$4,494,331	$3,336,750
Bicycle Lanes Installation	-	_	_	$1,925,590	$1,925,590	$1,925,590	$1,925,590	$1,781,980
Water Trail Launch Sites	-	$3,627	$3,627	$3,627	$3,637	$3,627	$3,627	$2,000
Campsites	-	$5,628	$5,628	$5,628	$5,628	$5,628	$5,628	$2,800
Proposed Parking	-	$256,649	$289,847	$321,937	$390,543	$368,412	$368,412	$324,188
Subtotal	-	$2,225,230	$2,574,328	$3,960,650	$4,154,666	$4,539,898	$4,871,998	$3,810,259
25% design/planning /admin	-	556,307	$643,582	$990,162	$1,038,666	$1,134,974	$1,217,999	$952,564
10% Contingency	-	$222,523	$257,432	$396,065	$415,466	$453,989	$487,199	$381,025
Subtotal with Bike Lanes	-	-	-	$7,272,467	$7,534,388	$8,054,451	$8,502,786	$6,925,828
Subtotal without Bike Lanes	$0.00	$3,004,060	$3,475,342	$5,346,877	$5,608,798	$6,128,861	$6,577,196	$5,143,848
Operations and Maintenance Annually								
2011 Operating Maintenance Budget	$279,360	$279,360	$279,360	$279,360	$279,360	$279,360	$279,360	$279,360
Annual Maintenance of proposed trails	-	$42,814	$71,098	$111,548	$114,234	$164,487	$194,758	$99,758
Trail Management (FTE @40k per year)	-	$120,000 (3 FTE)	$120,000 (3 FTE)	$240,000 (6 FTE)	$240,000 (6 FTE)	$400,000 (10 FTE)	$400, 000 (10 FTE)	$240,000 (6 FTE)
Subtotal Operations and Management	$279,360	$442,174	$470,458	$630,908	$633,594	$843,847	$874,118	$619,118
Totals								
Construction	$0.00	$3,004,060	$3,475,342	$5,346,877	$5,608,798	$6,128,861	$6,577,196	$5,143.848
Operations & Management	$279,360	$442,174	$470,458	$630,908	$633,594	$843,847	$874,118	$619,118
Total without Bike Lanes	**$279,360**	**$3,446,234**	**$3,945,800**	**$5,977,785**	**$6,242,392**	**$6,972,708**	**$7,451,314**	**$5,762,966**

Table 8. Summary Comparison of Alternatives by Environmental Consequences

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: WATER RESOURCES							
Riparian Buffers and Stream Crossings							
Long-term minor to moderate adverse from 94 miles of all trails within buffer zone and 400 stream crossings.	Long-term negligible adverse riparian buffers from decrease of trail miles in riparian zone. Long-term beneficial to stream crossings from decrease in number of stream crossings.	Long-term negligible adverse riparian buffers from decrease of trail miles in riparian zone. Long-term beneficial to stream crossings from decrease in number of stream crossings.	Long-term, minor to moderate adverse from an increase of 35.94 trail miles within riparian zone and potential increase of 71 stream crossings.	Long-term minor to moderate, adverse from an increase of 42 trail miles within riparian zone and potential increase of 136 stream crossings.	Long-term moderate and adverse from increase of 44 trail miles within riparian zone and potential increase of stream crossings by 94.	Long-term moderate and adverse from increase of trail miles within riparian zone by 48.55 and a potential increase of stream crossings by 143.	Long-term minor to moderate, adverse from increase of 37.94 trail miles within riparian zone and potential increase of stream crossings by 84.
Floodplains							
Long-term minor to moderate adverse from 22 miles all trails within floodplain.	Long-term negligible adverse to floodplains from increase of 0.69 trail miles within floodplain.	Long-term negligible adverse to floodplains from increase of 0.69 trail miles within floodplain.	Long-term minor, adverse from an increase of 4.88 trail miles within floodplain and small boardwalk systems in floodplains.	Long-term minor, adverse from increase of trail miles by 4.88 within floodplain and small boardwalks systems at two sites. Mountain bike trails are not within floodplain.	Long-term minor and adverse from increase of trail miles by 4.29 within floodplain and small boardwalk systems at three sites.	Long-term minor and adverse from increase of 4.29 trail miles within floodplain and small boardwalk systems at three sites. No mountain bike trails are within floodplain.	Long-term minor, adverse from increase of 3.77 trail miles within floodplain and potential small boardwalks systems at two sites. Mountain bike trails are not within floodplain.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Wetlands							
Long-term minor adverse from 37 all trail miles within 25' buffer of wetlands and 20 miles within 125' wetland buffer.	Long-term negligible adverse to wetlands from reduction of trails within 25' wetland buffer and minor increase of 2.8 of all trail miles within 125' wetland buffer.	Long-term negligible adverse to wetlands from reduction of trails within 25' wetland buffer and minor increase 2.8 of all trail miles within 125' wetland buffers.	Long-term minor to moderate adverse from an increase of 2.27 trail miles within 25' wetland buffer and an increase of 12.33 trail miles within 125' wetland buffer.	Long-term minor to moderate adverse from an increase of trail miles by 2.77 within 25' wetland buffer and an increase of trails miles by 20 within 125' wetland buffer.	Long-term minor to moderate adverse from an increase of 3.9 trail miles within 25' wetland buffer and an increase of 26 trail miles within 125' wetland buffer.	Long-term minor to moderate adverse from an increase of 5.2 miles within 25' wetland buffer and an increase of 30.8 trail miles within 125' wetland buffer.	Long-term minor to moderate adverse from increase of 2.67 trail miles within 25' wetland buffer and an increase of 19.66 trail miles within 125' wetland buffer.
Water Quality							
Long term, minor adverse from trail conditions where increased sedimentation to streams occurs.	Long term negligible to minor adverse from minimal increase of trail miles in one cold water habitat watershed.	Long term moderate adverse from minimal increase of trail miles in one cold water habitat watershed and increase of trail use in sensitive water resource areas.	Long term minor to moderate adverse from increase of trail miles in two cold water habitat watersheds and increase in trails, high quality watersheds.	Long term minor to moderate adverse from increase of trail miles in two cold water habitat watersheds and increase in trails in, high quality watersheds.	Long term minor to moderate adverse from increase of trail miles in three cold water watersheds and increase in trails in less disturbed, high quality watersheds.	Long term minor to moderate adverse from increase of trail miles in three cold water habitat watersheds and increase in trails in, high quality watersheds.	Long term minor to moderate adverse from increase of trail miles in two cold water habitat watersheds and increase in trails in, high quality watersheds.
Cumulative Impacts							
Long-term negligible to moderate and adverse from suburban development activities outside of the Park where water resources may be modified or lost. Long-term beneficial impacts if restorative actions related to the Brecksville Dam and combined sewer overflows occur.							
Trail Facilities Common to All Action Alternatives (Water Resources)							
Long-term, negligible adverse from minimal change in footprint within riparian zone and no required stream crossings. Long-term, negligible to minor impacts from the proximity of three launch sites, three campsites and four parking areas. Long-term negligible to minor from presence of some facilities within floodplains. Long-term minor to moderate adverse impacts from increased human activity on the river, campsites, and runoff from additional parking surface areas.							

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: VEGETATION							
Habitat Fragmentation and Spread of Invasive Plants							
Long-term, minor to moderate and adverse from vegetative disturbance from 186 acres of total trail footprint within the primary vegetation communities, presence of exotic plants along main trail corridors, and trails in areas of rare or special status plant species.	Long-term, negligible to minor and adverse from minimal reduction of two trail acres within the primary vegetation communities and limited expansion of trails that would increase spread of invasive plants.	Long-term minor and adverse from minimal reduction of two trail acres in the primary vegetation communities, increase of trail use in an isolated region of the Buckeye Trail, and limited expansion of trails that would increase spread of invasive plants.	Long-term, minor to moderate and adverse from additional 25 acres of trail corridors in primary vegetation communities including expansion of trails in some new areas. Potential for increased exotic plant proliferation may occur for high use interpretive trails and new trailhead entry areas.	Long-term, moderate and adverse from additional 36 acres of trail corridors in primary vegetation communities, including new mountain bike trails in upland forest areas of the central east and west rim of the Park. Potential for increased exotic plant proliferation may occur for high use interpretive trails and new trailhead entry areas.	Long-term, moderate and adverse from additional 38 acres of trail corridors in primary vegetation communities including expansion of trails in areas throughout the park. Potential for increased exotic plant proliferation may occur for high use interpretive trails, new trailhead entry areas and expanded primitive trails in undisturbed upland forest areas.	Long-term, moderate and adverse from additional 50 acres of trail corridors in primary vegetation communities including expansion of trails in areas throughout the park and new mountain bike trails along the central and southern eastern rim of the park. Potential for increased exotic plant proliferation may occur for high use interpretive trails, new trailhead entry areas and expanded primitive trails in undisturbed upland forest areas.	Long-term, minor to moderate and adverse from additional 31 acres of trail corridors in primary vegetation communities including expansion of trails in areas throughout the park. Potential for increased exotic plant proliferation may occur for high use interpretive trails, new trailhead entry areas and expanded primitive trails in undisturbed upland forest areas.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Cumulative Impacts:							
Long-term, negligible and adverse effects from continuing development projects within and near the Park boundary that may cause vegetation disturbance but the increase of future exotic management activities and habitat restoration on disturbed sites within the Park.							
Trail Facilities							
Long-term, negligible to minor adverse impacts on the primary vegetation communities from minor ground disturbance in isolated regions of the park.							
IMPACT TOPIC: WILDLIFE							
Habitat Fragmentation and Disturbance							
Long-term, minor and adverse due primarily from the overall continued fragmentation of forest habitats in the Park.	A minimal change of less than 10 acres in affected forest blocks and vegetation communities will likely maintain the existing long-term, minor adverse impacts on wildlife and their habitats.	A minimal change of less than 10 acres in forest and shrubland vegetation communities, zero affected change in forest blocks greater than 100 acres, and the addition of mountain biking on one trail will likely maintain the existing long-term, minor adverse impacts on wildlife and their habitats.	Long-term, minor to moderate adverse impacts on wildlife primarily from increased habitat fragmentation and loss with an increase of 35 acres of affected forest and shrubland and change in five forest blocks greater than 100 acres.	Long-term, minor to moderate adverse impacts on wildlife primarily from increased habitat fragmentation and loss with an increase of 45 acres of affected forest and shrubland and change in four forest blocks greater than 100 acres.	Long-term, moderate adverse impacts on wildlife from a significant level of fragmentation of large forest habitat blocks in disturbance by an increase of 45 acres of affected forest and shrubland and change in four forest blocks greater than 500 acres.	Long-term, moderate adverse impacts on wildlife from a significant level of fragmentation of large forest habitat blocks and change in disturbance by an increase of 57 acres of affected forest and shrubland and change in four forest blocks greater than 500 acres.	Long-term, moderate adverse impacts on wildlife from a significant level of fragmentation of large forest habitat blocks and change in disturbance by an increase of 39 acres of affected forest and shrubland and change in three forest blocks greater than 100 acres.
Cumulative Impacts:							
Short-term and long-term minor and adverse from emerging development, increased loss of habitat, temporary disturbance from construction projects and potential changes associated with climate change. Future wildlife management plans currently in development will affect local wildlife populations beneficially.							
Trail Facilities Common to All Action Alternatives							
Long-term negligible to minor and adverse from the position of trail facilities on the edge of forest blocks, minimal footprint and minimal localized disturbance from new or expanded uses.							

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: SOILS							
Soil Resources							
Long-term, minor to moderate adverse impacts from 69 trail miles in areas of soils with high erodibility, 60 trail miles in soils very limited for recreational paths and 22 trails with segments with trail grades that exceed 15%.	Long-term, negligible adverse impacts from use of existing disturbed areas, no change in trail miles within soils with high erodibility or very limited for recreational trails. No trails proposed are on grades greater than 15%.	Long-term, negligible to minor adverse impacts from use of existing disturbed areas, no change in trails in limited suitable soils. No trails are proposed on grades greater than 15%. New mountain bike use will increase use on erosion-prone Buckeye Trail.	Long-term, minor adverse from 75 trail miles in areas of soils with high erodibility, 66 trail miles in soils very limited for recreational paths, and nine new trails with segments with grades that exceed 15%.	Long-term, minor to moderate and adverse from 84 trail miles in areas of soils with high erodibility, 70.5 trail miles in soils very limited for recreational paths, nine new trail segments with trail grades that exceed 15% and mountain bike trails where some steep grades exist.	Long term, moderate, adverse from 90 trail miles trails in areas of soils with high erodibility, 77 trail miles in soils very limited for recreational paths, and fourteen new trails with segments with trail grades that exceed 15%.	Long-term moderate, adverse from 105 trail miles in areas of soils with high erodibility, 83 trail miles in soils very limited for recreational paths, fourteen new trails with segments with trail grades that exceed 15%, and portions of the mountain bike trail where steep grades exist.	Long-term minor to moderate, adverse from 82 trail miles in areas of soils with high erodibility, 68 trail miles in soils very limited for recreational paths, seven new trails with segments where trail grades may exceed 15%, and portions of the mountain bike trail where steep grades may occur.
Cumulative Impacts:							
Short-term and long term minor to moderate adverse impacts from soil conditions during construction projects inside and outside of the Park and continued soil compaction and soil loss from present and continuing urbanization.							
Trail Facilities Common to All Action Alternative							
Short-term and long-term negligible to minor effects on soil resources are expected from temporary disturbance during construction and minimal area of disturbance from access and use of launch sites, campsites, and new and expanded parking areas.							

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: CULTURAL RESOURCES							
National Register of Historic Places							
Long Term negligible to minor adverse from vulnerability of ground disturbance in high use areas and unauthorized use on unmanaged social trails.	Long Term negligible to minor adverse from three additional NRHP listings, but no modifications or change in resource.	Long term, negligible to minor adverse from three additional NRHP listings, but no modifications or change in resource. No additional impacts from proposed mountain bike trails.	Long term, negligible to minor adverse from increase in proposed trail within or adjacent to six NRHP listings.	Long term, negligible to minor adverse from increase in proposed trail within or adjacent to six NRHP listings. No additional effect will occur from mountain bike trails.	Long term, negligible to minor adverse from increase in proposed trails within or adjacent to eight NRHP listings.	Long term, negligible to moderate adverse from increase in proposed trails within or adjacent to eight NRHP listings and proximity of mountain bike trail within one NRHP property.	Long term, negligible to minor adverse from increase in proposed trails within or adjacent to eight NRHP listings. NRHP sites are not within proximity to proposed mountain bike trails.
Rural Landscapes and Scenic Values							
Long Term negligible to minor adverse from vulnerability of ground disturbance in high use areas and unauthorized use on unmanaged social trails.	Long Term negligible to minor Adverse from proposed actions within proximity of three Countryside properties, but minimal disturbance.	Long term, negligible to Minor Adverse from proposed actions within proximity of three Countryside properties, but minimal disturbance. No additional impacts from mountain bike trails.	Long term, negligible to minor adverse from proposed trails within perimeter of five countryside properties.	Long term, negligible to minor adverse from proposed trails within perimeter of five countryside properties. No additional effect from mountain bike trails.	Long term, negligible to minor adverse from proposed trails within perimeter of ten Countryside properties.	Long term, negligible to minor adverse from proposed trail within perimeter of ten Countryside properties and proximity of mountain bike trail within four properties.	Long term, negligible to minor adverse from proposed trail within perimeter of five Countryside properties and proximity of mountain bike trail within two properties.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Archeological Resources							
Long Term negligible to minor adverse vulnerability from ground disturbance in high use areas and unauthorized use on unmanaged social trails.	Long Term negligible to minor Adverse from two proposed trails in proximity to known or potential archeological resources.	Long term, negligible to minor adverse from two proposed trails in proximity to known or potential archeological resources. No additional impacts form mountain bike trails.	Long term, negligible to moderate, adverse, from thirteen proposed trails within proximity of known resources and potential surface disturbance.	Long term, negligible to moderate adverse from thirteen proposed trails within proximity of known resources and potential surface disturbance, including increase survey for mountain bike trail areas.	Long term, negligible to minor adverse from proposed trails within proximity of known resources and increase survey for areas not determined.	Long term, negligible to minor adverse from proposed trails within proximity of known resources and increase survey for areas not determined including for the mountain bike trail.	Long term, negligible to moderate adverse from thirteen proposed trails within proximity of known resources and increase survey for areas not determined including for the mountain bike trail.
Cumulative Impacts:							
Continued use of neighborhood social trails will continue under this alternative, resulting in long-term, negligible to minor and adverse impacts on cultural resources. Impacts resulting from the Boston Mills Area Development Plan/Environmental Assessment may occur.							
Trail Facilities Common to All Trail Facilities							
Long-term, negligible to minor adverse impacts on NRHP properties, Countryside Initiative program elements and archeological resources. Impacts to archeological resources and will need to be evaluated through site-specific surveys to ensure mitigation of impacts.							

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: VISITOR USE EXPERIENCE							
Visitor Use Experience							
Long-term, minor to moderate, adverse from overcapacity at high peak use areas, limited variety of trail experiences and potential for trail user conflict in high use areas. No effect from public health and safety or education and interpretation opportunities.	Long-term, beneficial from limited expansion of park facilities, and limited variety of new trail experiences and opportunities for programming. Long-term, minor to moderate adverse impacts from trail user conflicts and public health and safety on trail conditions on some trails.	Long-term beneficial from expansion of park facilities, limited variety of new trail experiences, including mountain bike and limited new areas for programming. Long-term, minor to moderate and adverse impacts from trail user conflict and public health and safety in some new trail areas.	Long-term beneficial impacts from expanded variety of trail experiences, from dispersal of uses in high use areas, and expansion of park areas for park resource learning Long-term, minor adverse from increase visitation patterns in expanded trail areas. Long-term minor to moderate and adverse from proximity of some trails to trail facilities.	Long-term beneficial impacts from expanded variety of trail experiences. Long term negligible and adverse impacts from increased education on new trails and uses. Long-term, minor to moderate adverse from increased trail user conflict on some portions of the new mountain bike trail, increased visitation patterns in expanded trail areas, and increased remote proximity of some trails to trail facilities.	Long-term beneficial impacts from expanded variety of trail experiences, expansion of areas for park resource learning, and separate primary user type trail systems to reduce trail user conflict. Long-term, negligible, adverse, from expansion of primitive, low use Trails. Long-term moderate adverse impacts from limited access to trail facilities from expanded primitive trail system.	Long term beneficial impacts from expanded variety of trail experiences. Long-term, negligible impacts from increased education on new trail uses and expansion of primitive trails and isolated expansion of mountain bike trail in low use areas. Long-term, minor to moderate adverse, from limited trail intersections and shared use. Long-term, moderate, adverse from trail facilities and limited access of expanded primitive trail system.	Long-term beneficial from expanded variety of trail experiences. Long-term, negligible from expansion of limited primitive, trails,interpretive trails, and isolated expansion of mountain bike trail in low use areas and increased education on new trail use. Long-term, minor adverse, from limited trail intersections and shared use and limited access of trail facilities from expanded primitive trails.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Cumulative Impacts:							
Long-term beneficial impacts from regional trail and trail facility expansion and improvements on the Cuyahoga River to improve water resource conditions for recreational use.							
Trail Facilities Common to All Action Alternatives							
Trail facilities and amenities will provide long-term beneficial impacts to visitor use experience from the improvement of facilities for visitation, new and expanded trail user experiences and new opportunities for education and interpretation. Long-term minor to moderate impacts visitor use and experience from potential trail user conflict in high use areas by new uses and public safety and health issues associated with river conditions for human contact and human waste management at campsites.							

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
IMPACT TOPIC: SOCIOECONOMIC							
Local Governments, Residents and adjacent landowners							
Long term, minor to moderate adverse impacts from unmanaged social trails and unimproved access to the park trails. No effects on business.	Long term, minor and adverse from proximity of three trails to adjacent land owners in a regional limited area of park and reuse of three public roads for trail use.	Long term, minor to moderate, adverse from use of Cleveland Metroparks and MPSSC land for mountain bike trail use. Proximity of three trails to adjacent lands owners reuse of three public roads for trail use, and increased road crossings for trails, including mountain bike trail use.	Long term, minor to moderate, adverse by use of other jurisdiction lands for trail placement, proximity of eight trails to adjacent land owners in isolated areas throughout park, reuse and of public roads for trail use and increase in trail crossings on public roads.	Long term, minor to moderate, adverse from use of other jurisdiction lands for trails, proximity of ten trails to adjacent land owners in isolated areas, reuse of public roads for trail use and increase in trail crossings on public roads.	Long term, moderate and adverse from use of other jurisdiction lands, proximity of ten trails to adjacent land owners in multiple areas, reuse of public roads, and increase in trail crossings on public roads.	Long term, moderate and adverse from use of other jurisdiction lands, proximity of ten trails to adjacent land owners in multiple areas, reuse of public roads, and increase in trail crossings on public roads.	Long term, minor to moderate, adverse from use of other jurisdiction lands for trail placement, proximity of eight trails to adjacent land owners in isolated areas throughout park, reuse and of public roads for trail use and increase in trail crossings on public roads.
Local business							
No effects by changes in use.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from limited trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from limited trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from limited trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from limited trail expansion.	Short-term and long-term beneficial impacts from new construction opportunities and local business opportunities from limited trail expansion.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Cumulative Impacts: (Socioeconomic)							
Long-term beneficial impacts from potential increased business opportunities spurred by regional trail development. Long-term, minor and adverse impacts on local governments for additional services potential required on future regional and local greenways and trails.							
Trail Facilities Common to All Action Alternatives (Socioeconomic)							
Trail facilities will have long-term negligible and adverse impacts on costs to visitors from marginal costs for water trail use permits, long-term minor and adverse from noise associated with some facilities and their proximity to non-NPS lands, long-term negligible and adverse from increase uses and additional entry points from public roads for expanded trail facility uses from public roads, and short-term and long-term beneficial impacts on business from new opportunities for business and construction activities associated with expanded trail facilities and uses.							
IMPACT TOPIC: PARK OPERATIONS							
Park Operations							
Long term minor adverse, from limited staff to meet current operations of trail management. No effect by no new facilities proposed.	Short and long term negligible to minor, adverse from reuse of current staff operations or minor increase of less than five new support staff and limited existing facility expansion.	Long term, minor, adverse from reuse of current staff operations or minor increase of less than five new support staff and limited existing facility expansion.	Long term, minor to moderate, adverse from additional staff support of 5-8% from current staff levels and expansion of operations for new and expanded facilities.	Long term, moderate, adverse from additional staff support of 8-10% from current staff levels and expansion of operations for new and expanded facilities.	Long term, moderate to major, adverse from significant increase of staff operation support of greater than 10% from current staff levels expansion of operations for new and expanded facilities.	Long term, major, adverse, from significant increase of staff operation support of greater than 10% from current staff levels and expansion of operations for new and expanded facilities.	Long term, moderate, adverse from additional staff support of 5-10% from current staff levels and expansion of operations for new and expanded facilities.

Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 5
Partner Operations							
Long term negligible adverse from the increase role of Trails Forever for capital and ongoing maintenance support	Long term minor adverse, from limited support for limited expansion of trails.	Long term negligible, adverse from limited support for limited expansion of trails and support by new user groups.	Long term, minor to moderate, adverse, from increase of trail operational support.	Long term, minor to moderate, adverse from increase of trail operational support.	Long term, moderate adverse from significant increase of trail operational support.	Long term, moderate, adverse from significant increase of trail operational support.	Long term, minor to moderate, adverse from increase of trail operational support.
Local Jurisdiction Operations							
No effect, from no new facilities proposed.	Long term negligible to minor adverse, from multi-use connector trails and few trails involving localized jurisdictions.	Long term, minor, adverse, from multi-use connector trails and mountain bike trail on primarily non-NPS jurisdiction.	Long term, minor, adverse, from multi-use connectors, bike lanes and localized trails involving multiple jurisdictions.	Long term, minor to moderate adverse, from multi-use connectors, bike lanes, localized trails involving multiple jurisdictions and proximity of mountain bike trails to other jurisdiction trails.	Long term, moderate, adverse, from multi-use connectors, bike lanes and localized trails involving multiple jurisdictions.	Long term, moderate, adverse from multi-use connectors, bike lanes, localized trails involving multiple jurisdictions and mountain bike trails with access to other jurisdictional trails.	Long term, minor to moderate adverse, from multi-use connectors, bike lanes, localized trails involving multiple jurisdictions and proximity of mountain bike trails to other jurisdiction trails.
Cumulative Impacts:							
Expanding residential and commercial development or redevelopment surrounding the Park may increase visitation and undesignated entry points into the Park, resulting in minor adverse, long-term impacts on park operations and management. Long-term minor adverse impacts from increased river use by expansion of river use access facilities outside of park, and potential water quality improvements from Route 82 dam and reduction of combined sewer overflows.							
Trail Facilities Common to All Action Alternatives							
Short-term and long-term, minor to moderate adverse, from its increase for staffing and operations required for new facilities and long-term negligible to minor adverse from increased design and contract service coordination, increased construction and ongoing maintenance for trail facilities, and increased coordination with local jurisdictions on new facilities, particularly river use.							

Table 9. Summary Comparison of Alternatives by Plan Goals.

Plan Goal	Trail User Experience	Footprint on Park Resources	Sharing Park Resource Stories	Sustaining the Trail Network	Utilization of Trail Partnerships
Alternative 1	Maintains current user experiences. Limits new uses and new experiences. Continue degradation of trail facilities may inhibit trail user experience.	Degradation of resources from trails and high use areas will continue to compromise park resources.	Provides opportunities along main corridors of park and limited on secondary trails.	Backlogged operations, degraded trail conditions and absence of sustainable trail management guidance in place limit the sustainability of the trail network.	Park has established partnerships through Trails Forever and Volunteer program.
Alternative 2A	Limited expansion of new trail experiences to regional greenway networks and short interpretive areas and minor connections between park trails.	Sustainable Trail Guidelines and minimal trail expansion will minimize trail footprint.	Limited expansion of sharing park resource stories.	Sustainable Trail Guidelines will incorporate practices and strategies to sustain the trail network.	Continuing trail partnerships with marginal increase in support. Expansion of user groups to support trail network will occur.
Alternative 2B	Same as Alternative 2A plus the addition of off-road bicycle use for limited expanded new outdoor recreation experiences in the park.	Sustainable Trail Guidelines and minimal trail expansion will minimize trail footprint.	Limited expansion of sharing park resource stories.	Same as Alternative 2A Some limitations may occur due to trail expansion and required resources to sustain.	Same as Alternative 2A Additional expansion of user groups with off-road bicycle use to support trail network.
Alternative 3A	Expansion of trails in all regions of the park, utilizing the visitor contact centers as the primary starting point for long and short trail experiences. Multi-use connections to regional greenway networks and coordination of bike lanes provide alternative user experiences to access the park.	Expansion of trails in some areas of park will have a footprint on park resources but be minimized by Sustainable Trail Guidelines.	Some expansion of sharing park resource stories, particularly adjacent to existing visitor contact centers.	Same as Alternative 2A Limitations will occur due to expansion of trails and additional required resources to sustain.	Expanded partnership resources will be required to support expanded trail system. Expansion of user groups to support trail network will occur.

Plan Goal	Trail User Experience	Footprint on Park Resources	Sharing Park Resource Stories	Sustaining the Trail Network	Utilization of Trail Partnerships
Alternative 3B	Same as Alternative 3A plus the addition of new mountain trails in two park areas to expand new outdoor recreation experiences in the park.	Expansion of trails in some areas of park will have a footprint on park resources but be minimized by Sustainable Trail Guidelines.	Some expansion of sharing park resource stories, particularly adjacent to existing visitor contact centers	Same as Alternative 3A.	Same as Alternative 3A. Additional expansion of user groups with off-road bicycle use to support trail network.
Alternative 4A	Expansion of trails in all regions of the park, including the expansion of intra-park long distance trails. Multi-use connections to regional greenway networks and coordination of bike lanes provide alternative user experiences to access the park.	Expansion of trails in many areas of park will have a footprint on park resources but be minimized by Sustainable Trail Guidelines.	Significant expansion of sharing park resource stories through destination trail systems adjacent to visitor contact centers and to primitive park resource features.	Same as Alternative 2A Limitations will occur due to expansion of trails and additional required resources to sustain.	Significant partnership resources will be required to support expanded trail system. Expansion of user groups to support trail network will occur.
Alternative 4B	Same as Alternative 4A plus the addition of a new off-road bike trail system through multiple regions of the park to expand new outdoor recreation experiences in the park.	Expansion of trails in many areas of park will have a footprint on park resources but be minimized by Sustainable Trail Guidelines	Significant expansion of sharing park resource stories through destination trail systems adjacent to visitor contact centers and to primitive park resource features.	Same as Alternative 4A.	Same as Alternative 4A. Additional expansion of user groups with off-road bicycle use to support trail network.
Alternative 5 (Preferred Alternative)	Expansion of trail experiences for recreation and destination trails, including limited new off-road bicycle use.	Expansion of trails in many areas of park will have a footprint on park resources but be minimized by Sustainable Trail Guidelines	Expansion of trails to share park resource stories, near visitor contact centers and primitive areas of the park.	Sustainable Trail Guidelines will incorporate practices and strategies to sustain the trail network.	Expanded partnership resources will be required to support expanded trail system. Expansion of user groups to support trail network will occur.

Table 10. Comparison of How Alternatives Meet Goals of National Environmental Policy Act

NEPA Goals	Goal 1: Fulfill the responsibilities of each generation as trustee of the environment for succeeding generation.	Goal 2: Ensure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings	Goal 3: Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or undesirable or unintended consequences	Goal 4: 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.	Goal 5: Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life's amenities.	Goal 6: Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.
Alt 1	Trails will continue to be degraded and compromise conditions of trail system that limit its long-term sustainability.	Visitor use conflict and visitor capacity occurs during peak seasonal use in some locations of the park.	Trails will continue to degrade park resources where use type and use frequency are causing impacts.	Trails provide opportunities for access and information on park resources related to our national heritage.	Some trails by overuse, resource conditions or trail design and limited connections. minimize a balanced approach.	Some sustainable practices are in place. Maximum extent of NPS sustainability goals has not been achieved.
Alt 2A	Incorporation of Sustainable Trail Guidelines will set forth measures to sustain park resources for generations to come.	Limited trail additions and trail facilities will assist in reducing visitor conflict and a limited variety of visitor experiences.	Utilize previously disturbed areas to minimize resource impacts and the introduction of Sustainable Trail Guidelines.	Limited expansion of trails provide limited new opportunities for access and information on park resources related to our national heritage.	A balanced approach is achievable by improved trail conditions and limited expansion, including community connections.	Sustainable Trail Guidelines in combination with parkwide sustainable goals will achieve NPS sustainability goals.
Alt 2B	Same as Alternative 2A.	Same as Alternative 2A.	Same as Alternative 2A.	Same as Alternative 2A.	Same as Alternative 2A. Off-road bicycle trail increases use in sensitive resource area.	Same as Alternative 2A.

NEPA Goals	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
Alt 3A	Same as Alternative 2A. Expansion of trails may limit resources to fully sustain trail network successfully.	Additions of trails and trail facilities for a variety of users throughout the park will assist in reducing visitor conflict and a limited variety of visitor experiences.	Use of Sustainable Trail Guidelines will minimize resource degradation. Increase in trail miles may increase resource disturbance.	New trails expand opportunities for access and information on park resources.	A balanced approach is achievable by improved trail conditions and community connections. Use of sustainable design will assist in meeting goal.	Same as Alternative 2A plus the addition of road bike facilities to increase alternative transportatio n options in the Park.
Alt 3B	Same as Alternative 3A.	Same as Alternative 3A.	Same as Alternative 3A with addition of off-road bicycle trails that may increase human conflict conditions.	Same as Alternative 3A.	Same as Alt 3A. A portion of off-road bicycle trail will increase use insensitive resourcearea.	Same as Alternative 3A.
Alt 4A	Same as Alternative 3A.	Additions of trails and trail facilities for a variety of users in the park will assist to reduce visitor conflict and a variety of visitor experiences.	Use of Sustainable Trail Guidelines will minimize resource degradation. Increase in trail miles may increase resource disturbance.	New trails in a variety of regions of the park expand opportunities for access and information on park resources.	Same as Alt 3A.	Same as Alternative 3A.
Alt 4B	Same as Alternative 3A.	Same as Alternative 4A.	Same as Alt. 4A with addition of off-road bicycle trails that may increase human conflict conditions.	Same as Alt. 4A, Off-road bicycle trail will increase use in sensitive cultural resource area.	Same as Alt 4A.	Same as Alternative 3A.
Alt 5	Same as Alternative 3A.	Same as Alternative 3A.	Same as Alt. 3A. Off-road bicycle trails will minimize resource degradation and human conflict.	Same as Alternative 4A.	Same as Alternative 3A.	Same as Alternative 3A.

Figure 2: Alternative 1, No Action

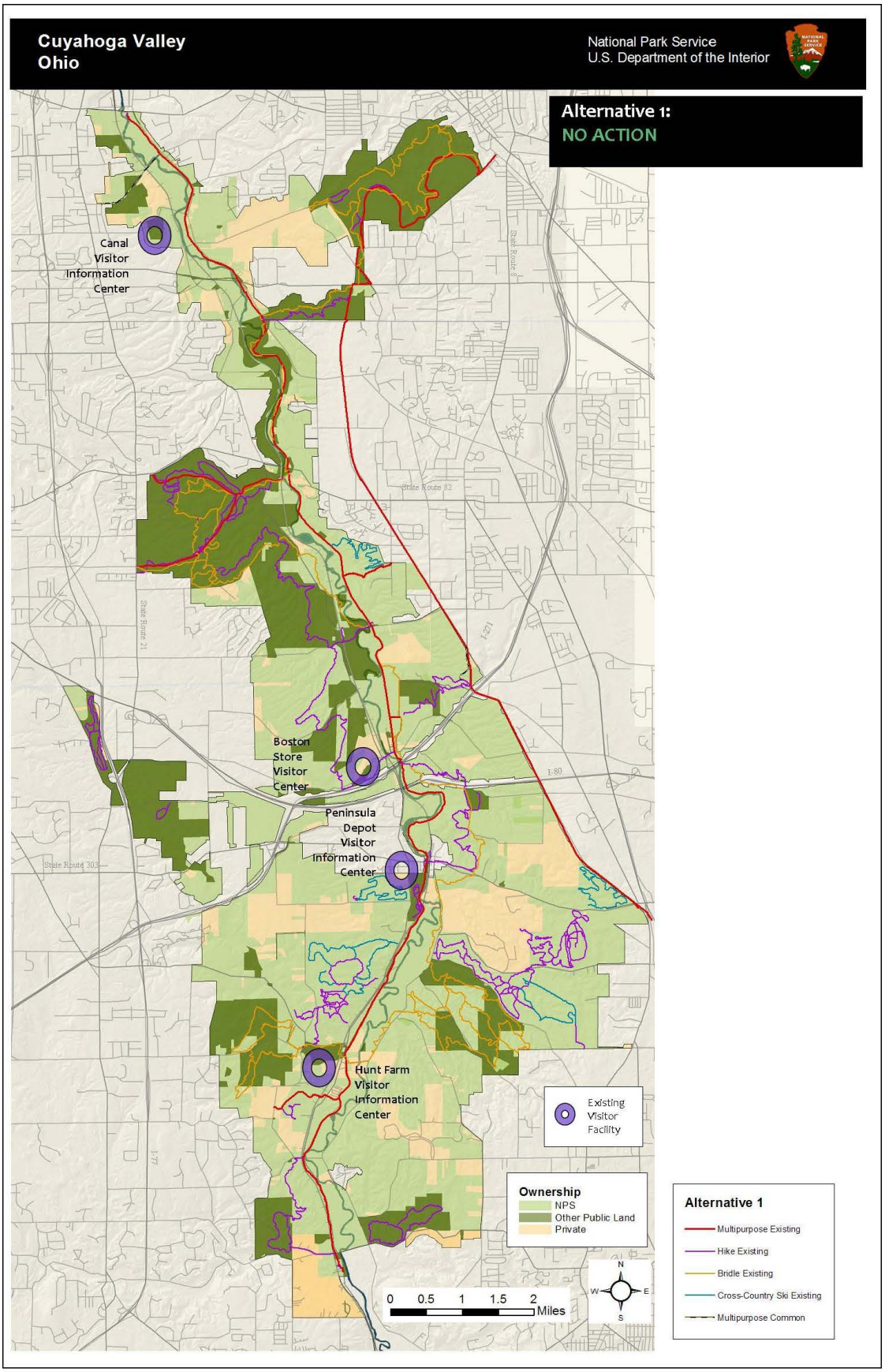


Figure 3: Restoration

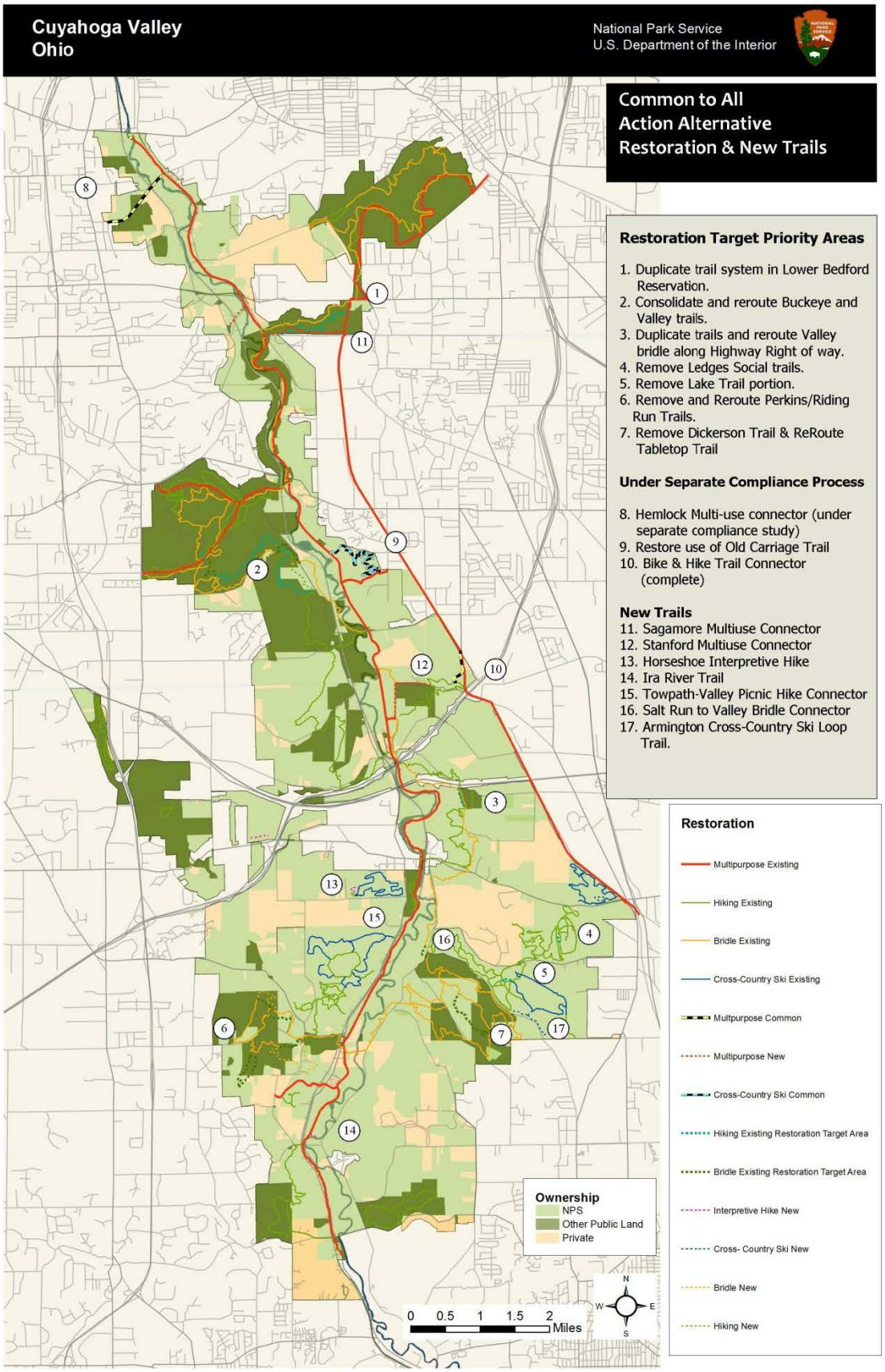


Figure 4: Trail Facilities

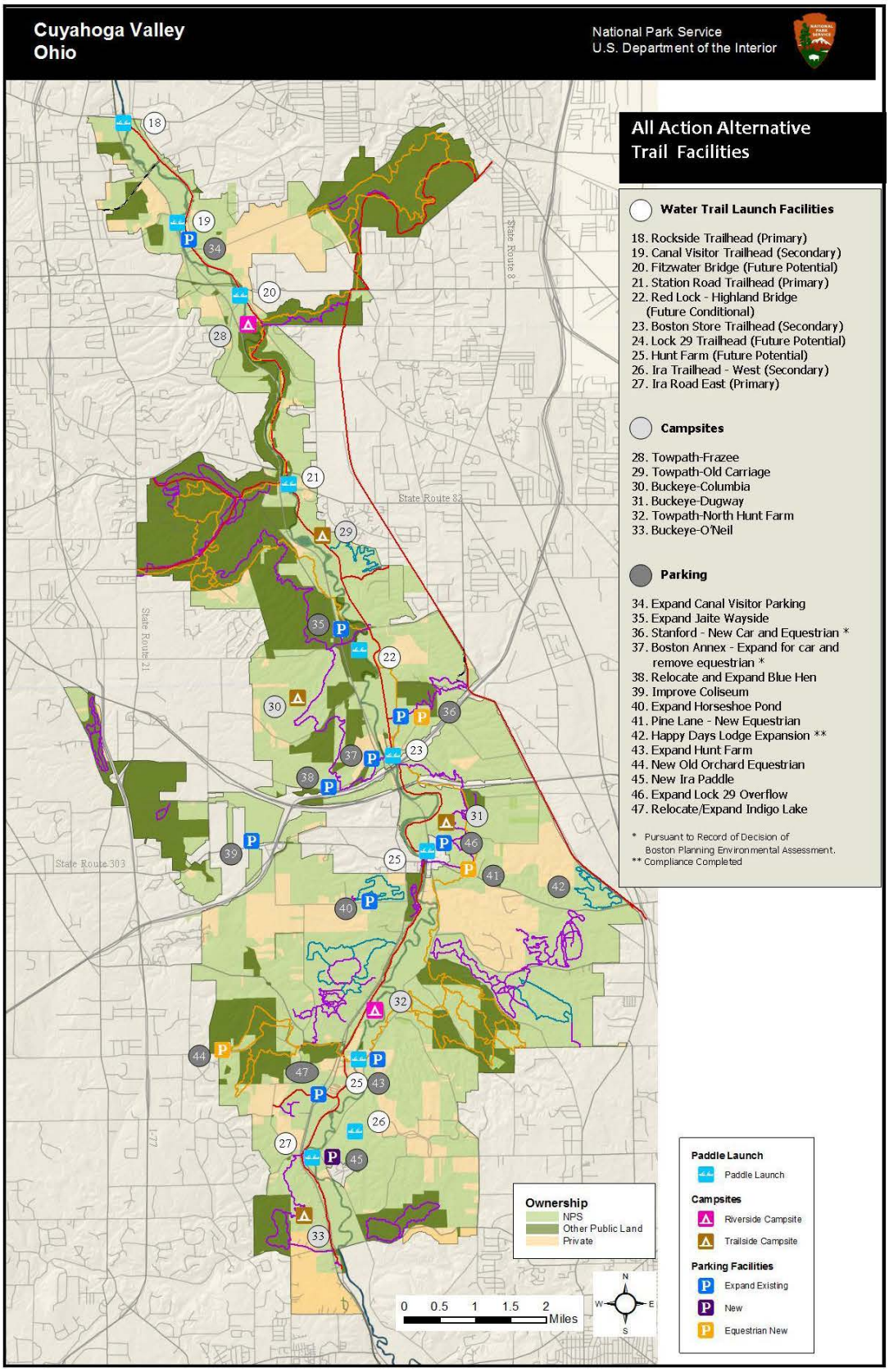


Figure 5: Alternative 2A, ReUse

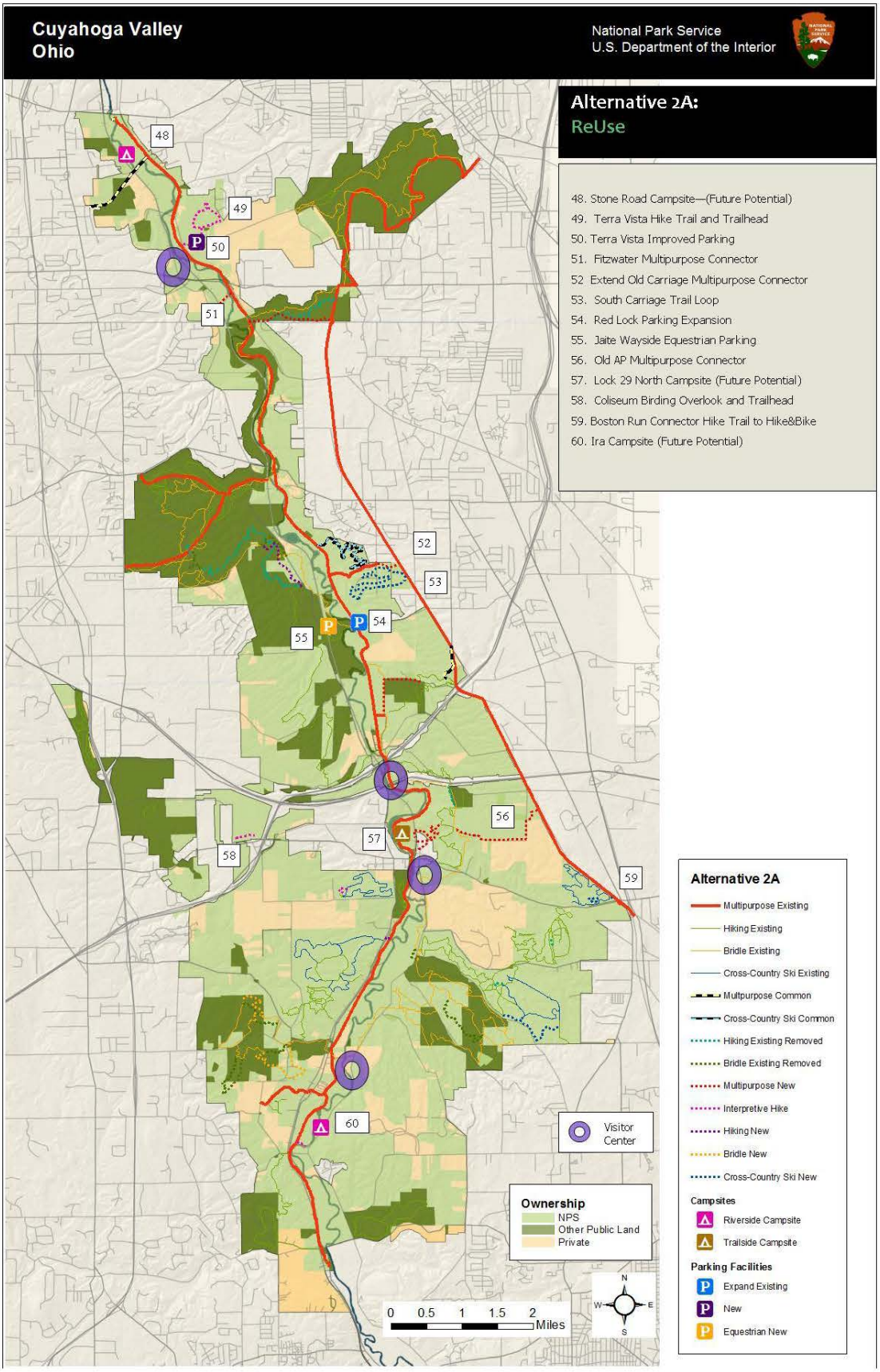


Figure 6: Alternative 2B. ReUse + Off-Road Bicycling Trails

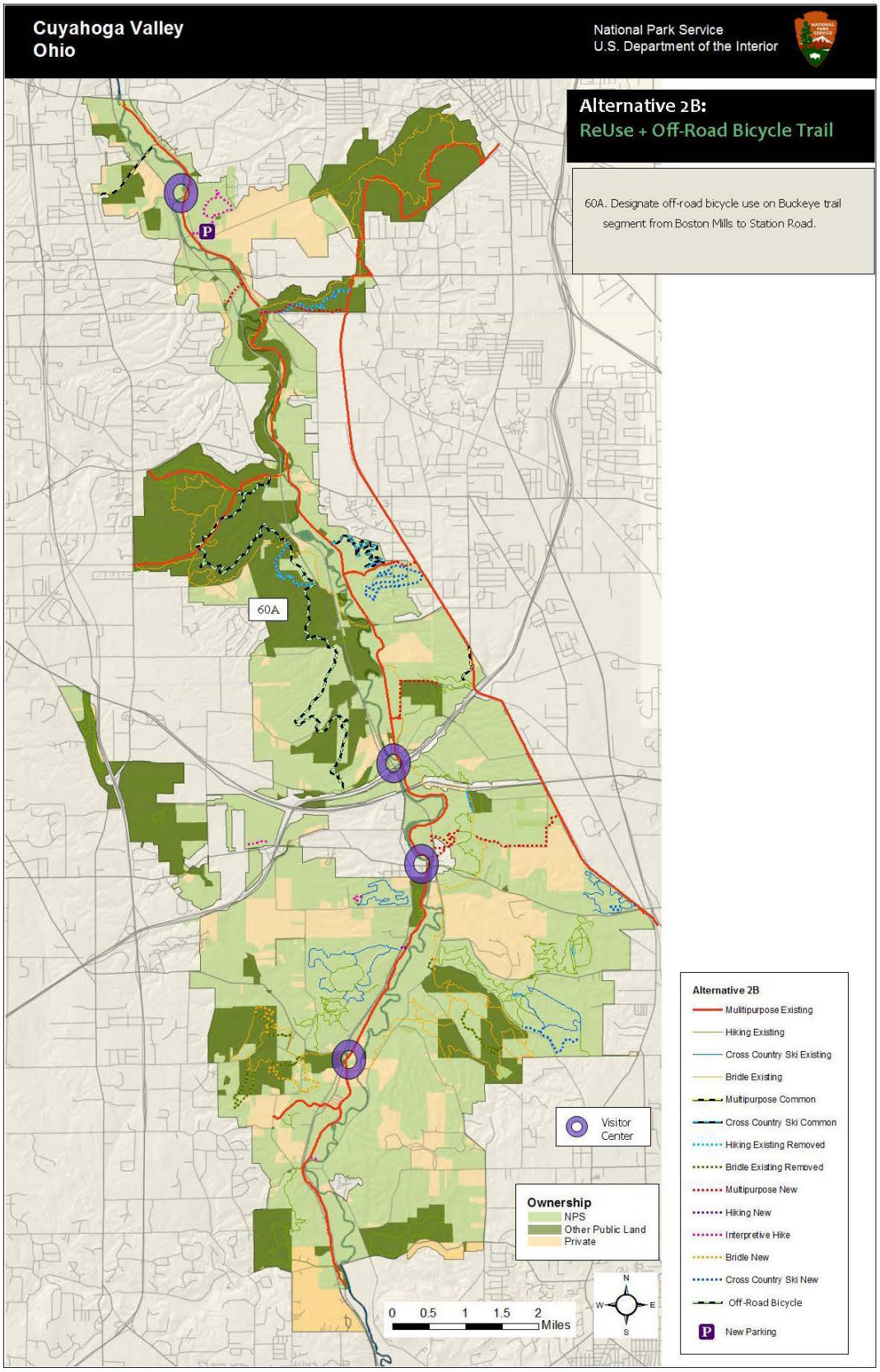


Figure 7: Alternative 3A. Recreation Focus

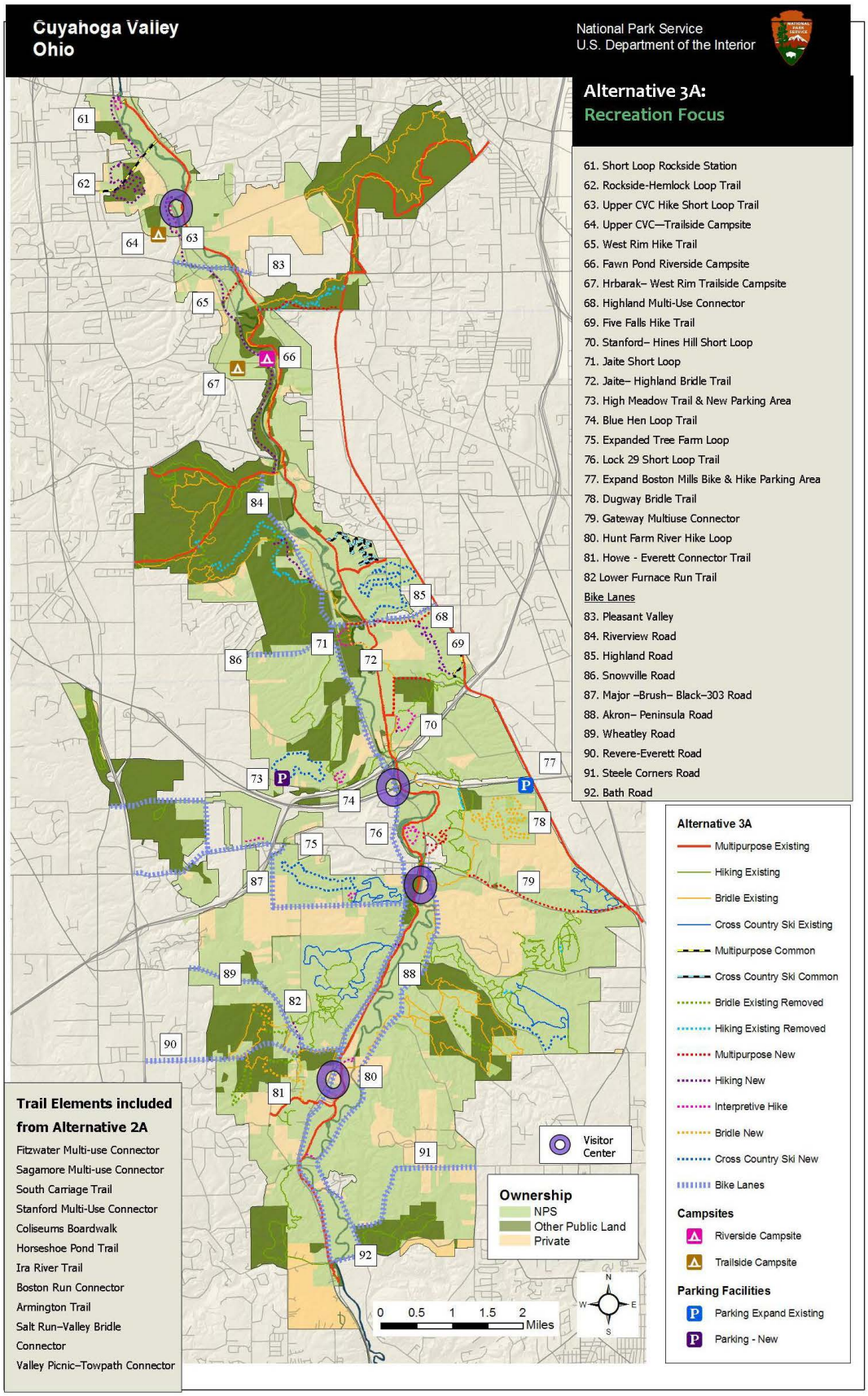


Figure 8: Alternative 3B. Recreation Focus + Off-Road Bicycling Trails

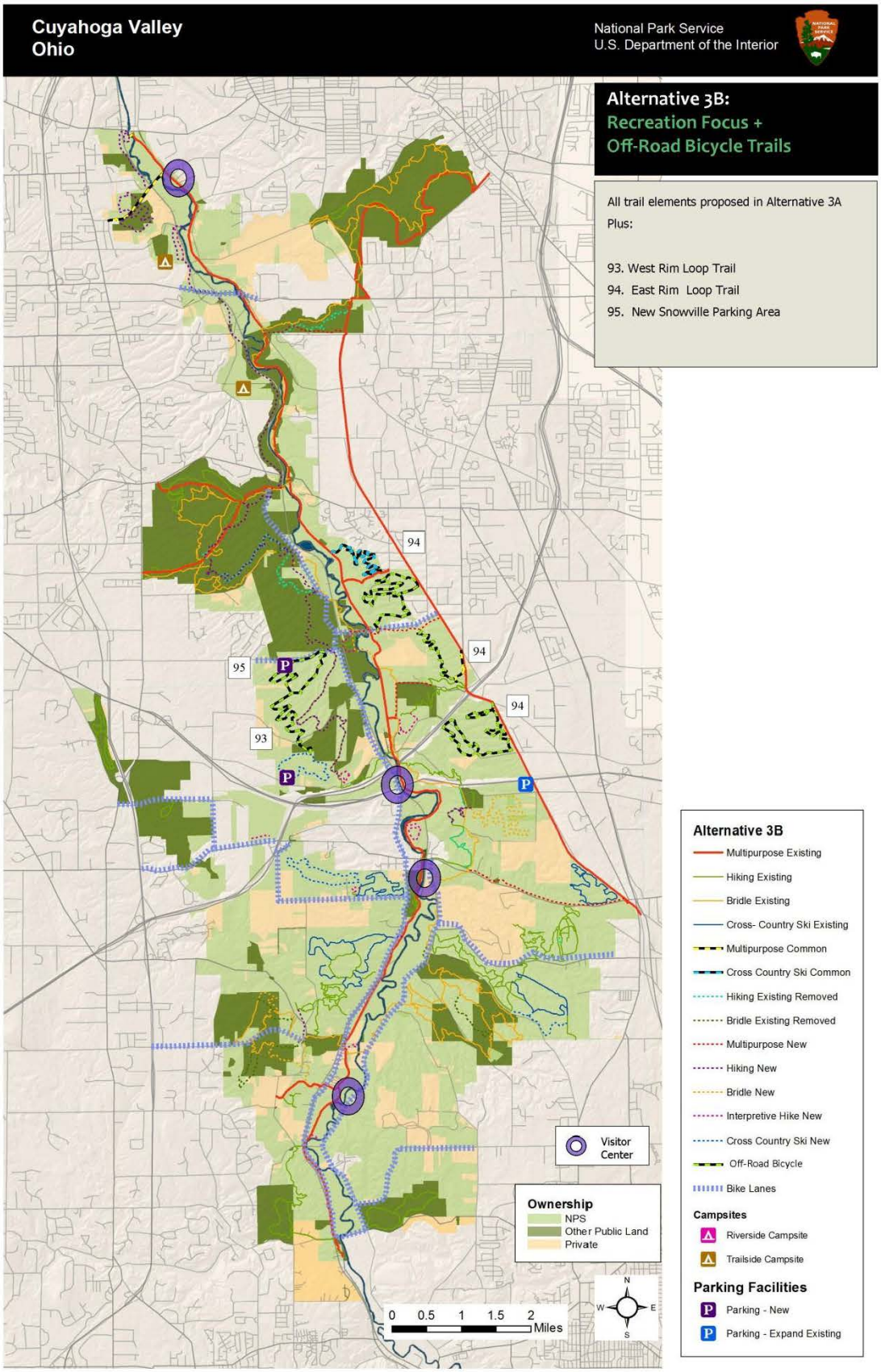


Figure 9: Alternative 4A. Destination Focus

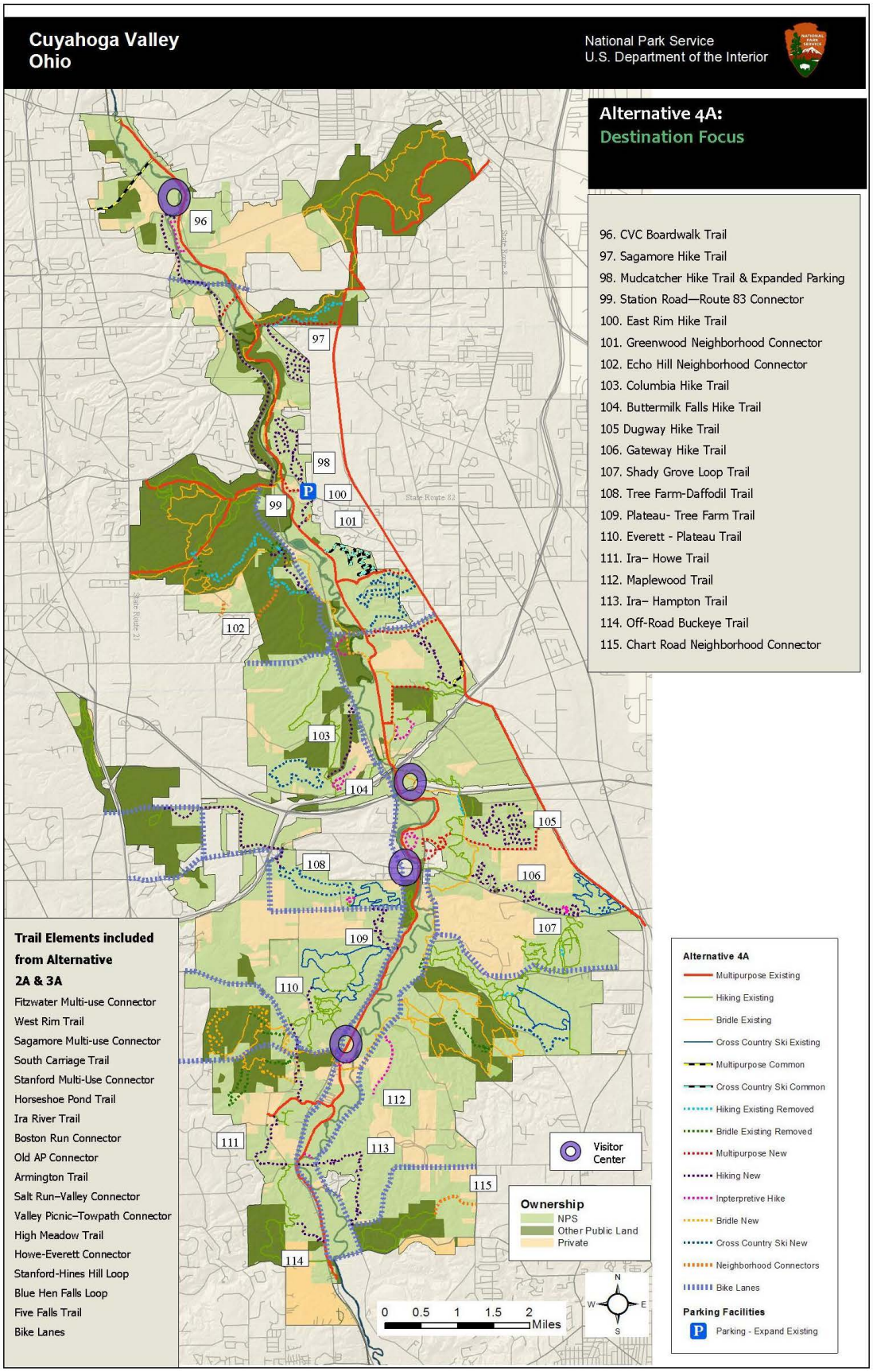


Figure 10: Alternative 4B. Destination Focus + Off-Road Bicycle Trail

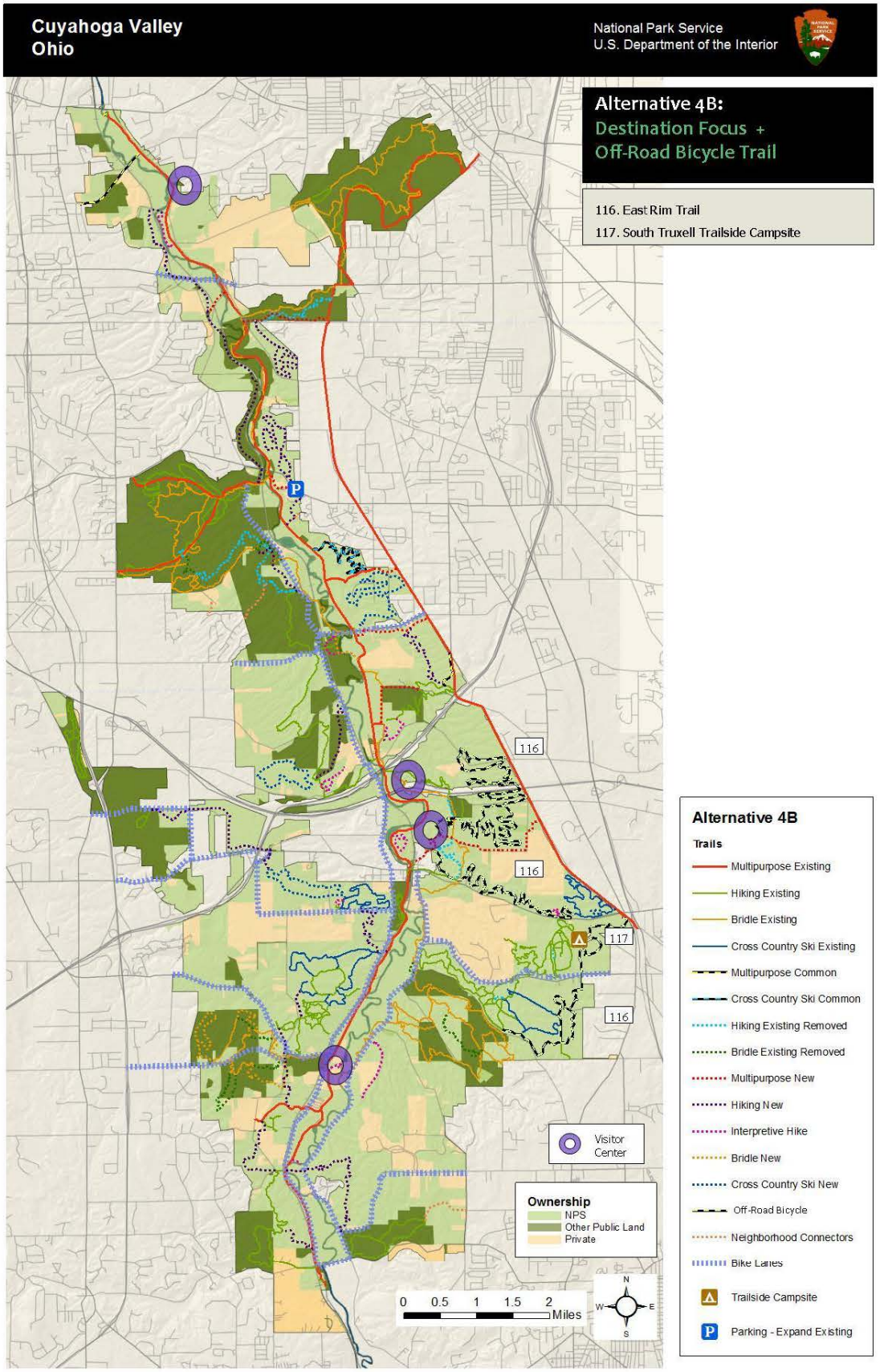
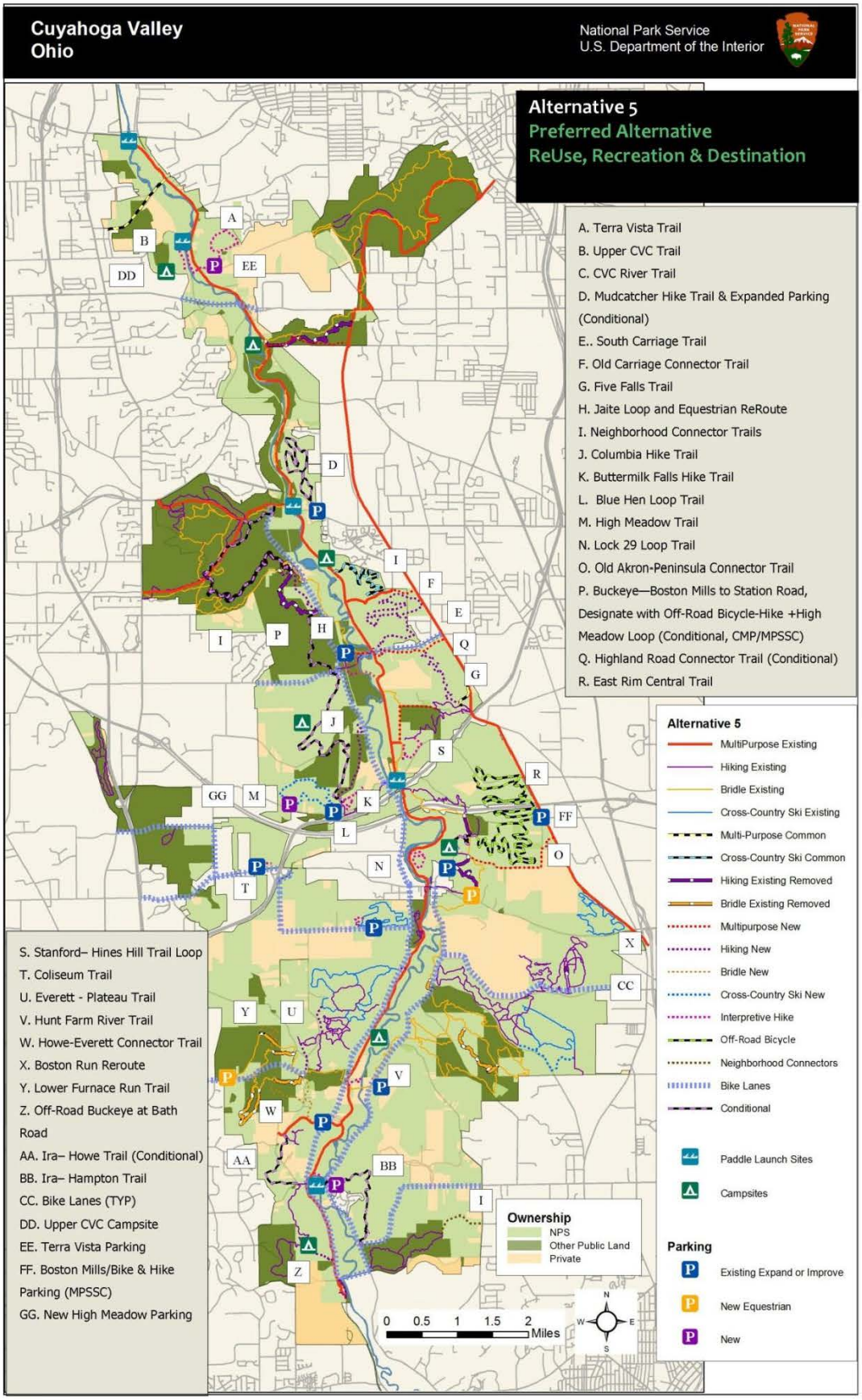


Figure 11: Alternative 5. ReUse, Recreation & Destination (Preferred Alternative)



Chapter 3: Affected Environment

This chapter describes the affected environment where resources are expected to experience environmental impacts by the actions proposed in the alternatives (NPS). These resources were identified during the public scoping process and through consultation with park staff and park partners.

3.1 Water Resources

The most significant and defining features in the Park are its water resources. The Cuyahoga River, its adjacent floodplain and tributary streams, and an array of wetlands create a landscape unique to the surrounding developed region. This section describes the water resources that may be affected by the proposed action.

3.1.1 River and Tributary Resources

More than 25 miles of the Cuyahoga River pass through the Park. The Cuyahoga River drains more than 800 square miles of Northeastern Ohio and 6.5% of this drainage is within the Park. Valley walls and tributary ravines characterize the watershed with steep forested slopes rising 100 to 600 feet above the floodplain. According to topographical maps published by the U.S. Geological Survey, more than 20 perennial streams totaling over 200 miles in length exist within the Park boundary. One tributary, Tinkers Creek, drain an area larger than 40 square miles while all other tributaries range between 2 and 20 miles. Additional unmapped ephemeral streams and headwater steams also exist. The park also contains approximately 1600 acres of wetlands, thousands of acres of floodplains, and many lakes and ponds throughout the park.

Known internationally as the "river that burned," the Cuyahoga River is on the rebound. At one time industrial pollution prohibited the survival of aquatic species. Today a rich diversity of wildlife thrives, and include some fish that are moderately or completely intolerant of pollution. As the river flows through forests and restored landscapes, the Cuyahoga's water quality continues to improve but full recovery is impacted by combined sewer overflows, runoff from fields and development (NPS, 2011b).

Surveys conducted by the NPS, Cleveland Metroparks and Metro Parks, Serving Summit County have identified some watersheds with an abundance of high quality headwater streams and the presence of aquatic species that indicate healthy water resource conditions. These include Salt Run, Boston Run, Stanford Run, Dickerson Run, Sagamore Creek, Columbia Run, Brandywine Creek, and a small tributary near the NPS Central Maintenance Area.

Water Quality. Water quality standards for Cuyahoga River and its tributaries have been established by the Ohio Environmental Protection Agency and the U.S. Environmental Protection Agency in accordance with the Clean Water Act. The State has established the following use designations that apply to the water resources within the Park: state resource water, warm water habitat, cold water habitat and primary contact recreation (Ohio EPA, 2007). The Park annually monitors nineteen streams and several sites along the Cuyahoga River, for physical and chemical water quality characteristics. Seven streams within the Park have been designated by Ohio EPA as cold water habitat. The majority of the tributaries within the Park meet the water quality standards set forth by the state for either warm water or cold water habitat designation.

Almost all of the river segments that travel through the Park are in full attainment of the state of Ohio's water quality aquatic life use designation (Ohio EPA, 2003). Fish communities continue to recover and have shown significant improvements in the past four decades. Most of the fish habitat is located in the mainstem of the Cuyahoga River. Several of its tributaries meet or exceed the delisting targets set forth by the Great Lakes Water Quality Agreement (International Joint Commission, 2011). The Brecksville Dam and upstream pool at river mile 20, south of Station Road is one of the areas in non-attainment within the Park boundary for fish communities (Ohio EPA, 2009).

Functional riparian. Riparian areas (land adjacent to rivers and streams) help maintain stream water quality and biological health. In 2008, a Park study characterized the conditions of the Park's riparian areas and their quality indicating that approximately 53% of the total land area of the Park was within a functional riparian area (Holmes and Goebel 2008).

3.1.2 Wetlands

Approximately 1,500 individual emergent, shrub/scrub, and forested wetlands (Cowardin et al. 1979) have been surveyed in the Park, covering an estimated 1900 acres. Most of these wetlands exist on hill slopes (slope wetlands, 692(number of type in Park)) and within the floodplains of the Cuyahoga River and its tributaries (riverine wetlands, 369). Small depressional wetlands are also common (368). Many of the largest wetlands are located in the headwaters of small streams and at the base of the valley slopes, where high groundwater tables and seeps keep the ground saturated year-round. Nearly 40 wetlands are estimated to be greater than 10 acres in size, and 220 wetlands are greater than 1 acre. However, the majority of wetlands are estimated to be very small and typically less than one acre (Davey Resource Group, 2001).

The quality of the wetlands vary from very high (Category III) to low (Category I) (Ohio Administrative Code Rule, 3745-1-54(C)(1). However, most wetlands are moderate quality, Category II wetlands. Currently, the Towpath Trail crosses the Ira Road Beaver Marsh, and Stumpy Basin, which are two of the highest quality and most diverse wetlands in the park. Many other important wetlands can be experienced along various other trails throughout the Park, such as the Buckeye Trail and the Lake Trail around Virginia Kendall Lake. Some other large wetlands, such as Fawn Pond and Pleasant Valley, exist in the floodplain of the Cuyahoga River where maintained park trails are absent, but restricted access roads are present. There are only a handful of high quality wetlands that are not experienced by visitors.

3.1.3 Floodplains

Approximately 3,754 acres (11%) of the land within the Park is within the 100-year floodplain of the Cuyahoga River.

The Cuyahoga River has frequently accessed its floodplain during large rain events. River gauges managed by the U.S. Geological Survey (USGS) are located immediately north of Rockside Road (Independence gauge) outside of the Park boundary and approximately 2.5 miles south of the Park at Old Portage Path (Portage gauge). In the past ten years, the Independence gauge has reached Major Flood Stage (18.5 feet) seven times with the most recent occurring in February, 2011. The river has also reached Moderate Flood Stage (17.0 feet) twice at Independence since 2000 (National Weather Service, 2012).The Old Portage gauge has not reached Major Flood stage during the collection of data for the

past one hundred years. Since 2000, the river has reached Moderate Flood stage five times and Flood stage three times at this location (National Weather Service, 2012).

The Towpath Trail is the single park trail that is predominantly located within the 100-yr floodplain of the Cuyahoga River. Because of its proximity to the floodplain, the Towpath Trail has experienced damage during the seven major flood stage events (National Weather Service, 2012), in the past decade, particularly in 2004 and 2011 which have resulted in trail closures, rehabilitation and repair of the trail.

3.1.4 Ohio & Erie Canal

Historically, the Ohio & Erie Canal linked Lake Erie with the Ohio River and played a major role in Ohio's economic growth. The canal parallels the Towpath Trail bisecting the Park and is partially watered by the Cuyahoga River. A watered section (8 miles) flows north from Station Road Trailhead to Rockside Road, and continues north beyond the Park boundary. The canal is a cultural resource and provides natural habitat for fish, turtles, mussels, beaver, otter, and birds.

3.2 Vegetation and Invasive Plants

3.2.1 General Vegetation Characteristics

The Cuyahoga Valley serves as a natural dividing line between two physiographic regions, the Central Lowlands to the west and Appalachian Plateau to the east, sometimes referred as a "botanical crossroads" (NPS, 2008). More than 1,300 species of plants have been documented at the Park, forming a variety of habitats. This includes mixed deciduous forest, mixed-evergreen forest, wet meadows, emergent marsh, and early successional grassland and shrubland (NPS, 2010d). Mixed-mesophytic forests cover approximately 23,000 acres (70 percent) of the Park with the oak-hickory association being the most common. Other forest associations at the Park include maple-oak, oak-beech-maple, maple-sycamore, pine-spruce and hemlock-beech. A long history of intensive land use has created forest at CVNP with vastly different ages and community structures.

The forests of CVNP can be broadly categorized as upland or bottomland forests, based upon landscape position relative to the floodplain of the Cuyahoga River. In upland forests, the dominant vegetation is a mix of hardwood trees, mainly oaks (*Quercus* spp.), hickories (*Carya* spp.), maples (*Acer* spp.) and beech (*Fagus grandifolia*). The groundcover in upland forests tends to be sparse, consisting of mayapple (*Podophyllum peltatum*), trout-lily (*Erythronium americanum*), spring-beauty (*Claytonia virginica*), toothworts (*Cardamine* spp.), violets (*Viola* spp.), Jack-in-the-pulpit (*Arisaema triphyllum*), and other herbaceous species. Shrub cover in upland forests at the Park is frequently sparse, but, when present, is often dominated by maple-leaved viburnum (*Viburnum acerfolium*), spicebush (*Lindera benzoin*), and witchhazel (*Hamamelis virginiana*) (NPS, 2004a).

Bottomland forests are located in the floodplains of the Cuyahoga River and its tributaries and predominantly support an overstory of ash (*Fraxinus* spp.), cottonwood *(Populus deltoide*s), sycamore *(Platanus occidentali*s), box elder (*Acer negundo*), Ohio buckeye (*Aesculus glabra*), silver maple (*Acer saccharinum*) and red maple (*Acer rubrum*), with some areas dominated by or absent of particular species. The herbaceous groundcover in these forests tends to be more frequent than in the upland forests. Typical herbaceous species in bottomland forests at the Park include enchanter's nightshade (*Circaea lutetiana*), grasses (*Poa* spp.), sedges (*Carex* spp.), violets (*Viola* spp.), moneywort (*Lysimachia*

nummelaria), wingstem (*Verbesina alternifolia*), smartweed (*Polygonum* spp.), jewelweed (*Impatiens capensis and Impatiens pallida*), wild onions, garlic and leeks (*allium* spp.), and garlic mustard (*Alliaria petiolata*). Shrub cover is sparse or more frequently absent in these areas. When present, bottomland shrubs consist mainly of viburnums (*Viburnum* spp.), non-native honeysuckles (*Lonicera* spp.), non-native privet (*Ligustrum*vulgare), and non-native multiflora rose (*Rosa multiflora*). Bottomland forests are more likely to support exotic plants than upland forest areas.

Interspersed among forests are other natural habitats, including shrub and grassland (approximately 1,100 acres or 3.4 percent of CVNP) and wetlands (approximately 1,800 acres or 5 percent), Agricultural fields cover approximately 1,950 acres or 6 percent of CVNP (NPS, 2002c). Table 11 provides acres of primary land cover types within the Park boundary.

Table 11: Primary Land Cover Types in CVNP, 2002.

Land Cover Type	Acres (percentage of total land cover in CVNP)
Developed Land	4.464 (13%)
Cropland/Agricultural Land	1,947 (5.9%)
Wetlands (forested and non-forested)	1,060 (3.2%)
Bottomland Forests (within floodplain)	1,634 (4.9%)
Upland Forests	21,821 (66.5%)
Shrub/Grassland	1,123 (3.4%)
Lakes/Ponds/Streams	729 (2.2%)
Total Land Cover	32,778

Open fields within the park vary from grassy areas that are frequently mowed to older successional areas with substantial shrub and tree growth. Grasslands are dominated by grasses (e.g., *Poa trivialis, Poa sylvestris, Panicum virgatum* and *Danthonia spicata*) with many forbs present as well (e.g., *Solidago canadensis, Solidago graminifolia, Aster nova-borensis* and *Apocynum cannibinum*). In old fields, the ground is covered mostly by grasses and forbs, but also includes brambles *(Rubus* spp.) and some shrubs (e.g., gray dogwood *(Cornus racemos*a*),* smooth arrow-wood *(Viburnum recognitu*m*),* common privet multiflora rose*,* and autumn olive *(Elaeagnus umbellat*a). Shrubs do not dominate large areas within these fields, though early successional trees, such as cottonwood and ash, may be present (NPS 2004a).

Shrubland habitats possess significant shrub/sapling growth. These are areas in which the majority of the ground is covered with woody growth greater than six feet in height, with a few emergent trees of six to twenty feet in height developing above the shrub layer. These habitats are typically vegetated with shrubs and young trees of up to six inches in diameter at breast height (e.g., hawthorn gray dogwood, smooth arrow-wood, common privet , *multiflora rose,* autumn oliv*e,*red maple*,* wild cherry *(Prunus serotina),* oaks, bigtooth aspen *(Populus grandidentata)* and white ash *(Fraxinus american*a) (NPS, 2004a).

Wetland habitats are located within the Cuyahoga River floodplain and included emergent, shrub, and forested areas. Emergent wetlands are characterized by erect, rooted, herbaceous plants, excluding mosses and lichens (Cowardin, et al. 1979). This would include marshes, wet meadows and fens. Emergent wetlands have many different types of communities including, fern species such as sensitive fern (*Onoclea sensibilis),* cattails (*Typha spp*.), skunk cabbage (*Symplocarpus foetidus*), many different sedge (*Carex spp.)* and grass species such as rice cutgrass (*Leersia oryzoides*). Shrub wetlands include areas dominated by woody vegetation that is less than 20 feet tall (Cowardin, et al, 1979) Common

wetland shrubs in the Park include buttonbush, spicebush, elderberry, many species of dogwood, viburnum, willows and alder. Forest wetlands are characterized by woody vegetation that is 20 feet tall or taller (Cowardin, et al. 1979). Bottom land floodplain forests common species include cottonwood, maples, black willow, sycamore, buckeyes, ash, and elms. Oak swamps (pink oak, swamp white oak, burr oak) are found occasionally.

3.2.2 Federal and State Endangered and Rare Plant Species

No federally listed species of plants have been documented at the Park. The Park is within the range of the northern monkshood (*Aconitum noveboracense*), a federally listed threatened plant species, which typically is found near the bottom of shaded cliffs adjacent to cool streams at sites in northeastern Ohio. However, the species has not been documented within the park and no appropriate habitats for the species have been found. A number of plant species in the Park are listed as endangered, threatened or potentially threatened by the State of Ohio (Table 12).

Table 12. State Listed Endangered, Threatened and Potentially Threatened Species known to occur within CVNP.

Common Name	Standard Scientific Name	Status
Bristly sarsaparilla	*Aralia hispida*	State Endangered
Drooping wood sedge	*Carex arctata*	State Endangered
Hairy tick-trefoil	*Desmodium glabellum*	State Endangered
Variegated souring-rush	*Equisetum variegatum*	State Endangered
Ground juniper	*Juniperus communis*	State Endangered
Large-leaved Mountain-rice	*Oryzopsis asperifolia*	State Endangered
Philadelphia panic grass	*Panicum philadelphium*	State Endangered
Pasture blue grass	*Poa saltuensis*	State Endangered
Compass-plant (historic reference)	*Silphium laciniatum*	State Endangered
Spotted coral root	*Corallorhiza maculate*	State Endangered
Ovate spikerush	*Eleocharis ovate*	State Endangered
Silvery sedge	*Carex argyrantha*	State Threatened
Pipsissewa	*Chimaphila umbellate*	State Threatened
Golden-knees	*Chyrosogonum virginiaum*	State Threatened
Bearded wheat grass	*Elymus trachycaulus*	State Threatened
Greene's rush	*Juncus greenei*	State Threatened
Gray beard tongue	*Penstemon canescens*	State Threatened
Great Rhododendron	*Rhododendron maximum*	State Threatened
Leafy goldenrod	*Solidago squarrosa*	State Threatened
Seaside arrow-grass	*Triglochin maritimum*	State Threatened
Bug on a Stick (moss)	*Buxbaumia aphylla*	State Threatened
American sweet flag	*Acorus americanus*	Potentially Threatened
Broad-winged sedge	*Carex alata*	Potentially Threatened

Common Name	Standard Scientific Name	Status
Golden-fruited sedge	*Carex aurea*	Potentially Threatened
Bebb's sedge	*Carex bebbii*	Potentially Threatened
American chestnut (fruiting)	*Castanea dentate*	Potentially Threatened
Rock harlequin	*Corydalis sempervirens*	Potentially Threatened
Round leaved dogwood	*Cornus rugosa*	Potentially Threatened
Thin-leaved sedge	*Carex cephaloidea*	Potentially Threatened
Fringed gentian	*Gentianopsis crinite*	Potentially Threatened
Weak spear grass	*Poa languid*	Potentially Threatened
Floating pondweed	*Potamogeton natans*	Potentially Threatened
Deer's tongue arrowhead	*Sagittaria rigida*	Potentially Threatened
Canada buffalo-berry	*Sheperdia Canadensis*	Potentially Threatened
Swamp oats	*Sphenopholis pennsylvanica*	Potentially Threatened
Shining Ladies-tresses	*Spiranthes lucida*	Potentially Threatened
Great Plain's Ladies' tresses	*Spiranthes magnicamporum*	Potentially Threatened
Rough fruited-pinweed	*Lechea intermedia*	Potentially Threatened
Arbor vitae	*Thuja occidentalis*	Potentially Threatened
Flattened sedge	*Carex complanata*	State listed- no status yet
Brittle bladder fern	*Cystopteris fragilis*	Presumed extirpated

The location of rare plant species within the park is widely distributed among all of the primary vegetation types of the park and in both highly visitor use and low visitor use areas of the Park, including their proximity to trails.

3.2.3 Invasive Plants

Nearly 20 percent of plant species in the park are non-native to the area. Approximately 50 of those non-native species are considered to be locally invasive and are able to over-run native habitats, displace native species, and form large monocultures that provide limited habitat value to native wildlife (Djuren and Young 2007).

The eleven most common exotic, invasive plants in the Park (in descending order) are multiflora rose, garlic mustard, reed canarygrass (*Phalaris arundinacea*), black locust (*Robinia pseudoacacia*), Japanese knotweed (*Polygonum cuspidatum*), privet, Japanese barberry (*Berberis thunbergii*), common reed (*Phragmites australis*), glossy buckthorn (*Frangula alnus*), Kentucky bluegrass (*Poa proatensis*) and autumn olive (Djuren and Young 2007). All of these species are distributed throughout the Park with some having broad environmental tolerances that enable them to inhabit upland and bottomland forests, as well as old fields and shrublands (e.g., multiflora rose, garlic mustard, privet and glossy buckthorn). Other common exotic plants dominate wetlands and riparian areas (e.g., reed canarygrass, Japanese knotweed and common reed), while others dominate drier uplands at the Park (e.g., black locust and autumn olive).

3.3 Wildlife

3.3.1 General Populations

Faunal species that have been detected in CVNP include approximately 247 species of birds, 64 fish species, 36 mammals, 20 reptiles, and 18 species of amphibians. Wildlife species are distributed throughout the Park and are associated with the three primary habitats the Park provides; mature deciduous forests, early successional fields and meadows, and wetland habitats. Because the Park landscape predominantly consists of forest (approximately 70 percent), this represents the primary wildlife habitat in the Park. Within the Park boundary, forests are substantially fragmented by roads, trails, residential development and other non-forest habitats. Eighty-nine forest blocks greater than 50 acres exist including 17 forest blocks greater than 500 acres. There are four forest blocks within the Park that consist of 900 to 1800 acres and include the areas surrounding the Oak Hill Day Use area, Blossom Music Center, Furnace Run Metro Park, and the Brecksville Reservation from Valley Parkway to Snowville Road.

3.3.2 Mammals

Populations of several mammal species have increased substantially in the last decade both locally and regionally, and these species generate frequent interactions with trail users and other park visitors.

White-tailed deer (*Odocoileus virginianus*) are an abundant species in the Park. Overall density estimates between 1998 and 2010 varied from 44 (2005) to 87 (1999) deer per square mile with an estimated 41 deer per square mile in 2010 (NPS, 2011b). Deer population numbers have not increased from the levels recorded in the late 1990s, but remain at a level that continues to limit forest regeneration. The adjacent lands owned by both regional Metroparks have instituted deer management plans the past few years to manage deer populations on those properties (NPS, 2011b). Alternatives for managing impacts of overabundant deer on other park resources are being addressed in a White-tailed Deer Management Plan and Environmental Impact Statement. Deer are a consistently popular species for viewing by visitors.

Coyote (*Canis latrans*) populations also have increased substantially within the Park over the decades since they were first detected in the Park in the 1980s. Population estimates from 1993-2006 ranged from 22 (1993) to 54 (2006), with an estimate of 134 coyotes for 2009 (NPS, 2011h). Although public sightings of coyotes are relatively common, direct interactions between coyotes and humans are rare. Each year, the Park may receive 1-2 reports of coyotes demonstrating defensive or aggressive behavior toward dogs being walked by visitors on trails (e.g. approaching, following, sometimes growling). However, there has never been aggressive behavior of coyotes specifically toward humans (visitors or residents) within the Park. Coyotes are known to use trails, habitat edges, rights-of-way, and abandoned roads as travel corridors. Studies of distribution of coyote scat also indicate that coyotes regularly use park trails for movement through the landscape (Cepek, 2000, Bollin-Booth, 2007).

Beaver (*Castor canadensis*) have been active in the Park since the 1980's. Past (2006) inventories indicate that there are at least 23 active beaver lodges located throughout the park, in a variety of habitats including floodplain wetlands, ponds, tributary streams, the Cuyahoga River and the Ohio & Erie Canal (NPS, 2006b). Beaver are another popular species for visitor viewing, particularly along the Cuyahoga River and at Ira Trailhead and Beaver Marsh. Conflicts between beaver and humans occur

occasionally when beaver activity creates flooding along trails, roads or private lands, or through impacts to trees. These are usually mitigated through tree protection and water level control devices rather than removing beaver themselves.

Additional nuisance wildlife species include raccoons, skunks, groundhogs, and Virginia opossum. These species have also increased in abundance over the past 20-30 years and are common throughout the park. Raccoons in particular are overabundant and can generate conflicts with humans around picnic areas, and other areas where food waste is located.

A bat inventory was conducted in the park during 2002 and 2003 and documented seven species of bat (NPS 2005). Four of these species, including the federally-endangered Indiana bat (*Myotis sodalis*), rely on forest vegetation for breeding and roosting. As of October, 2010 the Ohio Department of Natural Resources, Division of Wildlife, listed the following bats as species of concern: Little brown (*Myotis lucifugus*), big brown (*Eptesicus fuscus*), tri-colored (*Perimyotis subflavus*) and Northern long-eared (*Myotis septentrionalis*). All of these species are present in CVNP (Krynak, et. al. 2005).

3.3.3 Birds

Cuyahoga Valley National Park provides habitat for approximately 247 species of birds, including raptors (birds of prey) song birds, waterfowl, and migrants (NPS, 2011i, 2011j). At least 38 bird species observed in the Park are of conservation concern in Ohio (ODNR, 2009) or at regional and national levels as determined by the international conservation consortium, Partners in Flight (Hunter et al. 1993; Partners in Flight 2002). Table 13 provides information of terrestrial bird species that are of conservation concern and identified in the Park. Most of these species of concern have exhibited steep population declines throughout their range or regionally due to habitat loss and degradation (NPS, 2010d). Most are associated with forest and early successional habitats, and many are sensitive to habitat block size. Table 14 identifies habitat block area sensitive species that were documented within the recent Blossom land property acquisition area.

Table 13. Terrestrial Bird Species Known to Breed in CVNP and of Conservation Concern in Ohio

Species	Status	Habitat
Acadian flycatcher *(Empidonax virescens)*	Partners in Flight	Forest
American woodcock *(Scolopax minor)*	Partners in Flight	Early succession
Canada warbler *(Wilsonia Canadensis)*	Special interest in Ohio, Partners in Flight	Forest
Cerulean warbler (*Dendroica cerula)*	Species of Concern in Ohio, Partners in Flight	Forest
Dark-eyed junco (*Junco hyemalis)*	State threatened	Forest
Field sparrow (*Spizella pussila)*	Partners in Flight	Early succession
Henslow's sparrow (*Ammodramus henslowii)*	Species of Concern in Ohio, Partners in Flight	Grassland
Hermit thrush (*Catharus guttatus)*	State threatened	Forest
Kentucky warbler (*Oporornis formosus)*	Partners in Flight	Forest
Louisiana waterthrush (*Seiurus motacilla)*	Partners in Flight	Forest
Winter wren (*Troglodytes troglodytes)*	Special Interest in Ohio	Forest
Wood thrush (*Hylocichla mustelina)*	Partners in Flight	Forest

(ODNR, 2009, Hunter et al. 1993 – current Ohio Hills and Allegheny Plateau lists.)

Table 14. Area-Sensitive Forest Bird Species Documented within the Blossom Acquisition Property, 2001-2002.

Species	Scientific Name	Area-Sensitivity
Red-shouldered Hawk	*Buteo lineatus*	High
Broad-winged Hawk	*Buteo platypterus*	High
Yellow-billed Cuckoo	*Coccyzus americanus*	Moderate
Black-billed Cuckoo*	*Coccyzus erythropthalmus*	Moderate
Pileated Woodpecker	*Dryocopus pileatus*	High
Hairy Woodpecker	*Picoides villosus*	Moderate
Acadian Flycatcher*	*Empidonax virescens*	Moderate
Tufted Titmouse	*Baeolophus bicolor*	Moderate
White-breasted Nuthatch	*Sitta carolinensis*	Moderate
Blue-gray Gnatcatcher	*Polioptila caerulea*	Moderate
Yellow-throated Vireo	*Vireo flavifrons*	Moderate
Red-eyed Vireo	*Vireo olivaceous*	Moderate
Veery	*Catharus fuscescens*	High
Wood Thrush*	*Hylocichla mustelina*	Moderate
Cerulean Warbler*	*Dendroica cerulean*	High
Black-and-white Warbler	*Mniotilta varia*	High
American Redstart	*Setophaga ruticilla*	High
Kentucky Warbler*	*Oporornis formosus*	Moderate
Louisiana Waterthrush*	*Seiurus motacilla*	Moderate
Ovenbird	*Seiurus aurocapillus*	High
Hooded Warbler	*Wilsonia citrine*	Moderate
Scarlet Tanager*	*Piranga rubra*	Moderate
Rose-breasted Grosbeak*	*Pheucticus ludovicianus*	Moderate

(NPS, 2010c)
* Indicates species of conservation priority in the Allegheny Plateau and/or Ohio Hills physiographic areas of Partners in Flight.

The combination of upland forest, ravine, slope, succession, edge and wetland habitat provides for a diversity of breeding bird species and an important spring and fall migratory stopover region for land birds (Audubon, 2010). There are 116 species identified as breeders and 111 as migratory (Chasar, 2010). Of the birds that reside in the Park, 45 species are affiliated with rivers and wetland habitats, 62 are in the forest habitats and 57 are in the open field habitats (Chasar, 2010).

Ten raptors are either summer or year-round residents of the Cuyahoga Valley (NPS, 2011j). Common raptors in the Park include the turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), and red-shouldered hawk (*Buteo lineatus*) (NPS, 2010e).

Many of the bird species in the Park nest on or near the ground, using grasses and other low-growing vegetation for building nests. These include killdeer (*Charadrius vociferous*), wild turkey (*Meleagris gallopavo*), field sparrow (*Spizella pusilla*), ovenbird (*Seiurus aurocapilla*), eastern meadowlark (*Sturnella*

magna), spotted sandpiper (*Actitis macularius*), veery (*Catharus fuscescens*), and turkey vulture (NPS, 2010e).

Birds that nest in the upper parts of the understory or canopy of woodlands include the greater horned owl (*Bubo virginianus*), Cooper's hawk (*Accipiter cooperii*), cedar waxwing (*Bombycilla cedrorum*), blue jay (*Cyanocitta cristata*), wood thrush (*Hylochichla mustelina*), Baltimore oriole (*Icterus galbula*), common grackle (*Quiscalus quiscula*), and eastern kingbird (*Tyrannus tyrannus*).

Blue Herons have established heronries south of Bath Road, along the southern Park boundary, along the Cuyahoga River near the intersections of Wetmore and Akron-Peninsula Roads and in the upper reaches of the "Mudcatcher" region northeast of Route 82.

In 2004, the National Audubon Society designated Cuyahoga Valley National Park an Important Bird Area (IBA) in Ohio. IBAs are sites that provide habitat for one or more bird species of conservation concern, restricted range species, or vulnerable species due to resource conditions (Audubon, 2010).

3.3.4 Amphibians

Amphibians and reptiles spend much of their time in and around the ponds, wetlands and the riparian zones within CVNP. Reptiles (snakes and turtles) are frequently found along the Towpath Trail and in watered portions of the canal.

3.3.5 Federally or State Endangered Species

There are no federally designated critical habitats or wilderness areas within the vicinity of the Park. However, the park is within the summer breeding range of the federally-endangered Indiana bat (*Myotis sodalis*), and the species was detected during a parkwide inventory of bat species in 2002 and 2003 (Krynak, et al. 2005). No hibernacula or maternity roosts of Indiana bat have been detected in the Park. Factors contributing to the species' decline include loss or degradation of suitable hibernacula, human disturbance during hibernation, white nose syndrome, and loss, degradation, and fragmentation of forest habitat, particularly large mature trees with exfoliating bark in floodplain and riparian areas.

Though delisted in 2007, bald eagles remain a federal species of concern and are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles have nested in the Pinery Narrows area of the Park since 2007. Additionally, a pair of state-threatened peregrine falcons has successfully nested beneath the Interstate 80 turnpike bridge south of the Boston Store Visitor Center since 2008. The Park currently closes and limits tree clearing for hazardous conditions within portions of the Towpath Trail within the Bald Eagle nesting zone from February to July.

The Park is within the range of the piping plover (*Charadrius melodus*), a federally listed endangered bird species. However, the species has not been detected in the Park and no suitable breeding habitat for piping plovers exists within Park boundaries. The Park is also within the range of the eastern massasauga (*Sistrurus catenatus catenatus*) rattlesnake, a candidate species for listing under the Endangered Species Act (ESA) and listed as endangered by the State of Ohio. The species has not been detected within the Park. An assessment of potential habitat within the Park for this snake was conducted in 2003 and concluded that much of the area had little potential for supporting viable populations of *S. c. catenatus* (Lockhart, 2003).

Table 15. State of Ohio Listed Animal Species, Threatened or Endangered, 2009

Mammals	**Scientific Name**	**Status**
Indiana bat	*Myotis sodalis*	Federally and state endangered.
Bobcat	*Lynx rufus*	State endangered
Star-nosed mole	*Condylura cristata*	State Species of concern
Birds		
Bald Eagle	*Haliaeetus leucocephalus*	Federal Species of concern
American bittern	*Botaurus lentiginosus*	State Endangered
Northern harrier	*Circus cyaneus*	State Endangered
King Rail	*Rallus elegans*	State Endangered
Black tern	*Chlidonias niger*	State Endangered
Yellow-bellied sapsucker	*Sphyrapicus varius*	State Endangered
Golden winged warbler	*Vermivora chrysoptera*	State Endangered
Peregrine falcon	*Falco peregrinus*	State Threatened
Osprey	*Pandion haliaetus*	State Threatened
Upland sandpiper	*Bartramia longicauda*	State Threatened
Black-crowned night heron	*Nycticorax nycticorax*	State Threatened
Dark-eyed junco	*Junco hyemalis*	State Threatened
Hermit thrush	*Catharus guttatus*	State Threatened
Least bittern	*Ixobrychus exilis*	State Threatened
Least flycatcher	*Empidonax minimus*	State Threatened
Sharp-shinned hawk	*Accipiter striatus*	Species of concern
Sedge wren	*Cistothorus platensis*	Species of concern
Marsh wren	*Cistothorus palustris*	Species of concern
Henslow's sparrow	*Ammodramus henslowii*	Species of concern
Cerulean warbler	*Dendroica cerulea*	Species of concern
Prothonotary warbler	*Protonotaria citrea*	Species of concern
Bobolink	*Dolichonyx oryzivorus*	Species of concern
Northern Bobwhite	*Colinus virginianus*	Species of concern
Common moorhen	*Gallinula chloropus*	Species of concern
Great egret	*Casmerodius albus*	Species of concern
Sora rail	*Porzana carolina*	Species of concern
Virginia rail	*Ralllus limicola*	Species of concern
Black vulture	*Coragyps atratus*	Species of concern
Canada warbler	*Wilsonia canadensis*	Special interest
Magnolia warbler	*Dendorica magnolia*	Special interest
Northern waterthrush	*Seiurus noveboracensis*	Special interest
Winter wren	*Troglodytes troglodytes*	Special interest
Black-throated blue warbler	*Dendroica caerulescens*	Special interest

Mammals	**Scientific Name**	**Status**
Northern saw whet owl	*Aegolius acadicus*	Special interest
Pine siskin	*Carduelis pinus*	Special interest
Purple finch	*Carpodacus purpureus*	Special interest
Red-breasted nuthatch	*Sitta canadensis*	Special interest
Blackburnian warbler	*Dendroica fusca*	Special interest
Common snipe	*Gallinago gallinago*	Special interest
Northern pintail	*Anas acuta*	Special interest
Redhead duck	*Aythya americana*	Special interest
Brown Creeper	*Certhia americana*	Special interest
Long eared owl	*Asio otus*	Special interest
Mourning warbler	*Oporonis philadelphia*	Special interest
Short eared owl	*Asio flammeus*	Special interest
Golden crowned kinglet	*Regulus satrapa*	Special interest
American wigeon	*Anas americana*	Special interest
Gadwall	*Anas strepera*	Special interest
Green winged teal	*Anas crecca*	Special interest
Northern shoveler	*Anas clypeata*	Special interest
Ruddy duck	*Oxyura jamaicensis*	Special interest
Yellow headed blackbird	*Xanthocephalus xanthocephalus*	Special interest
Reptiles		
Spotted Turtle	*Clemmys guttata*	State threatened
Eastern box turtle	*Terrapene Carolina*	Species of concern
Blanding's turtle	*Emydoidea blandingii*	Species of concern

3.4 Soils

3.4.1 General Soil Characteristics

The Park harbors 65 soil types as defined by the Natural Resource Conservation Service (NRCS). Seven of these soil types cover approximately 45% percent of the Park (Thornberry-Ehrlich, 2009). Generally, most of the Cuyahoga River Valley and its larger tributaries contain soils that are a mixture of sands, gravels, clays, and silts. Occasional floodplain terraces along the Cuyahoga represent narrow zones of deep, well-drained, sandy silt loams (Brose, 1998). Soils are mainly derived from glacial till and lacustrine deposits and tend to be light colored, acidic and moderately to highly erodible. Table 16 describes soil types that are predominantly present in the Park, acres or greater within the Park, their surface erosion potential, and suitability for recreational trails.

Table 16. Soil Series Characteristics found in CVNP (NRCS 2009)

Soil Series	General Characteristics	Erosion Potential (K-factor)	Recreational Trail Suitability
Rough broken land, clay and silt	Theses soils are made up of broken land of clay and silt material in wooded areas along valley walls along the Cuyahoga River and its tributaries. Slope, erosion and hazards of slippage are limitation to this soil type.	No k values	Not rated
Ellsworth silt loam, 2-6 percent slopes	This is a deep soil that is gently sloping and moderately well drained. This soil is suited to such recreational uses as picnic areas and hiking trails.	High – k factor	Not limited Recreational Trails
Ellsworth silt loam, 25-50 percent slopes	This deep soil is steep and very steep and moderately well drained. Most areas are woodland. Trails in recreation areas should be protected against erosion.	High –k factor	Very limited recreational trails.
Geesburg-Mentor silt loams, 25-70 percent slopes	This soil consists of a moderately well drained soil located on terraces and steep areas. Trails in recreational areas should be protected against erosion.	High – k factor	Very Limited recreational Trails
Ellsworth silt loam, 6-12 percent slopes	This is a deep soil and moderately well drained. This soil is on ridgetops, on uneven shoulder slopes, along well defined waterways.	High – k factor	Very limited for recreational trails.
Mahoning silt-loam, 2-6 percent slope	This is a deep soil that is gently sloping and somewhat poorly drained. This soil is in broad areas on till plains. Erosion is a	High – k factor	Somewhat limited for recreational trails.

	hazard where the soil is disturbed and left bare of vegetation.		
Chagrin silt loam, occasionally flooded	This is a deep soil is nearly level, well drained, and typically located in the highest position on flood plains. This soil is suited to recreational uses, such as hiking trails.	Medium – k factor	Not limited for recreational trails.

3.4.2 Soil Erosion on Trails

Trails in the Park experience varying degrees of erosion severity and muddiness, caused by compaction, level of use, type of use, location in the landscape, slope, design of the trail and other localized trail conditions. Erosion and wetness is most prevalent in areas of the trail located within the floodplain, on fall line trails that follow direct drainage paths, and where heavier load trail users, such as horses occur. These include the Towpath Trail, Wetmore Trail, Perkins Trail and the Buckeye Trail. The Old Carriage Trail Connector has historically had soil slumping occur along its route causing damage to the trail and displacement of the soil.

The NRCS maintains the soil survey that documents, soil types by county and its characteristics and limitations. Two factors that the NRCS evaluates is the k-factor of a soil type and its suitability for recreational trails and recreational uses. As defined by NRCS, the "k" factor is an erosion factor that indicates the susceptibility of a soil to sheet and rill erosion by water (NRCS, 2010). Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water. Table 17 provides information on the K factor as it relates to soil conditions for the entire Park. Almost half of all of the land within the Park boundary is identified with a high K-factor primarily located in the plateau and steep slopes of the valley. Medium k-factor areas consist of approximately 1/3 of the parkland, which primarily consists of the floodplain and valley floor. The areas identified with k-factors as low accounts for 5.6% of the total park land. These occur in isolated areas throughout the Park.

Table 17. K-Factor Value of CVNP Lands

K Factor Value (Soil Erosion)	Percent of Total Park Land
High (0.43-0.49)	46.6%
Medium (0.32-0.37)	29.1%
Low (0.17-0.28)	5.6%
Null (No information available)	18.5%

Note. K-factor soil quantities are compiled from NRCS Soil Survey. K-Factor Values are compiled from Institute of Water Research, 2002

3.4.3 Soil Suitability for Trails

Suitability for trails that involve hiking and horseback riding is prescribed by the "paths and trails" rating of NRCS. Ratings are based on soil properties that affect trafficability and erodibility (NRCS, 2010). Table 16 outlines recreational trail suitability for the entire Park.

Table 18. Recreation Suitability for Paths and Trails (NRCS 2010)

Recreation Suitability Paths and Trails	Percent of Total Park Land
Null (no information available)	0.52%
Not rated	18.5%
Not limited	30.3%
Somewhat limited	13.4%
Very limited	37.1%

3.5 Cultural Resources

As stated in the NPS Cultural Resource Management Guideline (NPS 28), cultural resources are "the material evidence of past human activities, finite and nonrenewable, these tangible resources begin to deteriorate almost from the moment of their creation. Once gone, they cannot be recovered. If these resources are degraded or lost so is the parks' reason for being." The main cultural resources of the Park can be categorized as archeological resources, historic structures, and cultural landscapes.

3.5.1 National Register of Historic Places

The Park has 116 properties included on the List of Classified Structures (LCS). The LCS identifies structures that are either currently listed or eligible for listing in the National Register of Historic Places. There are 34 National Register of Historic Places listings located within the Park, many of which include multiple properties.

There is one designated National Historic Landmark section of the Ohio & Erie Canal in the Park which encompasses a four mile section along the canal and State Route 631 in Valley View. Many of the historic structures and places associated with trails include trail facilities, such as trailheads and visitor centers, and the canal locks along the Towpath Trail including Boston Store and Canal Visitor Center.

3.5.2 Cultural Landscapes

According to NPS Management Policies (2006) and Cultural Resource Management Guidelines (NPS, 1997), all cultural landscapes are to be managed as cultural resources, regardless of the type or level of significance. Management actions are to focus on preserving the physical attributes, biotic systems, and uses of a landscape as they contribute to historic significance. "Because landscapes can change, due to natural processes and human activities, protecting and preserving the historic character of a landscape can occur over time through the continuity of distinctive characteristics. Thus the emphasis is on maintaining the character and feeling rather than on preserving a specific appearance or time period" (NPS, 2006a). In the Park, six cultural landscape themes were identified in the 1994 Cultural Landscape Inventory and the 2000 Thematic Overview and Methodology Guide. The themes include: prehistoric and indigenous cultures, settlement, transportation, agriculture, industry, and recreation. Many of the agricultural landscapes are evaluated in the Park's Rural Landscape Management Plan /EIS (NPS, 2003b) and managed under the Park's Countryside Initiative. There are currently eleven farms operating in the Park under this program with one additional farm planned for operation in 2012.

3.5.3 Archeological Resources

Archeological resources are distributed throughout the Park. To date, more than half (51%) of the Park has been archeologically surveyed and 200 archeological sites have been documented, representing human episodes dating as far back as 10,000 years ago and as recent as the historic era of the 20th century. Different environmental settings were favored by groups who have utilized the valley over many millennia, thus predictive modeling, based upon landform types and the distribution of documented archeological sites, can be applied to suggest where additional cultural manifestations attributed to certain time periods might occur. Likewise, there are settings within the Park that would not have been favorable, or in some cases even accessible, for human utilization and thus are not expected to contain evidence of past use. Additionally, due to more recent undertakings within the Park, areas have been identified where there is no potential for archeological resources to exist (e.g., reclamation of degraded areas). Five archeological sites are listed on the National Register of Historic Places.

3.5.4 Visual Resources (Scenic Values)

The Park is comprised of a largely forested landscape bisected by the Cuyahoga River, interspersed with old fields, agriculture, and historic buildings. Visitors perceive the Park to be more remote than it is; probably due to the strong contrast with adjacent developed areas (Schleicher et al, 1994). Evidence of the long history of use by humans is contrasted by the large swaths of what appear to be more natural areas. Scenic views and vistas from either side of the valley reveal patterns of natural and of humans. Visitors also enjoy parts of the Park because of what they do not see there – industry, signs, light pollution (NPS, 2010d).

Four primary scenic values of the Park can be recognized for preservation as part of the purpose of the Park; the Cuyahoga River Valley, both short distance and long distance scenic views, Cultural Resources and their character, and the level of minimal development of park facilities and its properties.

3.6 Visitor Use and Experience

Visitor use and experience on Park trails can have a profound effect on their conditions, management and design. Providing trails in the Park to a wide variety of user groups and visitors is a critical goal for any unit of the NPS. The NPS seeks to provide quality outdoor recreation, interpretation, and education while protecting the resources that visitors seek as part of their trail experience. This section outlines the user patterns and trends related to the trails in the Park that will be affected by the proposed alternatives.

3.6.1 User Capacity

3.6.1.1 General Park Visitation

Park visitation has increased over the years from 1 million visitors in 1985, when the first Trail Plan was completed, to 2.4 million visits in 2010. Between 2006 and 2010, the yearly attendance has ranged similarly between 2.4 and 2.8 million visitors. Visitation generally peaks in the summer months with July

being the highest average month for 2008, 2009 and 2010 averaging 348,000 recreation visits. Park visitation is projected to increase slightly over the next two years with a projected visitation forecast for 2012 of 2.6 million (NPS, 2010-2011a).

Table 19. Park Visitation History

Year	1978	1985	1995	2005	2010
Visitation	496,400	1,018,828	3,195,207	2,533,827	2,492,670

Note: Data collection methods were changed in 2005 by removing visitation at Boston Mills Ski Area from overall CVNP visitor counts and visitor count methodology changes by NPS in 2009.
(NPS Stats, 2010)

The Park, like many National Parks, experiences higher visitation during the summer months. However, its spring and fall visitation is relatively similar to summer visitation. In 2010, summer visitation accounted for 34% of the total annual visitation. The other three seasons in 2010 of annual visitation included spring season with 28%, fall with 25%, and winter with 12% of total annual visitation.

Table 20. Proportion of Seasonal Visitation, 2010

Season	Visitation Proportion of Total Annual Visitation
Winter	12%
Spring	28%
Summer	34%
Fall	25%

(NPS Stats, 2010)

Table 21. Park Monthly Visitation, 2010

Month	Visitation
January	108,972
February	80,931
March	155,486
April	238,394
May	309,477
June	273,111
July	271,603
August	304,191
September	254,221
October	258,050
November	117,910
December	120,324

Partner Park Units Visitation. In addition to NPS visitation, the park units owned and managed by the Park Partners draw 2.6 million visitors annually within the National Park boundary. Combined, visitation within the Park boundary of the various park units exceeded 5 million visitors in 2010.

Table 22. Park Partner Facilities Visitation, 2010

Park	2010 Visitation (recreation visits)
Bedford	776,332
Brecksville	1,485,935
Deep Lock	112,209
Furnace Run	113,144
Hampton Hills	71,225
O'Neil Woods	37,724
Bike & Hike (from Barlow Road to Route 82)	66, 372
Total within CVNP:	2,662,941
Towpath Akron (MPSSC	177,103
Towpath (CMP) (between Rockside and Harvard)	79,240 (2009)

2010 Park District Visitation, Cleveland Metroparks
2010 MPSSC Visitation, MPSSC

3.6.1.2 Trail Use

The trails in the Park are used regularly throughout the year. Summer brings the most trail users to the Park, but winter months will also attract trail users for cross-country skiing and snowshoeing. The trails are used by visitors coming to the Park for daily exercise from nearby neighborhoods, out-of-town recreation enthusiasts and participants of events and programs in the Park. Table 23 outlines primary events held in 2010 on the Park's trails and their level of participation. Additionally, seven equestrian events were held in 2010 under a Special Use Permit. These events included the Celebration Ride and Carriage Ride at Howe Meadow, and Trail Rides (3) and an Obstacle Course Ride at Robinson Field.

Table 23. Trail Special Use Permits, 2010

Event	Number of Participants	Park Location
CVNPA Runs (7 events)	1000	Varies
Buckeye Trail 50k	250	Howe Meadow/Buckeye Trail
Revere H.S. XC	700	Howe Meadow
Cady 50k	225	Buckeye Trail
Burning River 100 mile	200	Buckeye/Wetmore/Towpath
Towpath Marathon Trail	250	Howe Meadow
Towpath Marathon	3000	Towpath
Woodbridge XC	1500	VK Trails
Double Scissors 60 mile	300	VK/Buckeye
Chaney Run	650	Howe Meadow
Pine Hollow Run	200	Pine Hollow
Jim Klett Run	500	Howe Meadow
Humane Society	300	Pine Hollow

Because of the variety of trail services, distances and level of difficulty, trail use differs by location and by use. In summer, 2010 and 2011, the Park conducted Trail Counts, consisting of counting trail users at 17 locations in the Park. The trail count assisted in identifying the level of use during the peak summer use season and the user type; bike, hike, or horse. Due to the summer season of counting, cross-country ski use and snowshoeing was not counted and will require a winter trail count to gauge its use activity. Findings of the initial counting conducted in 2010 and 2011 are summarized below.

- Bicycle use is the predominant use type on the Towpath Trail with an average bike to foot ratio of 3 bikes to every one walker or runner.
- The proportion of each trail use to the total overall use during 2010 and 2011 was 61% bicycles, 37% hike/walk/run and 1% equestrian.
- Saturday mornings and afternoons were the time periods counted with the highest use reported throughout the Park.
- Of all the trail segments counted, four locations exceeded trail use of over 300 users within a two hour period in both 2010 and 2011. These include the Towpath at Hunt Farm, Lock 29, Boston Store and Station Road Bridge. In addition, Boston Store and Lock 29 exceeded 500 users within two hour counting periods in 2011.
- In 2010 and 2011, there were 14 trail counting periods where trail use exceeded 200 bike users within a two hour period and four trail counting periods where trail use exceeded 200 walk/run/hike users within a two hour period.
- The three highest overall trail areas for an average week during the summer season in the Park include the Towpath at Hunt Farm, Towpath at Boston Store and Towpath at Lock 29. The three average lowest recorded during counting in 2010 and 2011 included Wetmore, Valley and Buckeye Trails at Pine Lane and Tree Farm. See Table 20 for average overall total users for all trail locations included in the Trail Count.
- A total of 63 equestrian riders in 2010 and 93 equestrian riders in 2011 with the additional month of August being included in the 2011 counting period. In 2011, equestrian activity was observed 13 of the 103 counting periods conducted on designated horse trails.
- Additional 24-hour counting was conducted in the summer of 2011 on sections of the Valley Bridle Trail. Results of the counting activity are provided in Table 24.

Table 24. Overall Average Total Trail Use During Trail Counting Periods, 2010-2011

Trail Segment	Average Total Users 2010-2011
Towpath at Hunt Farm	253
Towpath at Boston Store	237
Towpath at Lock 29	174
Towpath at Station Road Bridge	158
Brandywine (2010 only)	154
Towpath at Ira	153
Towpath at Stone Road/Rockside	97
Towpath at Frazee (2010 only)	81
Towpath at Botzum (2010 only)	54
Indigo Lake	43.5
Blue Hen (2011 only)	35
Everett-Covered Bridge	30.5
Oak Hill	13
Old Carriage Connector (2010 only)	12.5
Tree Farm	12.5
Pine Lane (Buckeye & Valley)	11
Wetmore	9

Table 25. Number of Trail Counting Periods Exceeding 200 Trail Users by Individual Use Type

	Number of Counting Periods 2010-2011
Greater than 200 bike users during 2-hour counting period.	15
Greater than 200 trail users during 2-hour counting period.	4

Table 26. Equestrian Trail Activity During Trail Count 2010-2011

Trail	2010	2011 (additional month of August)
Wetmore	9	37
Boston Store	0	11
Everett	29	27
Valley Bridle at Hunt Farm	25	24

Table 27. 24-hour Counting on Valley Bridle Trail, 2011

Location	June	July	August
Valley Bridle between Pine Lane(303 South) and Everett	73	64	72
Valley Bridle between Pine Lane (303 North) and Highland Road	34	38	19

3.6.2 Use of Trail Facilities

Visitors to the Park's trails have access to facilities for interpretation, service, and accommodations. Park Facilities are defined for the purpose of this Plan as facilities that connect or provide support to the Park's trails. These include visitor centers, trailheads, parking, restrooms, signage, and other associated facilities.

Visitor Centers. The Park currently operates four visitor contact facilities along the Towpath Trail. The Park is currently in the process of transforming the utility and services of these facilities for Park visitors. Boston Store currently serves as the primary visitor contact facility with Canal Visitor Center, Peninsula Depot and Hunt Farm serving as "nodes of visitor activity". These are locations within the Park, "where visitors can center themselves physically in the park, as well as intellectually and emotionally, through a variety of means, whether indoors or out" (NPS, 2009a). Boston Store Visitor Center had the highest visitation in 2010 with 34,573 visitors. Table 24 outlines visitation at the primary visitor centers adjacent to the Towpath Trail.

Table 28. Towpath Trail Primary Visitor Contact Facilities

Visitor Center(adjacent to Towpath	FY2010 Total Visitation
Boston Store Visitor Center	34,573
Peninsula Depot Visitor Center	29,679
Canal Visitor Center	22,703
Hunt Farm Visitor Information Center	13,110

Parking. The Park currently contains 33 trailhead parking areas that service the Trails. Each of the parking areas and trailheads have various levels of facilities that include signage, bulletin board or kiosk, parking, restrooms, benches, picnic tables and trash receptacles. During the peak season weekends, many of these primary parking lots reach full capacity, including Hunt Farm, Indigo Lake, Tree Farm, Lock 29, Red Lock, Ira, and Boston Store. These areas serve as the primary entryways onto the Towpath Trail and where visitor services and programs are concentrated. Parking for horse trailers is currently available at Everett, Wetmore, Boston Store Overflow and Station Road. Horse trailer parking is also available at the Equestrian Stables in Brecksville Reservation and at Bedford Reservation at the Egbert Trailhead.

Table 29. Parking Lots with Highest Estimated Recreation Visits, 2010

Parking Lot	Visits, 2010
Lock 29- Peninsula (main and overflow)	307,837
Canal Visitor Center	226,275
Station Road Bridge Trailhead	209,994
Pine Hollow (west)	119,601
Brandywine (main and overflow)	117,012
Ira Trailhead	116,109
Lock 39-Rockside	101,953

Table 30. Parking Lots with Lowest Estimate Recreation Visits, 2010

Parking Lot	Visits, 2010
Wetmore	7,625
Little Meadow	9,591
Pine Lane	20,994
Oak Hill	24,459

(NPS Statistics, 2010)

In summer of 2011, the Park conducted a random parking lot count to identify parking areas that may be reaching capacity during the peak use period for the Park. Of the 18 trailhead parking lots counted during this period, eleven of the parking lots had at least one day where the parking lot was 50% full. Table 31 lists parking areas and the number of days where 50% fullness was observed. Six parking areas exceeded 90% fullness at least once during observation periods, with Lock 29 and Boston Store having the highest frequency of maximum or near maximum fullness. Additionally, observation of vehicles with equestrian trailers during the observed time periods found the primary parking area for these vehicle types is Wetmore with a total of 26 vehicles observed overall. Three equestrian trailers were observed at Covered Bridge-Everett trailhead and one at Station Road. It should be noted that for a large part of the 2011 counting period, the Boston Store overflow lot was closed due to a Park improvement project.

Table 31. Parking Lot Capacity,50% and 90% Fullness Frequency 2011

Trailhead Parking Area	Number of times during observation days where parking lot fullness exceeded 50%	Number of times during observation days where parking lot fullness exceeded 90%
Canal Visitor Center	3	0
Station Road Bridge	6	0
Red Lock	12	2
Boston Store	13	3
Lock 29	14	4
Lock 29 Overflow	3	1
Blue Hen	3	0
Hunt Farm	9	1
Everett- Covered Bridge	1	0
Indigo Lake	2	1
Ira	6	0

Environmental Education Center. The Environmental Education Center, located in the southern portion of the Park, contains 2.8 miles of trails that annually serve 3,500 youth attending the Center for residential programs. These trails are restricted to the general public and serve the programs offered at the Center. The trails are in close proximity to the Furnace Run trails and the Oak Hill and Plateau Trail systems that are open for public use. Because of the Midwest weather conditions, extensive outdoor learning activities of the center, and the focus on youth, primary issues of the center involve ensuring the safety of the youth attending the center and providing facilities along the trails to support the outdoor learning experiences.

Howe Meadow, Happy Days Lodge and Hines Hill Center Programs. Three primary gathering places for events and facility use in the Park are Howe Meadow, Happy Days Lodge and the Hines Hill Center. In 2010, Happy Days Lodge had 23,632 visits, Hines Hill hosted 241 events and Howe Meadow was host to 24 events. None of these facilities currently provide trail connections to the Towpath and provide limited connections the Park's trail system. Happy Days Lodge provides trail connections to Boston Run and Haskell Run that can lead visitors to the Ledges and Virginia Kendall units. Increase in use of the Hines Hill Center by visitors of the Stanford House poses current challenges in the absence of a formalized walking path between the two facilities.

Visitation of Other Facilities for Trail Users. There are other facilities with direct connections to existing trails that provide expanded options for the visitor experience. These are currently maintained by the Park.

Kendall Lake Shelter. This shelter includes use as the Winter Sports Center for cross-country ski and snow-shoe rental. 3,918 contacts in FY10 (visitation varies greatly with weather conditions).

Octagon and Ledges Shelters. This shelter has reservable picnic shelters that include access to the Virginia Kendall trail systems.

Horseshoe Pond Shelter. This shelter has a non-reservable ADA accessible picnic shelter that is accessible to the Tree Farm Trail.

3.6.3 Visitor Use Experience

A wide variety of visitors come to the Park to utilize its trails for their use. This section describes this variety of trail uses and current outdoor recreation trends notable to CVNP trails.

3.6.3.1 General Park Visitor Types

General visitor use patterns in the Park were studied as part of a Visitor Study in 2005, through the NPS Social Science Program. In the summer of 2005, demographics of the park visitors reported that age groups between 31-55 (49%) visited the Park most frequently. Age groups older than 55 years had 22% of visitors and age groups younger than 30 years of age were 29% of total visitation.

Because of its proximity to a large metropolitan area and adjacent neighborhoods, visitors tend to visit the Park multiple times during the course of a year. In 2005, 49% of the visitors surveyed visited the Park 12 times or more per year and 30% visited the park at least 1 to 11 times per year.

This is further demonstrated by where visitors reside. In 2005, 90% of the visitors surveyed were from the State of Ohio and 1% was from outside the United States. 50% of visitor groups were residents of the Park area, which for the 2005 Visitor Study was defined as the Cleveland-Akron metropolitan area.

The 2005 Visitor Use Study also surveyed how often visitors had visited the Park. Of the visitors surveyed, 15% were visiting the Park for the first time, 6% visit the Park once a year and 50% of the visitors surveyed had visited the Park more than 10 visits in a year.

Observations from the Interpretive and Education Division identify patterns between local and out-of-town visitors. Local visitors seem to be more interested in recreational amenities like the Towpath. Out-of-town visitors seem to be more interested in attractions like Brandywine Falls. This demonstrates a distinction of outdoor recreation visits and destination visits in the Park. Visitor Center staff has also observed out-of-state visitation continuing to increase as awareness of the Park beyond the region increases.

Other findings in the 2005 Visitor Use Study include:

- Families were the predominant visitor group that visitors were with on their park visit (49%) with 25% of visitor visiting alone.
- Park visitors tended to spend two hours (34%) or three to four hours (33%) when visiting the Park. (4.4 hours, average length of stay). Only 2% of visitor groups visited the Park greater than one day.
- In the 2005 Visitor Study, use of the trails was the predominant activity for visiting the Park. The most common activities Park visitors participated in on their visit were hiking/walking (55%) and bicycling (47%). Trail related activities were the top three primary reasons among 14 park activities for visiting the Park. These included bicycling (35%), hiking/walking (26%) and jogging/running (12%) accounting for 73% of all visits to the Park. Equestrian-only designated trails were not included in the Study.

3.6.3.2 Trail Types

There are 175 miles of trail within the Park (Table 32). Of those miles, 97 miles are managed by the NPS. Trails range in distance from less than ¼ mile to over 20 miles providing a full range of trail types from a fully developed boardwalk system near facilities to singletrack earth trails in the primitive areas of the Park.

Table 32. Proportion of CVNP Trails by Designated Use Type (NPS and Park Partner Trails within CVNP)

Trail Type Within CVNP	Percentage of Total Trail Miles within CVNP
Multi-purpose Bike	42 miles/ 24%
Hike only	64.2 miles/37%
Equestrian	52.0 miles/30%
Cross-Country Ski	16.7 miles /9%
Total	174.9 miles/100%

Hiking/Running. All of the trails within the Park permit hiking/walking/running activities (Table 33). Hiking experiences in the Park range from highly developed short destination routes such as Brandywine Falls to long-distance primitive routes such as the Buckeye Trail. The Buckeye Trail is a statewide trail system of nearly 1,444 miles that today consists of a large loop in the State of Ohio. The trail branches north and east from Cincinnati and is rejoined in the Park before heading north to Lake Erie. The Buckeye Trail Association manages and maintains the trail that is designated as the Buckeye trail within the Park. A distinctive element of the hiking trails within the Park is the presence of primitive trails and the Towpath Trail located and accessible to a metropolitan area, particularly, trails at longer distances greater than five miles.

Table 33. Existing Hiking Only Trails in CVNP on NPS Lands

Current Hiking Only Trails on NPS- CVNP lands	Trail Miles
Buckeye Trail	10.1
Stanford Trail	1.5
Brandywine Falls	0.95
Blue Hen Falls	0.2
Ledges- Haskell Run +Connectors to Pine Grove	4.7
Pine Grove + connector to Lake Trail	1.9
Forest Point	0.5
Lake	1.1
Virginia Kendall Hills	2.0
Furnace Run	1.6
Oak Hill	1.4
CVEEC (not for public use)	4.1
Salt Run	3.5
Hemlock	0.2
Howe-Hale Connector	0.3
Total	**33.8**

Bridle Trails. Primary equestrian trails include Riding Run, Perkins, Wetmore and the long-distance Valley Trail (Table 34). Valley Bridle travels the length of the Park and connects into western and northern bridle trails outside Park boundaries. In addition, a camping facility, Robinson Field located near the Wetmore Trails provides an area for the equestrian community events. The equestrian user groups hold group riding events within the Park seven times a year. Regionally, twenty-eight Ohio State Parks provide over 450 miles of equestrian trails (ODNR, 2011). Cleveland Metroparks provides 82 miles of trails for equestrian use in five of its reservations, outside of the Brecksville and Bedford units (Cleveland Metroparks, 2011).

Table 34. Bridle Trails on NPS Lands

Current Bridle CVNP Trails on NPS Lands	**Trail Miles**
Valley Trail	14.5
Pinery Narrows	3.1
Riding Run	4.0
Perkins	2.8
Wetmore	4.4
Langes Run	3.5
Dickerson (Closed)	1.2
Tabletop (Closed)	0.7
Butlers	0.6
Total	**34.8**

Bike/Multi-Purpose. The Towpath Trail provides 20 miles within the Park boundary for off-road bicycle use. The Towpath Trail consists of an eight foot wide limestone material surface that follows the historic Ohio & Erie Canal. This is the primary bicycle route within the Park with the Old Carriage Connector and the Hale Farm Connector providing connections between neighborhoods or facilities to the Towpath Trail. In addition the parallel Bike & Hike trail provides an additional 10.4 miles for bicycle use along the eastern edge of the Park boundary. The Old Carriage Connector is the only trail that provides some connection to the Bike and Hike trail currently utilizing public roads for the linkage. Designated bike lanes currently exist on portions of Riverview and Akron-Peninsula Roads but are limited in width and are not continuous along the roadways. All current multipurpose trails and their mileage are summarized in Table 35.

Table 35. Current Multipurpose Trails

Current Bike/Multipurpose CVNP Trails on NPS Lands	**Trail Miles**
Towpath Trail	20.1
Towpath-Hale Connector	1.1
Old Carriage Connector	0.8
Stanford House Connector	0.1
Total	**22.1**

Cross-Country Skiing. Primary cross-country skiing trails are located at Boston Run, Old Carriage, Tree Farm, Plateau and the Virginia Kendall trail system (Table 36). The Towpath Trail also allows cross-country skiing. Cross-country skiing and snowshoeing continues to increase its interest and activity in the Park despite its dependence on weather conditions from year to year. In 2009-2010 winter, 3,931 visitors utilized the Winter Sports Center at Virginia Kendall for cross-country ski rentals, snowshoe rentals and winter hike programs. Boston Store provided 225 snow shoe rentals for visitors during the 2008-2010 Winter. Park staff has observed the most used trails for winter trail skiing or snowshoeing are Tree Farm, Cross-country trails, Plateau, Ledges and Boston Run ranking from most used to less used. The past two seasons, 2009-2010 and 2010-2011, visitors and Park staff have observed Tree Farm trailhead parking to be completely full during winter weekends.

Table 36. Current Cross-Country Ski Trails

Current Cross-Country Ski CVNP Trails on NPS Lands	**Trail Miles**
Old Carriage Trail (bridges closed)	2.7
Boston Run	3.2
Plateau	4.8
Tree Farm	2.9
Cross-Country	3.1
Total	**16.7**

3.6.3.3 Visitor Access (Including access for visitors with disabilities)

Trails in the Park offer a wide range of accessibility due to terrain, site conditions and desired visitor experience. Visitor access, including for visitors with disabilities will be defined in the Sustainable Trail Guidelines in the Park, through three activities, 1) defining and identifying levels of accessibility by Trail Class and site conditions to inform the desired design outcomes, 2) establishing a trail signage system to provide accessibility information for each trail within the Park and 3) defining the mobility equipment use and accessibility options that meet the conditions of the trails, protect the Park resources, sustain the desired visitor experience and maintain safe trails for all Park visitors.

3.6.3.4 Soundscapes/Noise

Due to the proximity of the Park adjacent to developed areas, trails are located near roadways and cross road intersections. This is most prevalent for the long-distance trails. The Towpath Trail has four road intersections, Buckeye Trail has nine road crossings and Valley Bridle has approximately eleven road crossings. Additionally, a section of the Valley Bridle trail is adjacent to the Ohio Turnpike interstate, causing less than optimal trail experiences for equestrian riding.

3.6.4 Opportunities for Outdoor Recreation

3.6.4.1 Outdoor Recreational Trail Trends – State and Regional

As part of its 2005 State of Ohio Trail Plan, a survey was conducted of Ohio households and their use of trails in the State of Ohio. Table 37 lists the results of the statewide survey of activities that occur in the Park or are being considered as part of the Trail Management Plan. The 2005 State Trail Plan identified walking, hard-surface bicycling and day hiking as the highest trail activities and horseback riding, backpacking overnight and cross-country skiing as the lowest trail activities.

Table 37. State of Ohio Trail Activities by Participation, 2005

Trail Activity	Percentage of Ohio Households Participating in Trail Activity
Walking	73.4%
Bicycling (hard surface)	44.1 %
Day Hiking	42.9%
Running	24.8%
Biking (natural surface)	18.9%
Canoe/Kayaking	18.4%
Horseback riding	8.9%
Backpacking overnight	7.0%
Cross-country skiing	5.0%

Source: State of Ohio Trail Plan, 2005

Outdoor recreation trends nationally reflect similar patterns for participation in outdoor recreation activities. The Outdoor Industry Foundation cited continued increase of the number of Americans hiking, trail running and camping. Table 38 show the activities available or being considered in the Park that nationally in 2009 were surveyed to be one of the top five most popular outdoor activities of all Americans, ages 6 and older. Additionally, cross-country skiing and snowshoeing continue to rise in popularity with both increasing nationally, with the Outdoor Foundation annual report citing a 9% increase for cross-country skiing and 11.4% increase for snowshoeing in 2011 from 2010 (Outdoor Foundation, 2011).

Table 38. National, Most Popular Outdoor Activities, 2009

Outdoor Activity	Percentage of Americans 6 and older Participating and ranking in Top 5
Running, Jogging, and Trail Running	16% Rank #2
Car, Backyard and RV camping	16% Rank #3
Road Biking, Mountain Biking and BMX	15%. Rank #4
Hiking	12% Rank #5

Source: Outdoor Recreation Participation Report, 2010, Outdoor Industry Foundation

3.6.4.2 Trail Uses

The uses of trails can serve a variety of visitors in the Park. Uses include the primary activities the trails are designed for; biking, hiking, running, cross-country skiing, and horseback riding. Other primary outdoor recreation uses of or a feature of the trails being considered in this Plan are provided in this section.

Off-Road Bicycle Trails. The sport of mountain biking was not a mainstream outdoor recreation activity when the 1985 Trail Plan was completed. Today, off-road bicycling or mountain biking is part of the various outdoor recreation activities that utilizes trails. An overview of mountain biking in National Parks, statewide and the local region is provided.

*Off-Road Bicycle Trails in National Park Service Federal Lands***.** Big Bend National Park recently conducted an Environmental Assessment for a Multi-Use Trail system including bicycle use off public roads outside developed zones. As part of its Plan, the Park reported on the status of this activity in NPS units and specifically National Parks (NPS, 2010b). Additional research and correspondence with NPS units was conducted by CUVA Trail Planning staff.

Main findings include:

- Approximately 23 National Parks provide bicycle trails on old or existing park roads.
- Approximately 8 National Recreation Areas allow or are in planning or rulemaking stages for off-road, single-track bicycle trails.
- No National Park currently has established "single-track" bicycle trails that are not on administrative roads or utility corridors. Two National Parks, Big Bend and Mammoth Cave, are currently in planning or rulemaking stages to implement "single-track" trails.
- Currently, the largest proposed off-road bike "single-track" trail system in a National Park is 10 miles at Big Bend National Park.

Wayne National Forest sits in the southern region of the State of Ohio, approximately a 2-1/2-hour drive from the Park. Wayne National Forest permits off-road biking on its 300 miles of natural surfaced trails.

Ohio State Parks. The State of Ohio contains 22 of its State Parks with designated off-road bike trails with approximately 200 miles available for natural surface bike trails. The nearest state parks to CVNP include West Branch (12 miles of mountain bike trails), Mohican (24.5 miles) and Quail Hollow (5 miles), all within an hour driving distance from the Park. No use statistics were available for the use of these trails (ODNR, 2011a).

*Regional and Local Off-Road Biking***.** Regional and county park districts continue to designate and create off-road, single track bike trails as part of their outdoor recreation trail activities**.** Off-road, single-track bike trails near metropolitan areas have a generally high level of use. Table 39 provides a small sample of off-road bike trail use in three metropolitan regions in the State of Ohio. A mountain bike access survey was also conducted in Hamilton County near Cincinnati, Hamilton County Park District, regarding its mountain bike trails. One finding of the survey highlighted the distance of driving and the distance of the trail. 62% of survey respondents indicated that amountain off-road, single track bike trail system of 8 miles or greater would be needed for the user to drive one hour or more to use. The off-road, single bike trails currently available in Cuyahoga and Summit County is a 2-mile loop at the Ohio & Erie Canal Metroparks Reservation in Cleveland and an 8-mile loop at Royalview within Mill Stream Run

Metroparks Reservation in Strongsville. Reagan Park, a municipal park located in adjacent Medina County provides nine miles of mountain bike trails.

Table 39. Ohio Mountain Bike Trails within Urban Metropolitan Metroparks Systems

Regional Park	2010 Mountain Bike Trail Rider Use
Five Rivers (Dayton)	2,000 per month during peak riding months
Mitchell Memorial Forest, Hamilton County, Cincinnati	2,591 (full year)
Ohio & Erie Canal (Cleveland Metroparks)	14,932 (full year)
Mill Stream Run- Royalview	NA – installed in 2012

*Birdwatching***.** Birdwatching and wildlife viewing are other popular activities people utilize the Park trails. Due to the migratory patterns for the region and its designation as an Important Bird Area (IBA), the Park serves as a destination of this outdoor activity. Locations such as the Coliseum site, Beaver Marsh, Ledges, Tree Farm, Pinnery narrows area along the Towpath, and areas along the River. In the 2005 Visitor Use Study, 18% of the visitors surveyed were participating in birdwatching activities, the sixth most popular activity. Of the groups participating in the birdwatching on trails, 45% participated in the activity several times during the year.

*Camping***.** The Park currently provides campsites at one location, on the Stanford Trail. This campsite offers a hike or bike-in facility with five campsites, near the Stanford House, along Stanford Trail. The campsite is open from the end of May through October each year. Since opening in 2009 camping permits have increased 10% annually. In 2010, 94 of the 158 days permitted for camping, the campsites were occupied, which is approximately 60% full capacity of the campsites. On average in 2010, 85% of the overnight stays consisted of one night with the remaining 15% of the total stays consisted of two day stays, and one three day overnight stay. The month of July had the highest number of stays with 211 in 2010. The number of campers in 2010 consisted of 260 groups with a total of 757 campers with the average group size ranging between 2-4 persons per camp group. There were six days in which the campsites were nearing the 30 camper capacity, occupying 25 campers or more.

Howe Meadow also provides limited camping, under a special use permit and limited programming as part of the Environmental Education Center programming and specific park programming. This camping is not open to general use.

Robinson Field is utilized through a limited permit for equestrian trail users for camping during stewardship work days. No other camping occurs here during the year.

*River Use***.** Outdoor recreation on the Cuyahoga River include fishing and paddling with a canoe or kayak. The River is a popular destination for these activities, as the quality of the water continues to improve. Currently river use does occur, but is not managed or regulated by the Park. Fishing occurs along the Cuyahoga River with popular spots being Station Road, Canal Visitor Center, and the confluence at Tinker's Creek. There are currently no river use facilities within the Park for paddling or canoe use, by way of launch sites or support facilities. There are currently two canoe liveries on the Cuyahoga River outside of the Park. These include the Camp Hi-Canoe Livery located in the Upper Cuyahoga River in Hiram, and the Crooked River Adventure in Kent, located approximately twenty-five river miles south of the Park. Camp Hi canoe livery estimates, on average, 15,000 to 20,000 users annually with an average of 150-200 users per day during its season of April through October. 2010 was the first year of

operation at Crooked River Adventures. The Kent Facility had 2,144 users for canoeing and kayaking during its 2010 season of May through October (Crooked River Adventures and Camp Hi Livery, 2011).In addition, in 2010, the Cleveland Rowing Foundation and public partners established Rivergate Park, ten river miles north of the Park in the City of Cleveland, providing public access for river-based recreation activities including rowing, canoeing and kayaking and the rowing club's headquarters (Cleveland Rowing Foundation, 2011). In 2010, the State of Ohio, Division of Watercraft, reported there were 93,853 registered canoe or kayaks registered in the State with 15,317 of those registered by owners within the five county region nearest the Park (Cuyahoga, Geauga, Medina, Portage, Summit).

3.6.5 Opportunities for Information and Education

3.6.5.1 Education and Interpretation

The Park's interpretation division coordinates with volunteers and Park partners to provide education and interpretation about the Park's resources. In 2010, the Park provided 114 trail related programs with 2,860 visitors attending these (Table 40)**.** The trail programming focuses on three activities; 1) history based learning of the Park's cultural significance and associated features, primarily along the Towpath Trail, 2) nature-based learning of the Park's unique natural resources including Brandywine Falls, Ledges and Blue Hen Falls, and 3) outdoor recreation based activities that utilizes the less developed areas of the Park to engage visitors in physical activity with history and nature-based content, including trails such as the Buckeye Trail, Virginia Kendall trails and Oak Hill. One program currently offered is taking visitors off trail for hikes to explore Park resources.

Table 40. CUVA Trail Related Programs, 2010

Trail Related Programs	# of Programs	Total Attendance
Birdwatching	24	740
Full moon hikes	12	505
Lantern hikes and campfire programs	6	166
Music in meadow hikes	5	138
Off the Beaten Path	12	217
Snowshoe Hikes	6	93
Other recreation-focused hikes	49	1,001
Total Trail Program 2010	114	2,860

Other programs offered associated with the Park trails include the UGRR program with 225 attendees in 2010, the Hang Out at Hunt with 2,145 attendees, trail roving (36,283 hours), Wildlife Watchers (10,216 hours) and Tunes along the Trail (2,000 hours).

Additionally, the Park and its Partners provide children programs on trails. In 2010, 4,482 children participated in these programs within the Park.

3.6.5.2 Orientation to Park Trails

In order to direct visitors in the Park to one of its primary features, trails, the Park established an objective to "plan and implement a comprehensive and distinctive park-wide sign system to welcome, identify and guide park visitors to the various features within the park" (NPS,1998). The Park established its first Sign Plan in 1983 and completed an updated Sign Plan and Sign Inventory in 1998. In 2008, Director's Orders 52 established the UniGuide sign system for NPS. The Park's signage system consists of levels of orientation for the visitor and trail user that include: traffic signs to direct visitors to park entrances and exits, facility signs, trail signs, bulletin boards at trailheads, regulatory signs, boundary signs and interpretive waysides. All of the Trail Management Plan alternatives may affect the signage due to additional or closed trails, new uses, new parking areas and new facilities. The alternatives however, will not affect the Sign Plan and Program significantly different. Trail signage will continue to be updated utilizing the NPS Uniguide sign system including updated accessibility information, and the use of alternative technology options for information on Park trails. The implementation strategy for the trail elements identified in the selected alternative of the Trail Management Plan will include the development of trail signage and trail information for park visitors.

The Park also publishes trail maps for free distribution that provide orientation to the trails. These are available online, and at visitor centers. To further enhance environmental stewardship, the Park continues to establish electronic and mobile trail maps for the trail user.

3.6.6 Visitor Facilities and Amenities

The trail user has access to a variety of facilities and amenities to assist with their visitor experience while in the Park.

Restrooms. There are restrooms at 25 trailheads within the Park. The restrooms range from fully developed to fairly primitive facilities. Current trails with temporary or no facilities include Boston Run and Blue Hen Falls.

Bicycle Racks. Bicycle racks are located along the Towpath at each visitor contact center, at Station Road, and Brandywine Falls.

Picnic Areas. Most existing picnic areas are located at park areas with limited or no trail access, such as Shady Grove, Maplewood and Columbia. Valley Picnic area does have trail access to the Plateau trail. Other areas that provide picnic areas include Horseshoe Pond, Brandywine Falls, Ledges, Octagon, Lake, Virginia Kendall, Boston Run, Oak Hill and Covered Bridge.

Benches and Seating. The trails provide benches along the trails at various intervals.

Horse hitching posts. Hitching posts for equestrian users are currently available at Wetmore, Hunt Farm, Boston Store, and Everett/Covered Bridge.

Overnight Accommodations. Overnight lodging for park visitors and programs are currently offered in the Park at the Environmental Education Center and Stanford House. Under the historic leasing program, Brandywine Inn, adjacent to Brandywine Falls, also provides lodging. Many of the visitors to these overnight facilities utilize the trails adjacent to the facilities. Additional lodging facilities within the Park have not been identified to date, but the desire to examine current park facilities for this use would

potentially be considered in the future. In addition, the Stanford Campsite discussed in section 3.6.4.2 provides overnight accommodations for trail users.

Parking. Parking areas are located near trail entrances throughout the Park. These are described in Section 3.6.2 of this Chapter.

Food/Retail. The Park partner, Conservancy for CVNP, provides food and beverage services at Trail Mix in Boston Store. Additionally, private food and beverage services are available in Peninsula, and Independence at Thornburg Station.

Equipment Rental. The Park provides outdoor recreation rentals for cross-country skis and snowshoes at the Winter Sports Center at Virginia Kendall and at Boston Store during the winter season. The Park also provides camping equipment for their youth camping programs.

3.6.7 Public Health and Safety

3.6.7.1 Trail Safety

During peak visitation months, there are areas of the trail that experience visitor conflicts that result in less than optimal visitor experiences. This is most notable on the Towpath Trail where bike riders and walkers/runners utilize the same trail. In 2009 the Park reported 28 incidents involving bike accidents or trail use conflicts (Table 41, 42 and 43). Because of the high visitation accessibility, relatively easy terrain and connections outside of the Park, the Towpath Trail attracts a wide variety of users, and typically has had the highest occurrence of incidents. Additionally, some of the trails pose safety hazards due to their proximity to water features, rock outcroppings, and steep terrain. The Park has injury incidents on the less developed trails due to traction and or falls on the trails due to the terrain and conditions at the time.

Table 41. FY 2009 Trail Injuries

Location	Number of Visitor Injuries
South of CVC to Station Road	4
South of Station Road to Red Lock	2
South of Red Lock to Boston Store	1
South of Boston Store to Lock 29	7
South of Lock 29 to Hunt Farm	1
South of Hunt Farm to Ira	2
South of Ira to Botzum	1
Buckeye Trail	4
Other Trails (Oak Hill, Furnace Run, Pine Grove, Ledges)	4

Table 42. FY 2009 Trail Visitor Injuries by Cause

Bikes	17
Hiking/Walking	6
Running	3
Stairs/Steps	2

Table 43. Towpath Visitor Accident Occurrences by Activity 2004-2008

Activity	Accidents
Hiking	9
Biking	49
Running	5
Miscellaneous/Unknown	3

An evaluation of the visitor accidents on the Towpath Trail was conducted in 2009. The report found that due to high visitation on the weekends, the weekends experienced the highest number of accidents between 2004 and 2008 with 41 accidents during the weekend and 25 for Monday through Friday during this five year period. During the same five year period, the Towpath between Boston Store and Lock 29 had the highest number of accidents with 25 occurring. There were 11 accidents or less on the other Towpath segments during the same five year period. Accidents involving bikes occurred 49 times, hiking 9 times and running 5 times over the five year period (NPS, 2009/2010a).

The Park initiated a Trail Safety awareness program, Safe is Sound, in partnership with the Ohio & Erie Canalway program to promote trail safety and good trail use practices. 2011 is the second year for the program.

3.6.7.2 Water for Public Use

Potable water is provided at various locations to trail users. Current locations along the Towpath Trail include Canal Visitor Center, Station Road, Boston Store, Lock 29, and Hunt Farm.

3.6.7.3 Human Contact with Cuyahoga River

In accordance with the applicable water quality standards for primary contact recreation established by Ohio EPA, the river water quality is often unacceptable for recreational use due to high concentrations of *Escherichia coli*, a fecal indicator bacterium. Issues associated with meeting primary contact recreation standards include the conditions after rainfall events, where the river rises and flow increases, resulting in increased fecal coliform and *E.coli* concentrations. The Cuyahoga River receives discharges of storm water, combined-sewer overflows, and incompletely disinfected wastewater from urban areas upstream of the Park. These discharges result in a threat to the health of visitors who come into contact with river water during recreational use (e.g., wading or canoeing). Because Park managers are concerned about the threat posed to human health by sewage and pathogen contamination, the Park currently discourages any canoeing, swimming, or wading in the river and does not currently manage river recreational use or provide visitor protection on the river. The Primary Contact Recreation standard as defined by Ohio EPA is as follows;

"At least one of the two following bacteriological standards must be met outside of the mixing zone. Mixing zone for the Akron Wastewater Treatment Plant is from the point of effluent discharge directly south of Bath Road to Ira Road.

1. Fecal coliform - geometric mean fecal coliform content based on not less than five samples within a thirty day period shall not exceed 1,000 per 100ml and shall not exceed 2,000 per 100 ml in more than ten percent of the samples taken during any thirty day period.
2. *Escherichia coli*, geometric mean *E.coli* content, based on not less than five samples within a thirty day period shall not exceed 126 per 100 ml in more than ten percent of the samples taken during any thirty day period." The Park follows and uses this standard."

The U.S. Geological Survey (USGS) and the NPS continue to develop and refine models that predict *E. coli* concentrations based on turbidity and rainfall measurements. Near "real-time" water quality conditions for the Cuyahoga River are posted on the Ohio Nowcast program website (Nowcast, 2011). The Nowcast program issues advisories and predicts the concentrations of *E. coli* once a day at the posted time only. The predicted concentrations are for a specific site along the river and are for information only. The primary sampling location during the summer is located at Highland Road in Brecksville. In 2009 and 2010, samples were taken from May 26 through August 20 and 25th each year. Of the 48 samples taken in 2009, 38 of the 48, or 79% of the days sampled, had a predicted water quality of "Poor" which identifies that a primary contact advisory is in effect at the time. In 2010, 27 of the 45 days or 60% of the days posted a primary contact advisory.

3.6.7.4 Cuyahoga River Obstacles

The river contains a variety of natural and man-made obstacles to consider for its use and access for canoeing. In 1981, a Cuyahoga River Hazard Survey was conducted to identify natural and man-made obstacles in the river. The survey included natural obstacles such as strainers, rating risk of injury potential, rating for water conditions, and risks of man-made obstacles. Strainers listed as an obstacle are defined for the purpose of river use is any object that filters water but does not allow people, boats to pass through. An updated Hazard Survey would need to be conducted prior to determination of river access portage sites and operation.

3.7 Socioeconomic

The Park is part of a metropolitan region that consist of multiple jurisdictions, various cultural, performing arts and recreation institutions, and a large network of corridors for vehicular and bicycle travel.

3.7.1 Population

The Park is within the center of the 15th largest metropolitan area in the United States, with a population of 2,881,937 in 2010. (U.S. Census Bureau, Cleveland-Akron-Elyria Combined Statistical Area). There are approximately 13,000 residents living within the Park boundary, including the population residing in Peninsula. Within a ½ mile to the Park boundary, a population of 112,350 reside. Within 2 miles, the population is 340,980 and 3.3 million within 25 miles of the Park. Within 100 miles of the Park, which is a typical two-hour car drive for day trip destinations, a population of 10.3 million reside. (U.S.Census,

2010). Population in the central cities have declined the past ten years, however, the suburban outlying communities continue to grow but at a lower rate over the past ten years.

3.7.2 Local Communities

The Park boundary contains portions of 15 local municipalities and two counties. It is sandwiched between the two major metropolitan areas of Cleveland and Akron. The local communities comprise of small villages and smaller suburban cities and towns, including the Village of Peninsula which is surrounded by the park boundary. Many large neighborhoods sit along the edge of the Park boundary including Greenwood Village in Sagamore Hills, Echo Hills in Brecksville, and neighborhoods in Cuyahoga Falls on both sides of the southern part of the Park.

The local communities contain commercial areas in close proximity to the Park and its trails. Directly adjacent to the Towpath Trail, commercial areas include downtown Peninsula in the central part of the Park and Thornburg Station along the northern boundary of the Park in Independence. Other extended commercial areas, not directly accessible from the trails, but near the park entrance points, include Sagamore Hills, near Holzhauer Road, downtown Brecksville on Route 82, northern Akron area Merriman Valley District along Riverview Road, Richfield commercial area on Route 303, and downtown Hudson and Valley View commercial areas. The commercial areas contain restaurants and shops that Park visitors may utilize when travelling into and out of the Park entrance points.

Specific commercial sites that provide trail related services within or close proximity to the park include the Trail Mix store across from Boston Store in Boston Township, Szalay's Market, near Hunt Farm, and Appalachian Outfitters retail store on Truxell Road near Ledges and Virginia Kendall Units. Local Bike shops, including Century Cycle adjacent to the Towpath Trail in Peninsula provide bike rentals for trail users. Nearby running and bicycle stores in Northfield, Hudson, Brecksville and Akron also provide retail service to trail users of the Park.

3.7.3 Municipal Services

The local municipalities in cooperation with the Park provide emergency services to Park visitors as needed.

3.7.4 Visitor Spending Characteristics

In 2009, the NPS reported 2,293 overnight stays and $54 million in visitor spending (Stynes, 2011). The 2005 Visitor Study for Cuyahoga Valley National Park indicated economic activities conducted within a 15 minute drive by park visitors surveyed included, dining in a restaurant (57%), shopping (30%) and buying takeout food (27%) (NPS, 2005c).

3.7.5 Land Ownership

National Park Ownership. The Park is similar to other urban National Parks, by its mosaic of land ownership within its boundaries. Of the 33,000 acres within the Park boundary, the NPS owns approximately 19,000 acres. NPS lands include lands under short-term and long–term retention

agreements. Some lands are utilized for utility right-of ways throughout the Park, but particularly through the central portion of the Park.

Other Public Lands. The second largest land owners in the Park are the regional park districts. Cleveland Metroparks own 5,700 acres in Bedford and Brecksville Reservations and additional tract land from the Highland Road area north to Sagamore Road, including lands that include the Buckeye Trail. Metroparks, Serving Summit County owns 3,203 acres including Deep Lock Quarry, O'Neill Woods, Hampton Hills and Furnace Run Metropark units, and lands that contain the trail systems of Wetmore and Riding Run and Perkins and conservation areas near Columbia Run, and Stanford Run. Metro Parks, Serving Summit County also owns and manages the Bike and Hike trail along the eastern edge of the Park.

Other public lands include lands owned by local municipalities including Hudson's Wildlife Woods Park located on Boston Mills Road that contains a small hiking trail connecting to the Buckeye and Valley Trails. The City of Independence and Independence Board of Education owns land along Stone Road in the northern portion of the Park. The Northeast Ohio Regional Sewer District has a service road near and through the Fawn Pond area.

Private Lands. The Park boundary contains 3,430 acres of privately owned land. These lands consist of approximately 3,200 acres of residential parcels and 200 acres of commercial lands, including some lands owned by utility companies. Some of the private lands contain conservation or scenic easements.

Compatible Institutional Lands. Compatible institutional land are tracts of land in private ownership by institutions, and are currently held and operated in a manner compatible with, or supportive of the NPS mission. Compatibles institutional land is the 4th largest land owner in CVNP. These include the Boy Scouts, Girl Scouts, Hale Farm, Old Trail School and the Blossom Music Center. Majority of these lands are located in the southern portion of the Park totaling 1,793 acres of land. Brandywine and Boston Mills Ski Resorts in the central region of the Park comprise of 138 acres at Brandywine and 58 acres at Boston Mills. These ski facilities, with no overnight accommodations attached to them, attracted approximately 270,000 visitors annually during the 2010-2011 winter season (Boston Mills/Brandywine Ski Resort, 2011). The Park does not operate or utilize these lands for programs or other activities, however, coordination with events and operations between the Park and these institutions occurs.

Table 44. Land Ownership in CVNP

Land Ownership Type	Acres
National Park Service	19,082
Other Public Land	8,581
Compatible Institutional Ownership	1,793
Private (some with easements)	3,430
Total	**32,886**

3.7.6 Transportation network

The Park contains all levels of a transportation system; roadways, highways, local roads, train and bicycle transportation options. The primary mode of travel that visitors enter the Park is through its roadways either by car or bicycle. In the 2005 Visitor Study, 1% of visitors surveyed arrived in the Park by bike or foot. The Scenic Railroad provides primarily intra-park transportation with service south of the Park boundary for visitors. There are approximately 96 miles of road within the boundaries of the Park. The Cleveland Metroparks and Metro Parks, Serving Summit County own and operate 12 miles of these roads. The NPS owns and operates one mile of road within the Park boundary. The road system in the Park is under the jurisdiction of local municipalities, counties or the State.

The road network within the Park serve as primary corridors for east to west and north to south vehicular travel particularly for commuting and connection to the major interstates adjacent to or bisect the Park, that include interstates 77, 271, the Ohio Turnpike and Route 8. Route 303, Route 82, Pleasant Valley Road, Wheatley Road to Steel Corners Road to Bath Road, and Rockside Road are the primary east-west roadways crossing through the park. Akron-Peninsula, Riverview and Canal Road are the primary north-south roadways in the Park. Many other roads within the Park are less travelled including Major Road, Sagamore Road, Everett Road, and Wetmore Road. Regional Transportation agencies have collected average daily traffic counts for motor vehicles, on roads within Park boundaries.

Table 45. Vehicle Traffic on Roads in CVNP 2006-2009

Location	ADT (Average Daily Traffic)
Cuyahoga – Alexander Road between Canal and Dunham Roads	9,799
Summit – Route 82 near Chaffee Road	11,770
Summit – Route 303 at Riverview Road	2,730
Summit – Route 303 between Riverview and Route 8	9,400
Summit – Wheatley between I-77 and Oak Hill Road	2,770
Summit - Riverview at Everett Road	5,680
Summit- Akron Peninsula Road between Route 303 and Quick Road	2,850
Summit – Route 303 between I-271 and Riverview Road	8,170

Source: NOACA, Cuyahoga County Highway Traffic Counts, 2006-2009
AMATS, 2010

Current bike use on roads within the Park occurs during spring, summer and fall months annually. Use has not been documented in formal counts, but is observed most frequently on the roads extending through the Park, including Route 303, Riverview and Akron Peninsula.

Road improvements for bicycle use have been made over the years by local, county and state agencies including improved shoulder conditions on portions of Riverview Road, Boston Mills Road, Truxell Road, Everett Road, and Akron-Peninsula Roads.

3.7.7 Soundscapes/Noise

The Park boundary abuts in many locations to medium-density residential areas and small village city centers. The high use trails, such as the Towpath travel through Boston Township and portions of Peninsula. Old Carriage Trail and the Old Carriage Connector trail abut the Greenwood Village

neighborhood in Sagamore Hills. The remaining trails are not in close proximity to the neighborhoods surrounding CVNP.

Highway noise from I-271 and I-480 occur on the Valley Bridle Trail and Buckeye Trail that are located in close proximity to these roadways. Area roads throughout the park where high traffic volume occurs, contributes to the noise within the Park.

3.8 Park Operations

Operations of the trails and associated trail facilities in the Park include the use of Park staff, Park partner organizations including volunteers, and other jurisdictional operations within the CVNP boundary.

3.8.1 Operations

The Park is operated and managed by the NPS in collaboration with a variety of Park Partners. The Park employs 100 staff in five management divisions: administration, interpretation, maintenance, visitor protection and resource management, in addition to the Superintendent's office.

3.8.1.1 Staffing for Trails

All divisions of the Park play a role in the management and enjoyment of the trails within the Park. The primary staffing for the trails include professionals in design, construction, maintenance, interpretation, and visitor protection of the trails. The Park trails field staff are the key stewardship manager of the trail system. The current trails field staff include a part-time landscape architect, four full-time permanent trails maintenance staff, and six fulltime seasonal trails staff persons working up to five months annually. Currently, there are three trail maintenance positions vacant due to limited budgets. In addition to this trails field staff, many NPS staff assists and manage various aspects of the trails, whether it is safety of trail users, programming on Park trails or monitoring of Park resources along the trails.

3.8.1.2 Budget for Trails

In 2011, the trails operating and maintenance budget was $279,360. The 2008 Park Asset Management Plan reported only 18% of the total projected maintenance needs for trails were currently being funded with the existing budgets (NPS, 2008a).

Current staff levels are challenged to meet current demands of trail management most notably for trail maintenance, specifically for deferred maintenance and capital maintenance, site planning, design and project management. Tasks needed to implement a comprehensive Trails program do not have current staff assigned for them. These tasks include compliance, project and park-wide planning for trail management, funding, monitoring of visitor use patterns and trail conditions, and volunteer management and training.

3.8.2 Operation & Maintenance of Trail Facilities

Park facilities are defined for the purpose of this Plan as facilities that connect or provide support to the Park's trails. These include visitor centers, trailheads, parking, restrooms, signage and other associated facilities. Park staff, Park partners and volunteers manage, maintain, operate, and program these facilities throughout the year.

Trails. The Park and its Park Partners maintain and manage its trails. The Park conducts annual general maintenance of all of the trails in the Park. Annual maintenance includes mowing and trimming during growing season, bridge cleaning, hazardous tree removal and limb inspection, fall leaf removal and inspection of signs, bollards, and gates. The Park conducts assessments and trail improvements related to drainage and erosion on particular trail units every two to five years or more frequently where recurring issues occur. Some trails have recurring maintenance issues due to their resource conditions and require maintenance staff to refocus on these trails when weather conditions occur. This primarily occurs on the Towpath Trail, with some conditions occurring at Valley Bridle trail, Perkins trail and Wetmore trail.

*Visitor Centers***.** The Park provides staffing and management at the four visitor contact centers as described in the Visitor Use Experience section 3.8. These centers also provide park and trail maps and typically the first stop for trail visitors for information and orientation. Canal Visitor Center and Boston Store Center operates daily during the summer and limited hours during the winter season. Hunt Farm and Peninsula also operate during the summer but has limited hours with staff and programming.

In addition to the NPS facilities, Brecksville Nature Center within Cleveland Metroparks, provides programming and trailhead facilities to the Park visitors.

Other Park Visitor Facilities. The Park and Park partners operate and maintain other visitor facilities that are utilized by trail users. These include the Winter Sports Center at Virginia Kendall, Environmental Education Center, Stanford House, Happy Days Lodge, Howe Meadow and Hines Hill Center. Frazee House, which is currently closed for rehabilitation, is also operated by park staff and accessible to the Towpath Trail.

Parking. The Park maintains the parking facilities within the Park. This includes snow clearing during the winter use months of 21 of the 34 trailhead parking areas.

Trail Rental and Equipment Storage. The Interpretive Division supplies trail equipment for their trail-related programming activities. These include bicycles, cross-country skis and snowshoes. Additionally, the Interpretation Division provides tents for its Kids in Tents on Trails program. The Winter Sports Center and Boston Store provides cross-country ski rentals during the winter season to trail users.

Permits. The Park and its partners manage permits and agreements for some of the activities and facilities associated with trails, including the Stanford campsite, and events held on trails coordinated by groups outside of the Park.

3.8.3 Partner Operations

Cuyahoga Valley National Park has been a leader in the NPS to establish partnerships and volunteer groups that contribute to the success of the Park's trail system.

3.8.3.1 Park Partners and Programs

The Park has three primary non-profit partners; the Conservancy for Cuyahoga Valley National Park, Cuyahoga Countryside Conservancy, and the Cuyahoga Valley Scenic Railroad. These organizations provide support to the operation and programming of the Park's facilities that are associated or affected by the Park's trail system. In addition, Cleveland Metroparks and Metroparks Serving Summit County maintain and operate the facilities in their respective reservations within the Park boundary.

Conservancy for Cuyahoga Valley National Park. The Conservancy, established in 2002, serves as the primary park-wide partner for the Park. The Conservancy focuses on four primary programs in partnership with the Park: 1) environmental education to youth, 2) adult programming and facility events at Howe Meadow, Happy Days Lodge and other venues throughout the Park focusing on arts, cultural and natural resources, and health and wellness, 3) coordinating volunteer activities among the various needs in the Park, and 4) the Trails Forever Program providing support to the Parks trails in a variety of ways. All of these programs within the Conservancy utilize the Park's trails and trail facilities. Additionally, the Conservancy operates and manages the Happy Days Lodge facility, Stanford House, and Hines Hill Conference Center, and the permit system for the Stanford campsite.

In addition to its programming, its current headquarters on Hines Hill Road provides meeting space in conjunction with the Hines Hill Conference Center. Current facilities are limited for pedestrian circulation and bicycle use that would connect the facility to other nearby park facilities including Stanford House and Brandywine Falls.

Trails Forever Program. In 2009, CVNP and the Conservancy kicked off its Trails Forever Program to provide added support and focus on the needs of the trails in the Park. The program is focused on five primary activities; providing trail experiences, volunteer stewardship, planning, trail system enhancement and establishing an endowment as part of the TRAILS FOREVER Legacy Fund. Two of the significant endeavors that the Trails Forever program will support include fund development for one-time capital projects and endowment growth for ongoing trail stewardship and maintenance. In 2012, Trails Forever will provide its first installment of support towards ongoing trail stewardship.

*Cuyahoga Countryside Conservancy***.** The Cuyahoga Countryside Conservancy was established in 1999 in association with the Park's Rural Landscape Program. The Countryside Conservancy coordinates the re-establishment of farms within the Park by providing technical training, coordination of eleven working farms, and operation of farmers markets in the Park. Since 2004, Farmers Markets have been occurring at Howe Meadow during the summer months and at nearby Old Trail School during the fall. During the summer of 2010, the Farmer's Markets at Howe Meadow averaged 45 vendors per week with customer attendance of 27,982 (Countryside Conservancy, 2011). In 2012, the Countryside Conservancy will be relocating its primary headquarters near the Black Acres Farm on Quick Road for expanded facilities and operations of the programs the Conservancy provides.

*Cuyahoga Valley Scenic Railroad***.** Cuyahoga Valley Scenic Railroad (CVSR) is dedicated to the preservation of passenger rail transportation in Cuyahoga Valley and the historic Ohio & Erie Canalway. CVSR operates and manages all rail programs and events, with 2010 program attendance reaching 180,000 (CVSR, 2011). The railroad provides eight stops within the Park. One of the newest offerings on the Scenic Railroad is the Bike Aboard program, launched in 2007. The program offers visitors to board their bikes on the train to travel to other parts of the Park's Towpath Trail or to provide an alternative mode of transportation to a destination after biking on the Towpath Trail. The Bike Aboard program has significant use since its inception in 2010 with use of 20,505. The Railroad's direct connections are limited to pedestrian walkways at Boston Store and Lock 29. Direct links to the trails are available at Canal Visitor Station, Indigo Lake, Station Road and Botzum. There currently is no direct trail connection to the Towpath or other Park trails at Rockside Station.

3.8.3.2 Trail Volunteers

The Park's trail system has one of the most extensive trail volunteer programs in the NPS. The Park's volunteer trail program involves groups that provide assistance to the Park in the following areas; visitor protection and orientation, trail stewardship and visitor education. Five primary volunteer trail groups include, Trailblazers, Cuyahoga Valley Trails Council (CVTC), Adopt-A-Trail, Ohio Horseman's Council (OHC) and the Buckeye Trail Association (BTA). Table 44 shows the hours contributed from each group in 2011. In addition other volunteer groups contribute to trail orientation and programs: Wildlife Watchers (1,484 hours), Paw Patrol (611 hours), Program Assistant hikes (744 hours), and Cycling School volunteers (553 hours).

Table 46. Trail Volunteer Hours

Trailblazers	Cuyahoga Valley Trails Council	Adopt-A-Trail	Medina Ohio Horseman's Council	Buckeye Trail Association
7,920	1,152	6,038	934	190

(Conservancy for CVNP, 2011)

Challenges facing volunteer programs include matching projects with skills, retaining volunteers over the years, and having Park and partnership staff available to coordinate volunteer activities. In 2011, the park initiated a trail volunteer program focused on trail condition assessments.

*Buckeye Trail Association***.** The Buckeye Trail Association is the state-wide non-profit organization that provides stewardship to the Buckeye Trail throughout the state of Ohio. The Association maintains the 35-mile portion of the Buckeye Trail that travels through the Park boundary.

3.8.4 Local Communities and Other Jurisdictions

Operations by local communities and other park jurisdictions are part of the activities associated with the Park's trail system. Local communities and regional and State governments maintain the roadways within the Park. The Park also coordinates with local communities and the other Metropark entities on trail events and programs.

Cleveland Metroparks. The Cleveland Metroparks maintains the facilities and trails within Bedford and Brecksville Reservations. These include the Brecksville Nature Center, the associated golf courses and the trails and their amenities. Coordination for visitor protection, programming and stewardship is an ongoing partnership between the Cleveland Metroparks and CVNP.

Metro Parks, Serving Summit County (MPSSC). The MPSSC maintains the facilities and trails within most of the parks in their jurisdiction within the Park boundary With the exception of maintenance on Perkins Trail, Riding Run Trail, and the Wetmore Trail. CVNP maintains these facilities. Coordination for visitor protection, programming and stewardship is an ongoing partnership between the MPSSC and CVNP.

Chapter 4: Environmental Consequences

4.1 Introduction

This section analyzes the effects of each alternative and the affected environment issues described in Chapter 3 of this document. The analysis includes effects of each individual alternative and compares the effects to other alternatives, to other reasonably foreseeable future actions in the Park and to actions that occur outside of the Park and in the region The no action alternative (Alternative 1) is used to compare the effects of current Park actions and management direction with the proposed in the action alternatives. (NPS)

For the purpose of the Environmental Impact Statement (EIS), an issue describes an environmental problem or relationship between a resource and an action or actions. Impact analysis predicts the degree to which the resource will be affected.

Applicable Regulations and Guidelines. The applicable regulations and guidelines for the impact topics are outlined in Chapter 1, Purpose and Need of this document. Additional regulations and guidelines specific to the impact issue topics are provided under each impact section of this Chapter.

Methodology and Assumptions. This describes the methods used to predict the impact. The methods utilized are the best available at the time of this document and based upon literature review, existing information on impact topics, and the best professional judgment of Park staff and partners.

Impact Indicators. As directed by NEPA and NPS Director's Orders 12, considerations must include context, intensity, duration, and timing (1508.27) as described below.

> **Context.** Context is the affected environment within which an impact would occur. This can include site-specific which is defined at trail element scale, local which is defined as the Park boundary, regional which is defined as within 20 miles of the Park boundary, or global affected interests which are beyond the 20 miles of the Park boundary.
>
> **Duration.** Duration refers to the time period over which the effects of an impact persist. Duration of impacts is defined as follows.
>
> > Short-term – impacts last for less than 2 years, often quite less. This would include any temporary impacts such as construction associated with the alternatives.
> >
> > Long-term – impacts last for more than 2 years, which would include impacts that are permanent. This Trail Management Plan is established to serve the Park for the next 15 years. The analysis period used for assessing impacts is up to 15 years.
>
> **Intensity.** This refers to the severity of the impact. The intensity of an impact may be negligible, minor, moderate or major. Impact intensities will be described specifically under each impact topic. Impacts may be either beneficial or adverse, but intensity is described only for adverse impacts. Beneficial impacts are those that involve a positive change that moves the resource

toward a desired condition. Adverse impacts involve a change that moves the resource away from a desired condition or detracts from its appearance and condition.

Types of Impacts. As outlined in NPS Director's Orders 12, the following categories of impacts need to be considered and analyzed.

Direct effects (40 CFR 1508.8). Direct effects are caused by the alternatives at the same time and in the same place as the action.

Indirect effects. (40 CFR 1508.8) Indirect effects are impacts caused by the alternatives that occur later in time or farther in distance than the action.

Cumulative effects (40 CFR 1508.7) Cumulative effects are "additive" impacts to a particular resource and include impacts of actions in the past, present and the reasonable foreseeable future. The actions or projects that were identified and analyzed as part of cumulative effects are listed below.

4.1.1 Cumulative Impacts

The National Environmental Policy Act regulations administered by the Council of Environmental Quality require the assessment of cumulative impacts in the process for federal projects. "Cumulative impact" as defined in Section 1508.7 of NEPA, "is 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative impacts are analyzed for all alternatives under each impact topic. The following plans and projects are considered in the cumulative impact analysis.

Past Actions, Projects and Plans

- *Cuyahoga and Summit County Greenspace Plans.* County Plans that have set in place a vision for the two counties greenspace and trail network.
- *Rural Landscape Management Plan, 2002.* Outlines the goals and preferred strategy to continue the agricultural traditions in the Valley, preserve scenic values of the Park's rural landscape, and using environmentally sound practices for its implementation.
- *CUVA Long-Range Interpretive Plan, 2003*. Provides the strategy for interpretation for the Park.
- *Ohio & Erie Canal Heritage Corridor Management Plan, 2000*. Outlines the concepts and goals for the 110-mile Heritage Corridor that includes the Park. The Plan includes the extension of the Towpath to downtown Cleveland.
- *NOACA and AMATS Regional Transportation Plans.* Provides the vision for alternative transportation including bikeways and trails for the region.

Current Actions, Projects and Plans

- *Urbanization of Region*. While the region continues to trend towards a reduced population size, it remains a highly urban area with communities adjacent to the Park and areas poised for development. Due to the age of these communities, infrastructure upgrades (roads, bridges, and utilities) will continue over the coming years.
- *Brecksville Dam EIS.* The Park and Ohio EPA are conducting an Environmental Impact Statement to evaluate alternatives for the modification or removal of the Dam near Station Road bridge.
- *Krejci Dump Clean-up and Restoration.* The clean-up and restoration of an 46 acre dump site along Hines Hill Road will eventually provide public access to once contaminated lands.
- *Jaite Mill Restoration Project.* The site clean-up and restoration of the Jaite Mill site, south of Highland-Vaughn Road, will eventually provide public access to share the industrial heritage of the Cuyahoga Valley.
- *Visitor Experience Plan for Park Facilities*. A Conceptual Framework for Enhancing Visitors Experiences (2009a) outlined recommendations for specific park facilities and their future functions and roles in providing visitor experiences. Park facilities included in the study included Canal Visitor Center, Wilson's (Alexander) Mill, Stanford House, former Vernon Boodey House, former Nina Stanford Home, Boston Store Visitor Center and surrounding facilities, Hunt Farm Visitor Information Center, Szalay House, Kendall Lake Shelter. Some of the recommendations have been implemented or are currently underway.

Foreseeable Future Actions and Plans:

- *Boston Mills Area Conceptual Development Plan and Environmental Assessment.* An Environmental Assessment is currently being conducted for the Boston Mills area addressing parking, circulation and visitor services for the Park's facilities in Boston Township.
- *Deer Management Plan/ EIS.* An Environmental Impact Statement is being developed to determine the management strategy for deer in the Park.
- *Akron Long-Term CSO Control Plan. 2010.* The City of Akron's Plan to reduce the number of sewer overflows into the Cuyahoga River that contributes to the water quality of the River.
- *Cuyahoga Water Trail Forum*. The group is working on the development of a strategy for designation of the Cuyahoga River as a state water trail and potentially a national recreation water trail, under the National Park Service National Recreational Trails program.

4.1.2 Impairment of National Park Resources

In addition to determining the environmental consequences of implementing the alternatives, NPS Management Policies, 2006 require the analysis of potential effects to determine whether the actions would impair park resources (NPS, 2010f). As defined by NPS Management Policies (1.4.5), an 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. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- 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 in the park's general management plan or other relevant NPS planning documents as being significant.

4.1.3 Unacceptable Impacts

The NPS Management Policies, 2006 outlines a standard to avoid impacts that it determines to be unacceptable. The Management Policies, (1.4.7.1) defines unacceptable impacts as impacts, individually or cumulatively that would

- Be inconsistent with a park's purpose or values,
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process,
- Create an unsafe or unhealthful environment for visitors or employees,
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- Unreasonably interfere with
  - -Park programs or activities,
  - -An appropriate use,
  - -The atmosphere of peace and tranquility, or the natural soundscape maintain in wilderness and natural, historic, or commemorative locations within the park, or
  - -NPS concessioner or contractor operations or services.

4.1.4 Future Compliance

This Environmental Impact Statement describes the impacts associated with a conceptual trail management plan for the Park, it does not provide site-specific evaluations and details for many plan elements. Prior to implementation of any specific trail or facility, the NEPA analysis will be reviewed to determine that 1) all impacts have been adequately analyzed for particular actions, and 2) that there are no changes to the affected environment or impacts on resources. If site-specific detail is insufficient, additional compliance documentation may be required. Specifically, coordination with the State Historic Preservation Office for NHPA Section 106 and/or with the U.S. Army Corps of Engineers and Ohio EPA on stream or wetland permits is expected.

4.2 Impacts on Water Resources

4.2.1 Relationship of Trails to Water Resources

The following water resources may be impacted by the Trail Plan elements.

Watershed imperviousness has been demonstrated to be a reliable indicator of watershed health (Schueler 1994, Arnold and Gibbons 1996). In the Cuyahoga Valley, this has been found to hold true, particularly for ecological values (Skerl and Plona, 2007). Watershed health is affected by factors such as the level of imperviousness (areas that water cannot infiltrate, such as roads and roofs) and biological conditions. The Ohio EPA Index of Biotic Integrity (IBI) measures the structural and functional characteristics of fish communities and is based on trophic composition, diversity, presence of pollution-tolerant species, abundance of biomass, and the presence of abnormal organisms (OEPA 1987). In larger park watersheds, IBI indices decrease from a "Very Good" (at 5% imperviousness) to "Fair" rating as imperviousness exceeds 24%. In smaller subwatersheds, IBI ranges from nearly "Exceptional" (at ~2% imperviousness) to "Very Poor" as imperviousness approaches 35%. The quality of headwater streams, as indicated by their macroinvertebrate communities also appeared to decrease with increasing imperviousness. Increases in turbidity and high bacteria (*E. coli*) levels were observed in park watersheds that exceeded 15% imperviousness. Trail infrastructure can contribute to a watershed's imperviousness depending on the level of development in the watershed and the extent of the trail infrastructure. Some trails may have impacts due to their materials and width, such as asphalt on a high use, and trails requiring 8-foot tread widths. Other trails may have little or no effect, such as a natural surface low use, primitive trails with a 2-foot tread width.

Water quality can be degraded by trails when trail runoff containing suspended sediments reaches streams, rivers and lakes. Such sedimentation can alter aquatic food chains and fish populations (Forman, 1995). Trails designed to reduce runoff and set back from streams can help preserve water quality (Lanehart, 1998).

Another impact trails and trail facilities may have on water quality is if human and animal waste are not disposed of properly, they can add unwanted nutrients into the stream. Horse manure on trails and their impact to water quality are typically correlated by the number of horses along trails on an annual basis. A study of potential water quality issues associated with horse manure, noted that good trail placement practices assisted in reducing its contribution to water quality degradation and that it was typically a minimal impact compared to other water quality impacts (Westendorf, 2009). Human waste management at campsites can impact water resources through improper disposal, where toilet facilities are not provided. While no specific research on the effects of increased levels of fecal coliform bacteria as a result of unmanaged campsites is available, it is an issue that has been raised in other prominent primitive camping and trail systems (Marion, 2003).

Riparian buffer zones have been shown to remove most sediment runoff based on the type and width of the vegetated buffer area (Wenger, 1999). Trails in close proximity to the immediate vegetative buffers of streams can remove or modify this function by increasing sedimentation into streams. Additionally, stream crossings can modify the function of a stream corridor through use of infrastructure such as bridges and culverts.

Floodplains are unique habitats and typically contain poorly drained and organic soils that can be vulnerable to impacts from infrastructure within them, including trails. Floodplains also have flat landform slopes which challenge the design of trails to provide proper grading in typically wet soil conditions (Lanehart, 1998).

Wetlands are a unique water resource and can be impacted by alteration of hydrology, changes in wetland vegetation, and pollution in runoff (Hopper, 2007). Wetland buffers protect wetlands by moderating the effects of changes surrounding them (NPS, 2002). The Park has established wetland buffer recommendations associated with the wetland characteristics found in the Park, with a minimum requirement of 25' for low quality wetlands. Buffers greater than 125' would maintain water quality of higher quality wetlands (NPS, 2002b). Trails can affect wetlands if trails or their infrastructure are located within wetlands or their buffers.

4.2.2 Applicable Regulations and Guidelines

The NPS is charged with maintaining, rehabilitating and perpetuating the inherent integrity of water resources and aquatic ecosystems consistent under the Clean Water Act and other applicable federal, state, and local laws and regulations.

NPS Management Policies (2006)

Section 4.6 Water Resource Management. NPS will perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems.

NPS Director's Order 77-1; Protection of Wetlands. NPS will minimize degradation, preserve, and avoid direct or indirect impacts of new construction in wetlands where no other practicable alternatives exists.

NPS Director's Order 77-2; Floodplain Management. Directs NPS to preserve floodplain values and minimize potentially hazardous conditions associated with flooding and the issuance of a Statement of Findings where applicable on proposed actions within a regulatory floodplain.

Executive Order 11988, Floodplain Management. Requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of flood plains. Wherever there is a practicable alternative, avoidance of direct and indirect floodplain development should occur.

Executive Order 11990, Protection of Wetlands. to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands."

4.2.3 Methodology

Water resource impacts associated with the Trail Alternatives were evaluated through the use of available information on the Park's water resources, including functional riparian areas, floodplains, wetlands, watershed imperviousness and location of water resources. The information utilized and methodology for analysis for each water resource issues is described below.

Watershed Imperviousness. Current imperviousness of park watersheds was assessed using the 2006 USGS National Land Cover Database imperviousness layer in GIS. Changes in watershed imperviousness from proposed trail development were compared to existing conditions. Trail footprints (in acres) were defined as trail length multiplied by a typical 10' tread width. Trail facilities (in acres) are defined by the approximate area for the facility once fully installed. While the surface conditions of the trails vary, it is assumed that all trails will have some level of compaction occur, causing limited perviousness from existing conditions on all trails. The analysis was intended to determine if the proposed development increases watershed imperviousness levels to thresholds that have historically indicated changes in water quality.

Water Quality. Existing NPS and OEPA headwater stream data was used to evaluate water quality within high quality and cold water stream watersheds. Change in trail miles within designated cold water habitat watersheds, low developed watersheds was characterized and uses that may increase human or animal waste within the watersheds was identified. Figure 12 shows the watersheds in Cuyahoga Valley National Park.

Functional Riparian Zones and Streams. Impacts on functional riparian areas were evaluated based on the placement of trail elements within functional riparian zones. Total trail acres (trail miles x 10-foot width) in functional riparian zones defined by Holmes and Goebel (2008) were characterized. The number of potential stream crossings was quantified by intersecting proposed trails with county stream layers in GIS. The total acres of trail within a functional riparian zone of 125 feet were used to analyze potential impacts to these vegetative buffers.

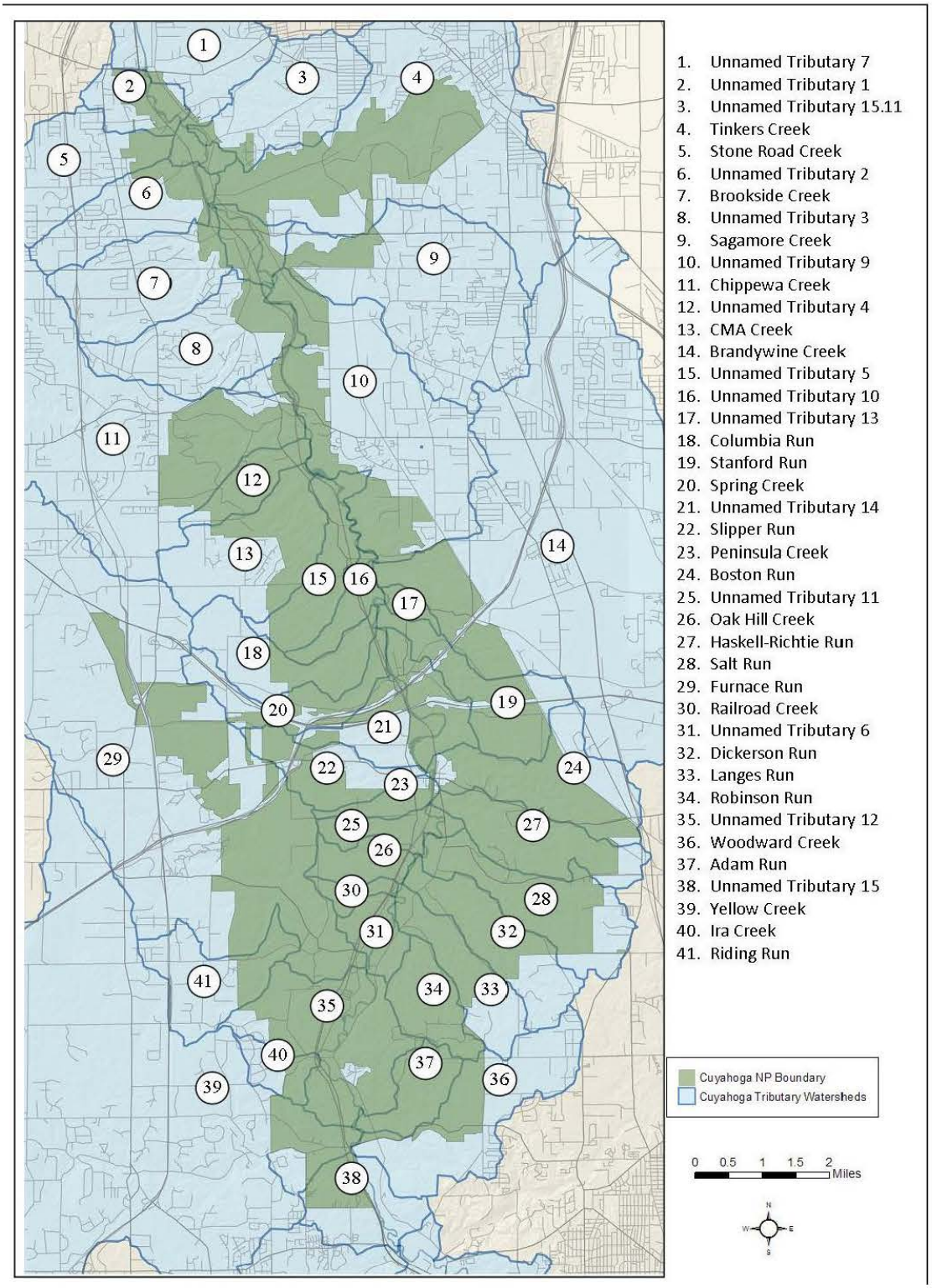
Floodplains. Trail elements within the 100-year floodplain boundary were characterized. Some proposed trail elements may be subject to compliance with NPS floodplain management policies (NPS DO 77-2), including boardwalks, campsites, and water access facilities. Nevertheless, the conceptual level of this Plan does not provide specific trail or facility placement; therefore, this evaluation only highlights where potential conditions for floodplain impacts may occur. Such facilities may require further evaluation in accordance with DO 77-2 during site planning and implementation for each trail or facility.

Wetlands. Wetland impacts were evaluated by characterizing the proximity of trail elements. The Park applied wetland buffers of 25'to 200' based on wetland quality (NPS, 2002b). To evaluate the broad set of wetland conditions in the Park, an evaluation of a trail elements within 25' and 125' buffer widths was used the analysis. A 2010 Park GIS layer was utilized to generate buffers and characterize intersections with trails elements. When available, data on wetlands with moderate to high resource quality (defined by the Ohio EPA as Category 2 or 3 wetlands) is also used in the analysis.

Impacts to wetlands for "excepted actions" are exempt from the requirements of NPS Directors Order 77-1. "Excepted actions" include scenic overlooks, foot and bike trails, boardwalks and small boat launches if the impact is 0.1 acre or less and for minor stream crossings that completely span a channel or wetland habitat with no piling structures (NPS, 2008). For this analysis it is assumed these conditions exist for all trail elements. However, the conceptual level of the Trail Plan does not provide specific trail or facility placement; therefore this evaluation highlights where potential conditions for wetland impacts may occur. Such facilities may require further evaluation in accordance with DO 77-1 during site planning and implementation.

Figure 12: Tributary Watersheds in Cuyahoga Valley NP

Source: CVNP and Ohio EPA



Impact Intensity Levels

Negligible: Impacts on water resources would be barely detectable and would not have an impact to the physical and biological integrity of the water resources locally or regionally. Limited minimal increase or no change associated with number of stream crossings, affected riparian buffer zones, and within the 100-year floodplain would occur. Watershed imperviousness would not increase nor exceed 15% threshold nor affect any designated cold-water habitats. The 15% imperviousness threshold has historically demonstrated where water quality conditions begin to decline.

Minor: The impacts on water resources would be small and measurable within a tributary watershed, but barely detectable. No mitigation measure associated with water quality or hydrology would be necessary. Isolated regional increase or change associated with number of stream crossings, affected riparian buffer zones, the 125' wetland buffer, and within the 100-year floodplain would occur. Watershed imperviousness would increase minimally but not the exceed 15% threshold and may affect minimally cold-water habitats.

Moderate: The impacts on water resources would be detectable and affect multiple tributary watersheds or water resources. Increases occur, parkwide, in the number of stream crossings, affected riparian buffer zones, affected 25' and 125' wetland buffers, and trails within the 100-year floodplain. Watershed imperviousness would increase but not exceed 15% threshold and may affect numerous cold-water habitats.

Major: The impacts on water resources would be substantial and obvious and may extend outside of the Park boundary. Removal or significant alteration of water resources would occur. Mitigation measures would be necessary and would likely result in the loss of water resources within the watershed.

4.2.4 Impacts of the Alternatives

Tables 43 to 48 present data compiled to compare changes in water resource impacts among alternatives.

4.2.4.1 Impacts Common to All Alternatives

Effects of Increased Imperviousness. The watersheds in CVNP have a wide variety of imperviousness that range from near zero in watersheds like Oak Hill Creek to very high in watersheds like Tinkers Creek, where impervious cover accounts for 25% of the watershed. All alternatives contribute to the imperviousness of the tributary watersheds in which they reside at varying degrees of intensity based upon the number of trail miles and trail facilities present in each watershed, since trails and support facilities have varying amounts of impervious cover. However, none of the current or proposed trail elements individually or cumulatively increase imperviousness greater than 1% overall or affect the imperviousness of the park's tributary watersheds to the extent of exceeding a 15% imperviousness threshold. With the application of the Sustainable Trail Guidelines for all Action Alternatives, some trails lengths and tread widths may be reduced, eliminating some level of imperviousness. Best management practices for parking areas for upgrading infrastructure may also reduce imperviousness, providing impacts that are beneficial. Overall, all alternatives may have long-term, negligible to minor adverse impacts to watershed health from increased imperviousness, though these effects may be largely

mitigated by sustainable design and low impact methods of stormwater management for future restoration and development of trails under all alternatives.

Floodplains. There are approximately 22 miles of existing trail within the 100-year floodplain. Using a baseline tread width of 10', the existing trail system occurs on 0.7% or 26 acres of the approximate 3,750 acres of floodplain area that exist in the park. The most notable trail entirely located within the floodplain is the Towpath Trail, which is closed periodically during heavy rain events and damaged due to flooding. The berm built for the Towpath Trail impedes floodplain functions in some areas. Since the Towpath Trail will remain for all alternatives and not be altered from its current conditions, except for repairs and major flooding events, impacts to floodplain functions is long-term, minor to moderate and adverse by the existence of the trail system in the floodplain.

Temporary Construction Activities. All trail elements will require some level of construction that may cause disturbance to water resource conditions during the construction period. These activities may have short-term minor adverse impacts to water resources, however storm water management and water quality protection best management practices will be utilized to minimize these impacts.

Cumulative Impacts

It is likely that continued suburban development outside of the Park will continue to reduce the number and quality of wetlands and increase imperviousness in the Cuyahoga River watershed. Adverse impacts on wetlands inside of the Park may become more significant as total wetland area outside of the Park is reduced. Additionally, continued suburban development will likely adversely impact the water quality and quantity of rivers and streams that flow through the Park. Long-term, negligible to moderate and adverse impacts from suburban development activities outside of the Park are expected as these water resources are either modified or lost.

Other conditions that affect water quality include the continuing operation of combined sewer overflows (CSOs) in the City of Akron and the presence of low head dams, notably the Brecksville Dam and, to a lesser extent, the Peninsula Dam. The CSO's degrade water quality especially after storm events, and the improvements and/or elimination of CSO's will take many years and millions of dollars. The Brecksville Dam has been identified by the Ohio EPA as the primary impact to reaching full attainment of water quality standards within the stretch of river within Park boundaries. Restorative actions such as the removal of dams or CSOs are currently under evaluation and would result in long-term beneficial effects when implemented.

4.2.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

Water Quality. Water quality is indirectly impacted by increased sedimentation from trails located where erosion is occurring and equestrian use in low-land areas, resulting in long term minor adverse impacts.

Functional Riparian Zones and Streams. Approximately 94 miles of existing trail reside within functional riparian zones and involve approximately 400 stream crossings across the Park. The existing trail system covers approximately 219 acres of land within the Park which accounts for 1% of all land within park boundaries, making up less than 0.5 % of landcover within any designated cold water habitat

watersheds. Conditions exist in areas where increased muddiness, erosion, disturbance of aquatic life at stream crossings, and modification of functional riparian areas occur. Impacts to functional riparian and stream crossings to Alternative 1 are likely to be long-term, minor and adverse.

Floodplain. No additional impacts from Alternative 1 will occur than what is described in Common to all alternatives. Impacts to the floodplain will be long-term, minor to moderate and adverse from the Towpath Trail's proximity and conditions within the floodplain.

Wetlands. Approximately 37.63 miles (21%) of all existing trail miles lie within 25' of park wetlands. The existing trail system occurs on 2%, or 45 acres, of the 1,900 acres of wetland (as currently mapped) that exist in the park. These are most notable along the Towpath Trail at Stumpy Basin and the Beaver Marsh areas where elevated boardwalk systems pass through wetland areas. The adverse impacts to wetlands under Alternative 1 are long-term, minor from a limited trail footprint in wetland areas and the use of sustainable design practices, such as boardwalks, to protect the wetland functions.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Alternative 1 would allow continued long-term, negligible to minor adverse impacts to riparian areas, streams, floodplains and wetlands. These impacts are due to the extent of the trails present throughout the Park within sensitive water resource areas and localized conditions that impact water resource issues by their current design, location and use.

4.2.4.3 Impacts Common to All Action Alternatives

Sustainable Trail Guidelines. The proposed actions may affect water resources through direct encroachment, contribution of sedimentation and change in natural drainage patterns. Best practices outlined in the Sustainable Trail Guidelines (Appendix C) and site-specific design to improve water quality, decrease storm water input, and enhance functions and integrity of wetland and water resource features will be adhered to in order to prevent direct and indirect impacts on water resources. The Guidelines set forth procedures and practices that identify the resources, the level of impact caused by the design of the trail facility and design practices to minimize these impacts. The Guidelines set forth a procedure to determine if the trail will proceed or not be implemented based upon the effects it will have on the water resources and the design of the trail.

It is possible that the NPS, after determining that no practicable alternative exists, may decide to expressly permit some level of adverse impact on wetlands or other water resources. Such situations cannot be readily identified at this time as they are related to site-specific plans not yet developed. Should these situations arise, the NPS will implement environmental compliance and documentation procedures as required under the Clean Water Act, NEPA and Director's Orders 77-1 and 77-2 to characterize site specific impacts. The NPS will first seek to avoid impacts to wetlands and water resources. Unavoidable impacts will be minimized and mitigated. Implementing the Sustainable Trail Guidelines will have long-term, beneficial impacts to water resources by the long-term reduction of impacts to water resources in the Park.

Restoration of Trails. There are trails identified for removal or realignment that are common to Action Alternatives. The removal and realignment will reduce trail miles in some wetlands, reduce the trail footprint in some tributary watersheds, and reduce unmanaged stream crossings in some areas. A marginal reduction of 0.2 trail miles within the functional riparian areas occurs in all Action Alternatives, contributing negligible adverse impact to functional riparian areas. Removal of trails will result in a reduction of potentially ten stream crossings, resulting in long-term beneficial impacts to streams. The restoration actions common to all Action Alternatives reduce the number of trail miles marginally (less than 0.5 mile) from existing conditions with the removal of trails that currently existing within 25' of wetlands.

Impacts of Trail Facilities and Amenities. Paddle launch facilities, campsites, parking lots and other trail amenities that are common among alternatives may affect water resources.

Water Quality. All launch facilities will minimize stabilization needs and impacts on streambank erosion through appropriate siting. Only river access routes requiring a ten feet or less elevation change will be selected. Increased human use may affect water quality due to increased littering and disturbance on the river. Increases in education and interpretation of water resource impacts will help minimize this impact.

Minor site disturbance (less than 1 acre cumulatively) would occur if all campsites were implemented, resulting in minor, localized vegetation removal and soil erosion. Impacts from limited restroom facilities associated with the riverside campsites and remote trailside campsites on the Buckeye Trail would require additional visitor education regarding "Leave No Trace" practices associated with human waste management. Access to limited restroom facilities, particularly on riverside campsites, based upon floodplain restrictions may have long-term, minor adverse impacts to water quality. Use of sustainable best practices for construction and operations will minimize these localized impacts.

No parking areas are proposed to be located within designated coldwater habitat watersheds. Proposed parking areas will not require any modification or filling of streams. Best management practices to minimize surface runoff impacts will be implemented as prescribed in the Sustainable Trail Guidelines. Impacts to water quality from parking areas will be long-term, negligible to minor and adverse from the minimal change in runoff from surfaced areas.

Some trail amenities may require temporary soil disturbance during construction and require evaluation of soil conditions prior to construction. The amenities will have isolated disturbance, small in size of disturbance (less than 25 square feet), temporary in soil disturbance.

Adverse impacts of water trail facilities and amenities on water quality will likely be temporary and negligible during construction and then long-term and minor through increased human activity and access to the river, development of riverside campsites, and surface runoff from parking areas.

Functional Riparian Zones and Streams. All launch sites will be within the functional riparian zone but will be isolated and designed to minimize impacts on riparian buffers of the river. Adherence to sustainable siting and design guidelines and the minimal presence of facilities will likely result in long-term, negligible to minor adverse impacts to functional riparian zones.

The placement of all riverside campsites will conform to a minimum 120' buffer distance to the Cuyahoga River and associated recommended buffer distance for streams, reducing impacts to riparian

buffers and streambanks. The trailside campsites along the Buckeye Trail, at Columbia, Dugway and O'Neil, are outside of or along the perimeter of the defined functional riparian zones. No campsites will require any stream crossings associated with their location. Impacts to functional riparian zones from riverside campsites will be long-term, negligible to minor, and adverse from their placement and small footprint within the riparian areas of the Park.

The addition of 20 acres of parking lots will occur in existing developed areas, with the exception of Blue Hen relocation parking area, where new construction would be required in an area where vegetation exist. While all proposed actions for parking areas occur within the functional riparian zone, with the exception of Tree Farm and Coliseum, the size of the areas that will affect the functional riparian zones will be less than 0.5 acre and localized.

Adherence to sustainable siting and design guidelines, small development footprints, and the minimal presence of facilities will likely result in long-term, negligible to minor adverse impacts to functional riparian zones from trail facilities and amenities.

Floodplains. All launch facilities are within the 100-year floodplain. Their sustainable design will not impact floodplain function or streamflow characteristics. Site design recommendations of low impact design, natural surface access with minimal or no surface structures would minimize impacts to the floodplains and the presence of structures in the floodplain. However if launch facilities would require structures, compliance with DO 77-2 would be evaluated during site planning.

The five riverside campsites proposed are located within the 100-year floodplain and would require an evaluation of its applicability to DO 77-2. Due to their primitive and low impact design goals, the campsites will not change or alter the functions of the floodplain and the park will initiate policy for campsite use during rain events and high flood events. Impacts to floodplains will be long-term, negligible to minor adverse.

The expansion of parking at Canal Visitor Center, Lock 29 Overflow, Hunt Farm, and the new Ira Paddle parking would be located within the 100' year floodplain but small in size and associated with daytime use. These parking areas proposed are within the floodplain but meet the exceptions outlined in DO 77-2, therefore, no significant impacts to floodplain function are expected or further assessment required.

Overall impacts to floodplains from trail facilities and amenities may be long-term, minor and adverse due to from the construction of campsites and launch facilities.

Wetlands. Three paddle launch sites are potentially within 125' of existing wetland areas; Fitzwater, Red Lock and Ira. Wetland delineations before construction would help avoid wetland impacts. Paddle launch sites will not require modification or removal of wetlands and will consist of low impact design methods to mitigate their proximity to these resources.

Campsites at Frazee and Ira can be sited outside of the 125' wetland buffer zone.

Of the 31 existing parking lots that provide trail access, three of the lots are within 25' of a known wetland area, and 21 are within 125' of wetland areas in the Park. Proposed expansion at Canal Visitor Center and Lock 29 Overflow would encroach into the 25' buffer of existing wetland areas. Of the new parking areas proposed, the Coliseum and Ira Paddle lots would be within the 125' wetland buffer. The Old Orchard parking areas would be outside of the 125' wetland buffer areas. Design of the parking

areas will not modify the affected wetlands and follow the procedures set forth in the Sustainable Trail Guidelines and NPS policies. The number of new or expanded parking areas within 25' and 125' of wetlands and no modifications to wetlands proposed, adverse impacts to wetlands are likely to be long-term and minor to moderate.

Adverse impacts to wetlands will likely be long-term and minor to moderate from the proximity of three launch sites, three campsites and the construction of parking areas near (but not in) wetlands.

4.2.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Water Quality. Trails proposed in cold water habitat watersheds create a minor increase (0.4%) of trail acre coverage in Slipper Run from the proposed Horseshoe Pond Trail and Coliseum Boardwalk Trail. Effects to water quality will likely be long-term, negligible to minor, adverse from the minimal changes in trail mile coverage in park watersheds.

Functional Riparian Zones and Streams. Alternative 2A will predominantly utilize existing disturbed areas for new trails and remove and restore trails where they currently exist in floodplains and riparian areas. A marginal reduction of 0.2 trail miles within the functional riparian areas is proposed, contributing negligible adverse impacts to functional riparian. Removal of trails will result in a reduction of potentially ten stream crossings, resulting in long-term beneficial impacts to streams.

The campsites at North Stone Road, and Ira-West of River will be within the functional riparian zone, but isolated and designed to minimize impacts on riparian buffers of the river and conform to a minimum 120'buffer distance to the Cuyahoga River for its placement. Impacts to functional riparian zones from these additional sites will be long-term negligible to minor and adverse from their placement.

The expansion of the Red Lock parking area will require new construction where existing vegetation exists. While the expanded area is within the functional riparian zone, the size of the area will be less than 0.5 acres and localized.

Floodplains. New trail miles are increased by less than .70 mile within the floodplain for the entire Park. This largely includes the Ira River Trail south of Beaver Marsh. The trail proposed will likely utilize low impact design and potentially a boardwalk system. Because, the impact is isolated and consists of a minimal area of disturbance and no alteration in floodplain function, impacts to floodplain will likely be negligible to minor and adverse.

The North Stone Road and Ira-West riverside campsites are both proposed within the 100-year floodplain and would require an evaluation of its applicability to DO-77-2. Impacts will be similar to what is described for the riverside campsites, common to all Action Alternatives.

Since, none of the additional parking areas proposed in Alternative 2A are within the 100-year floodplain, impacts will be long-term, negligible, and adverse.

Wetlands. Though some trail will be removed from wetland buffers, Alternative 2A does increase new trail miles within 25' and 125' of existing wetlands by 2.8 miles, including Terra Vista Trail, Coliseum boardwalk (0.27 miles) and the Ira River Trail (0.15 mile). Since the increase is localized in existing

disturbed areas and would apply sustainable best site design practices, the adverse impacts of Alternative 2A on wetlands will likely be long-term, minor to moderate.

Campsites at Stone Road and Ira - West can be sited outside of the 125' wetland buffer zone.

Proposed expansion at Red Lock would encroach into the 25' buffer of existing wetland areas. Of the new parking areas proposed, the Terra Vista lot would be within the 25' wetland buffer. Design of the parking areas will not modify the affected wetlands and follow the procedures set forth in the Sustainable Trail Guidelines and NPS policies. The number of new or expanded parking areas within 25' and 125' of wetlands and no modifications to wetlands proposed, adverse impacts to wetlands are likely to be long-term and minor to moderate.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Since the increase is localized, in existing disturbed areas and use of sustainable best site design practices will be utilized, the adverse impacts of Alternative 2A on wetlands will likely be long-term, minor to moderate. The impacts to floodplain will likely be negligible to minor and adverse from the isolated and minimal trail miles proposed in the floodplain and additional riverside campsites. Contributions to water quality will likely be long-term, negligible to minor from the minimal change in trail mile coverage in all watersheds of the park.

4.2.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts of Alternative 2B to water resources will be similar as described for Alternative 2A except that the inclusion of an off-road single-track bicycle trail on the existing Buckeye Trail will have additional long-term, minor to moderate adverse impacts to water resources. The tributary watersheds in which the existing trail that would be utilized for off-road bicycle use travels have high quality headwater streams that contain coldwater species rarely found in other areas of the Park. The proposed segment of the Buckeye Trail will be re-routed to remove the existing trail from an existing high quality wetland reducing current impacts. The proposed off-road bike trail will have no effect on floodplains since it is not located within the 100 year floodplain. While the miles of trail are similar to Alternative 2A, realignment to minimize impacts will occur, and use of sustainable trail design practices will improve conditions of the existing trail for bicycle use. Increased use in areas where healthy water resources are abundant may have adverse impacts on those resources. Since the bicycle trail will utilize an existing trail system, the number of trail miles will be similar to Alternative 2A, with a reduction of 0.2 miles, resulting in a negligible adverse impact to functional riparian areas and stream crossings. Trails will have a negligible to minor adverse impact on wetlands, from a marginal reduction of 0.1 in trail miles within 25' of wetlands and a small increase of 1.3 trail miles within 25' and 125' of wetlands parkwide. Impacts to floodplains overall will be long-term, negligible to minor, and adverse with no additional effect from off-road bicycle trail use. Impacts to water quality from increased use on the Buckeye Trail in multiple high quality tributary watersheds would expect to be long-term, moderate and adverse.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Since the off-road bicycle trail will utilize an existing trail system, the number of trail miles will be similar to Alternative 2A. A reduction of 0.2 trail miles within the functional riparian zone will , result in a negligible adverse impact to functional riparian and stream crossings. Trails will have a negligible to minor adverse impact on wetlands, from a marginal reduction of 0.1 in trail miles within 25' of wetlands and small increase parkwide of 1.3 trail miles within 25' and 125' of wetlands. Impacts to floodplains overall will be long-term, negligible to minor and adverse with no additional effect from off-road bicycle trail use. Impacts to water quality from increased use on the Buckeye Trail in multiple high quality tributary watersheds would expect to be long-term, moderate and adverse.

4.2.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Water Quality. Impacts to water quality will be long-term minor to moderate and adverse from the increase in trail miles that will occur in two coldwater habitat watersheds; Slipper Run and Boston Run. Trail miles in Slipper Run will increase with the expansion of the Tree Farm trail, Trail miles in Boston Run will increase with the Gateway multi-purpose trail. An increase in trails will occur in watersheds where less development has occurred or less trail miles currently exist where documented high quality headwater streams exist, including Spring Creek and Brandywine Creek

Functional Riparian Zones and Streams. Impacts from the 27% increase of trail miles within functional riparian zones and increased stream crossings on riparian zones and streams will be long-term, minor to moderate and adverse .

The trailside campsites at the Upper CVC and West Rim are outside of or along the perimeter of the defined functional riparian zones.

New disturbance will occur for the construction of the High Meadow parking area. The size of the parking areas will be less than 0.5 acre and localized.

Floodplains. Alternative 3A proposes a 22% increase of trail miles within the floodplain comprising a total of an additional 4.88 trail miles within the floodplain. Proposed trail elements include the West Rim Trail, Jaite Trail loop trail, Rockside trail short loop, a portion of the Rockside-Hemlock Trail, and the Hunt Farm Trail short loop, in addition to Ira River Trail and the Coliseum Trail proposed in Alternative 2A. With the exception of the Hunt Farm Trail loop, all of the trails will consist of a natural surface, thereby not affecting floodplain functions or requiring infrastructure. The Hunt Farm Trail (0.30 mile) may require a boardwalk system because of its development level as an interpretive trail and proximity to a primary system entry point. Impacts to floodplains will likely be long-term, minor and adverse from the increase in trail miles, and small trail areas of less than 0.30 mile overall that may require boardwalk

systems. The additional campsites and parking areas in Alternative 3A are not located within the 100-year floodplain and will have no effect.

Wetlands. Alternative 3A would add approximately 2.7 trail miles within the 25' wetland buffer and approximately 12 miles within the 125' wetland buffer. The trail elements within the 25' wetland buffer areas are largely contributed from the West Rim Trail, near Fawn Pond and Pleasant Valley wetlands, the Jaite loop Trail and portions of the Five Falls Trail and South Carriage Trail. Disturbance and increased use near Fawn Pond, a high quality wetland, will result in long-term, minor adverse impacts. All of these trails are proposed as minimally developed natural surfaced trails reducing their footprint and infrastructure requirements. Boardwalks system may need to be utilized where site conditions prohibit natural surface trails, most notably for portions of a ½ mile segment of the West Rim trail and ¼ mile segments of the Five Falls and South Carriage trails. Since impacts are isolated to one large wetland and some isolated areas of smaller wetlands throughout the Park and no removal or modification of wetlands will occur, impacts to wetland is likely to be long-term, minor to moderate.

The additional campsites in Alternative 3A are located outside of the 125' wetland buffer zone and will have no effect. The additional parking area proposed at Snowville would be within the 125' wetland buffer.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Impacts to functional riparian zones and streams will be long-term, minor to moderate and adverse from the increase in trail miles within riparian zones and potential increase in stream crossings. Impacts to floodplains and wetlands will likely be long-term, moderate and adverse from the increase of trail miles in multiple isolated areas. Impacts to water quality will be long-term minor to moderate and adverse from the increase in trail miles that will occur in multiple coldwater habitat watersheds and increase in watersheds with documented high quality headwater streams.

4.2.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

The impacts of Alternative 3B on water resources are similar as described for Alternative 3A except for the addition of two off-road single-track bicycle trails.

Water Quality. The off-road single-track bicycle trails will increase trail miles in the Spring Creek, Columbia Run, and unnamed (# 5) tributary watersheds on the West Rim trail; and Stanford Run, Brandywine Creek and unnamed (#9) tributary watersheds on the East Rim trail as depicted on Figure 12. The tributaries located where these trail systems are proposed, are relatively undisturbed with a network of high quality headwater streams, with each of the areas containing limited development of some residential areas, roads and existing trails contribute to the water quality conditions of the area. None of the off-road bike trails travel through designated coldwater habitat watersheds within the park. Sustainable design practices to reduce runoff and changes in water quality functions will minimize long-

term impacts. Combined with the additional impacts of Alternative 3A, impacts to water quality will be long-term, minor to moderate and adverse from the increase of trails in tributary watersheds where minimal disturbance currently exists.

Functional Riparian Zones and Streams. An increase in stream crossings will be necessary in the current network of headwater streams in both areas with the exception of the southern east rim where fewer streams exist. In combination with other impacts described for Alternative 3A, impacts to functional riparian zones and streams will be long-term, moderate and adverse. The additional parking area at Snowville is not within the functional riparian zone and will have no effect.

Floodplains. No floodplains will be affected by either off-road bicycle trail routes or the additional parking area at Snowville. The impacts are the same as Alternative 3A.

Wetlands. Wetlands will be adjacent to portions of the proposed off-road single-track bike trails in both areas, particularly the Five Falls Trail segment, requiring boardwalk systems or routing the perimeter of the wetlands using low impact design methods. Given the additional trail miles of the off-road trails, 2.77 trail miles would occur within the 25' wetland buffer area and 20 trail miles would occur within the 25' to 125' wetland buffer area. The trails will consist of a minimal width less than 4 feet, reducing its footprint and be similar to what is proposed in Alternative 3A with the potential for increased use from the new use. The Snowville Parking area is located outside of the 125' wetland buffer zone and will have no effect. The impacts to wetlands will likely be long-term, minor to moderate, and adverse from the increase of trails within designated wetland buffers in isolated regions of the park.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Impacts to functional riparian zones and streams will be long-term, moderate and adverse. The impacts to wetlands will likely be long-term, minor to moderate, and adverse from the increase of trails within designated wetland buffers in isolated regions of the park. No additional impacts to floodplains will occur. Overall, Alternative 3B will have long-term minor and adverse impacts from other non-off-road single-track bicycle trails. Impacts to water quality will be long-term, minor to moderate and adverse from the increase of trails in tributary watersheds where minimal disturbance currently exists.

4.2.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

Water Quality. Alternative 4A expands the trail system in multiple tributary watersheds throughout the Park. Impacts to water quality will be long-term minor to moderate and adverse from the increase in trail miles that would occur in three coldwater habitat watersheds: Slipper Run, Boston Run, and Woodward Creek. These are largely a result of the expansion of trails on Tree Farm Trail, the Gateway Trail and the Chart Road neighborhood hike connector. An increase in affected high quality headwater streams, including Spring Creek, Columbia Run and Brandywine Creek will also occur, from addition of the High Meadow Trail, Columbia Run Trail, and Five Falls Trail.

*Functional Riparian Zones and Streams***.** A 31% increase of trail miles within functional riparian zones and a possible 23% increase in stream crossings will cause long-term, minor to moderate adverse impacts to functional riparian zones and streams. The additional campsite at Truxell and parking area at Mudcatcher-Cancasi will be located outside of the defined functional riparian zone and will have no effect.

Floodplains. An increase of 4.29 miles trails in the floodplain from portions of proposed trails for the West Rim Trail, Jaite Loop Trail, Hunt Farm Short Loop Trail and Ira River Trails as described in Alternatives 2A and 3A is proposed. Additionally, the Canal Visitor River Boardwalk Trail (0.62 miles) and Buttermilk Falls Trail (0.40 miles) may require a boardwalk as a result of site conditions and prescribed high use as an interpretive trail for visitors. Impacts to floodplains will be long-term, minor and adverse. The additional campsite at Truxell and parking area at Mudcatcher-Cancasi are outside of the 100-year-floodplain and will have no effect.

Wetlands. New trail miles within 25' and 125' of wetlands in the park will collectively increase by 26 miles. Proposed additional trails within wetland areas would result in 23% of all trail miles being within the 25' wetland buffer and 26% being within the 125' wetland buffer. The new trail miles are largely contributed by the West Rim trail, which is proposed to travel near Fawn Pond and Pleasant valley wetlands, the Jaite Loop Trail, Tree Farm to Daffodil Trail, and portions of the South Carriage Trail and Five Falls Trail. Many of these trails are low developed natural surface trails, with tread width of 4' and projected for low use. Low impact design and boardwalk systems will be utilized to minimize any impact to wetland functions. The additional trailside campsite at Truxell and parking area at Mudcatcher-Cancasi are outside of the 125' wetland buffer zone and will have no effect. Impacts to wetlands will be long-term, minor to moderate and adverse due to impacts in small specific areas in some of the watersheds.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Impacts to functional riparian zones and streams will be long-term, moderate, and adverse from the increase of trail miles and stream crossings throughout the park in multiple tributary watersheds. Impacts to wetlands will be long-term, minor to moderate and adverse from the increase of trail elements near wetlands and an overall increase in trail miles. Alternative 4A will have long-term, minor adverse impacts to floodplains requiring boardwalk systems on potentially three proposed trails. Impacts to water quality are expected to be long-term, minor to moderate and adverse from increase of trails in high quality headwater stream watersheds.

4.2.4.9 Impacts of Alternative 4B

Direct and Indirect Impacts

Impacts of Alternative 4B on water resources are similar as described for Alternative 4A except for the addition of the off-road, single-track bicycle trail on the east rim of the Park.

Water Quality. Cold water habitat watersheds with high quality headwater streams affected by the mountain bike trail include Salt Run and Boston Run and will likely have long-term, minor to moderate adverse impacts to water quality.

*Functional Riparian Zones and Streams***.** An increase of 48.55 trail miles within functional riparian zones and a potential increase of 143 stream crossings would occur. Impacts to riparian zones and stream crossings and water quality will be long-term, moderate and adverse from the increase of trails in multiple coldwater habitat watersheds and overall increase of trails in functional riparian zones and crossing streams.

Floodplains. The off-road bike trail will not affect any floodplains in the Park. Impacts are the same as Alternative 4A.

Wetlands. An increase of an additional 0.76 trail acres within the 25' wetland buffer area is proposed with the off-road bike trail. Since the increase is minimal and alternative siting during site planning may occur, the impacts to wetlands for Alternative 4B will remain long-term, minor to moderate and adverse, similar to Alternative 4A.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Alternative 4B will have minor to moderate adverse impacts on water quality from additional trails and trail uses in three designated coldwater habitat watersheds and high quality headwater stream areas are expected. Long-term, minor, adverse impacts to floodplains would be expected. Impacts to wetlands would be long-term, minor to moderate, and adverse from the increase of trail elements near wetlands. Impacts to functional riparian zones and streams will be long-term, moderate, and adverse from the increase of trail miles and stream crossings throughout the park in multiple tributary watersheds.

4.2.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

The impacts of Alternative 5 on water resources are similar for associated trail elements as described under all of the Alternatives.

Water Quality. Impacts on cold water habitat watersheds is relatively negligible to minor and common to the trail elements located in the Boston Run and Salt Run watersheds, related to the Old Akron-Peninsula Connector and Armington trail. No proposed off-road bike trails occur in the cold water habitat watersheds. Impacts on water quality will likely be long-term, negligible to minor from the minimal change in trail mile coverage in all watersheds of the park.

*Functional Riparian Zones and Streams***.** Impacts to functional riparian zones and streams will be long-term, minor to moderate and adverse from an increase of 38 miles (a 28% increase from existing conditions) within functional riparian zones and increase in stream crossings.

Floodplains. New trail miles are increased by 3.77 miles within the floodplain for the entire park. This largely includes the Ira River Trail south of Beaver Marsh, the Hunt Farm River Loop trail, the CVC Boardwalk Trail and portions of the multi-use connector trails. The trail proposed will likely utilize low impact design and potentially a boardwalk system. Because the impact is isolated and consists of a minimal area of disturbance and no alteration in floodplain function, adverse impacts to floodplain will likely be negligible to minor.

Wetlands. New trail miles within 25' and 125' of wetlands in the park will collectively increase by 22 miles, including the South Carriage Trail, Five Falls Trail, CVC Boardwalk Trail and smaller portions of other trails. Many of these trails are low developed natural surface trails, with tread width of 4' and projected for low use. Low impact design and boardwalk systems will be utilized to minimize any impact to wetland functions. Impacts to wetlands will be long-term, minor to moderate and adverse due to impacts in specific wetland areas in some of the tributary watersheds.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Impacts to water resources from trail elements in Alternative 5 will likely be minor to moderate and adverse from the increase of trail miles within close proximity of water resources of the park. This will require sustainable design practices and potential additional evaluation for some proposed trail segments.

Table 47. Trail Miles within Defined Functional riparian Zone

Alternative	Trail Miles within Functional Riparian Zone
Alt 1 (Existing Conditions)	94.34
Alt 2A	-0.21
Alt 2B	+1.59
Alt 3A	+35.94
Alt 3B	+42.14
Alt 4A	+44.6
Alt 4B	+48.55
Alt5 (Preferable Alternative)	+37.94

Note: Alternatives 3A, 3B, 4A, 4B and Preferred Alternative include bike lanes miles of 24.65 on existing roadways within functional riparian zones.

Table 48. Change in Number of Stream Crossings

Alternative	Projected Total Stream Crossings
Alt 1 (Existing Conditions)	400
Alt 2A	-8
Alt 2B	No Change
Alt 3A	+71
Alt 3B	+136
Alt 4A	+94
Alt 4B	+143
Alt 5 (Preferred Alternative)	+84

Table 49. Trail Miles within 25' buffer of existing identified wetlands

Alternative	Change in Trail Miles within 25’ of wetland
Alt 1 (Existing Conditions)	37.63
Alt 2A	-0.34
Alt 2B	-0.09
Alt 3A	+2.27
Alt 3B	+2.77
Alt 4A	+3.9
Alt 4B	+5.2
Alt 5 (Preferred Alternative)	+2.67

Table 50. Trail Miles within 25'-125' buffer of existing identified wetlands

Alternative	Change in Trail Miles within 25’ to 125’ of wetland
Alt 1 (Existing Conditions)	20
Alt 2A	+2.82
Alt 2B	+2.38
Alt 3A	+12.33
Alt 3B	+20.04
Alt 4A	+26
Alt 4B	+30.8
Alt 5 (Preferred Alternative)	+19.66

Table 51. Trail Miles within 100-yr Floodplain

Alternative	Trail Miles within100-yr Floodplain
Alt 1	22
Alt 2A	+0.69
Alt 2B	+0.69
Alt 3A	+4.88
Alt 3B	+4.88
Alt 4A	+4.29
Alt 4Bl	+4.29
Alt 5 (Preferred Alternative)	+3.77

Table 52. Percent of Disturbance for 10' wide trail in Designated Cold Water Habitat watersheds

Alternative	Boston Run	Langes	Sagamore	Salt	Slipper	Woodward	Robinson
Alt 1 Existing	0.5	0.4	0.1	0.7	.009	.03	0.0
Alt 2A	0.6	0.4	0.13	0.76	.039	.03	0.0
Alt 2B	0.6	0.4	0.13	0.76	.039	.03	0.0
Alt 3A	0.70	0.47	0.13	0.86	.489	.05	0.02
Alt 3B	0.70	0.47	0.13	0.93	.489	.05	0.02
Alt 4A	0.92	0.47	0.13	0.93	.759	.08	0.12
Alt 4B	0.92	0.47	0.13	1.15	.759	.08	0.12
Alt 5 (Preferable Alternative)	0.75	0.4	0.12	0.78	0.04	.06	0.0

4.3 Impacts on Vegetation

4.3.1 Relation of Vegetation to Trails

Trails and trail facilities considered in the alternatives travel through all of the major habitats of the park including forests, floodplain, shrublands, and to a limited extent, wetlands. Trail impacts to vegetation communities can vary based upon trail location, resource sensitivity, level of trail development, and its designated use.

Changes in vegetation. Changes can occur to habitats through habitat disturbance and fragmentation. Habitat disturbance can occur by trampling from trail use causing recurring ground disturbance. Various studies have been conducted on the impacts of trampling vegetation on trails and in camping areas. One study conducted showed that low levels of trampling can cause substantial reductions in vegetation cover and height (Cole, 2004). The study also documented that plant communities varied greatly in both resistance (their ability to avoid being damaged) and resilience (their ability to recover from damage). For instance, the magnitude of vegetation loss on campsites in meadows was significantly less over time than on forest campsites (Cole, 2004).

The geographic extent of trampling often is fairly limited, extending only about one meter from trail's edge (Dale and Weaver, 1974; Dawson et al., 1974). Trampling causes compaction of leaf litter and soil (Dawson et al., 1974; Whitaker, 1978). Under trampling, some plant species decrease near trails, especially woody and delicate herbaceous plants (Tonneson and Ebersole, 1997). Grasses and sedges are generally most tolerant of trampling (Dale and Weaver, 1974; Dawson et al., 1974).

Fragmentation of habitat can occur when trail corridors pass through a habitat block and result in changes in species diversity or functions of habitat. One study found that microclimatic alterations causing change in plant species may occur within the edges of forests adjacent to clearings (Chen et al., 1999). Edge effects, which are typically changes in vegetation structure where disturbance occurs, can occur along trails within forests, particularly if the trail tread width is wide enough to open up the canopy (Cole, 1978; Dale and Weaver, 1974).

Introduced exotic species. Studies have found significantly less plant cover and more exotic plant species near trail edges (Benninger, 1989). Exotic species tended to be more abundant on more heavily used trails, and total species richness was significantly negatively correlated with distance from trailheads, indicating that trail corridors serve as conduits for movement of species (Benninger-Truax et al., 1992). A correlation analysis of literature from 184 studies from around the world found that the number of exotic species in nature reserves increased with the number of visitors, but no conclusions could be drawn about roles of dispersal and disturbance (Lonsdale, 1999). Edge effects also play a role in creating or widening disturbance corridors that may invite more exotic plant species by the change of vegetative cover (Lonsdale, 1999).

In a study conducted along the Appalachian Trail, 95% of exotic species were typically found near anthropogenic disturbances, and most of the exotic species were within 100 feet of the disturbance. (NPS, 2005a). Trails with higher use will have a greater amount of exotic plant species, especially closer to the trailhead entrance. (Benninger-Truax, 1992) Horse trails also may support increased densities of exotic plants as plant seeds are spread along trails by hoofs and manure (Benninger, 1989).

4.3.2 Applicable Regulations and Guidelines

Executive Order #13112 on Invasive Species. Prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological and human health impacts that invasive species cause.

Endangered Species Act of 1973, as amended. Conservation of ecosystems upon which threatened or endangered species of fish, wildlife and plants depend. Requires federal agencies to insure that any action authorized is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

NPS Management Policies (2006)

4.4.2 Management of Native Plants and Animals. Where possible, natural processes will be relied upon to maintain native plant and animal species and influence natural fluctuations in populations of these species.

4.4.4 Management of Exotic Species. Exotic species will not be allowed to displace native species if displacement can be prevented.

4.3.3 Methodology

Analyses of the impacts of alternatives on vegetation are based upon information available on vegetation types at the Park. Impacts were determined by the increase of potential disturbance from proposed trail elements on vegetation in the Park including bottomland forests (forests within the 100-year floodplain), upland forests, and shrublands. The level of disturbance within these major vegetation communities as reflected in changes in trail miles may reflect the degree of expected disturbance and fragmentation from the proposed actions. The impact analysis was based on the knowledge and professional judgment of Park staff, available data and relevant scientific literature, where applicable.

Impacts were quantified by assigning a 10-foot wide disturbance corridor for all trails, which establishes a trail acre measurement of its maximum area of ground disturbance once installed. This corridor represents a “worst-case” footprint of disturbance from a trail. It is expected that most trails actually impact a smaller footprint. The number of trail acres within dominant vegetation types of the Park were quantified using GIS. An NPS 2002 land cover classification and the 100-year floodplain area were used in the analysis. Vegetation types evaluated include bottomland forests within the 100-year floodplain, upland forests, shrub/grassland areas and wetlands.

The potential for invasive plant introduction or expansion was estimated by the mileage of trail development and types of use in currently undisturbed areas. It is assumed that actual disturbance of vegetation will be less with the application of the Sustainable Trail Guidelines that minimize disturbance.

Intensity Thresholds

The following threshold descriptions were used to define the effects of alternative actions on vegetation at the Park:

Negligible. Some changes in native vegetation may occur at this threshold but would be slight, and barely detectable. Changes may affect some individual plants but would not affect entire native populations. New areas of plant disturbance would be small or minimal and the risk of invasive plant proliferation would be low and isolated.

Minor. Changes in native vegetation would affect some native plants and local plant populations, but would not affect population viability. Some minimal disturbance would occur in isolated areas of new development and invasive plant proliferation would be detectable but isolated. Changes to local populations and ecological processes would be minimal but detectable.

Moderate. The change in native vegetation would affect a population's abundance and diversity within a sizeable area of a vegetative type (forest block, wetland complex, etc) but the changes would not affect the viability of affected populations. Changes to local vegetation and ecological processes would be readily detectable but limited to a geographic area of the park. Invasive plant proliferation would be detectable and require management, but new populations would remain isolated.

Major. Change in vegetation would affect a population and its existence locally and compromise its viability regionally. Native vegetation would be affected in a relatively large area both in and out of the Park. Invasive plant proliferation would increase, new populations become established at several sites and require significant new management efforts.

4.3.4 Impacts to Vegetation by Alternatives

4.3.4.1 Impacts Common to All Alternatives

Spread of invasive plants by trail users and off-trail hikers. Trail users and off-trail hikers will continue to promote the spread of invasive plant proliferation in the park as facilitators of seed dispersal through foot, bike or hoof on the trails, continuing to contribute long-term minor adverse impacts to Park vegetation communities. Trail mileage and management among the alternatives and their effect on the spread of invasive plants above or below this common impact threshold are described for each alternative.

Cumulative Impacts. Emerging development projects in and outside of the Park boundary will continue to cause vegetation disturbance that may alter the abundance and resilience of some vegetation communities, causing areas in the Park to be potentially more prone to the introduction or expansion of invasive plant species. Current and future exotic plant management activities and habitat restoration actions focused on disturbed sites will have long-term beneficial impacts on park vegetation. Other current or future plant management activities, including implementing the Heartland Network Regional Exotic Plant Management Plan (in preparation) and potential prescribed burning of designated grassland areas within the park may have long-term, beneficial effects that promote native plants and reduce exotic plants at the Park.

4.3.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

Trails and trail facilities that currently exist are located primarily in the floodplain and forested uplands and wetland areas. Other trails exist in meadow and grassland areas such as the Virginia Kendall Hills. The current trail system covers 212 acres. Table 53 outlines trail impacts within each major vegetation community from each alternative.

Currently, approximately 186 trail acres are within four primary vegetation types in the Park: bottomland forests (6.5 acres), upland forests (131 acres), shrubland (3.5 acres), and wetland buffers (45.6 acres). The current trail system impacts less than 1% of these combined vegetation communities parkwide.

Invasive plants are a dominant feature along many sections of trail at the Park, including the Towpath Trail corridor, which is dominated for much of its length by non-native shrubs and grasses. The presence of social trails may promote the spread of invasive plants in some areas of the park. Some existing trails, in the Virginia Kendall Lake area, the Ledges area, and along the Valley Bridle trail, pass in close proximity to known rare or special status plant species, which may increase the risk of deterioration or local extirpation of these populations from trampling or spread of invasive seeds. Impacts to vegetation from continuation of Alternative 1 will be long-term, minor to moderate and adverse.

Cumulative Impacts

No additional cumulative effects are expected.

Conclusion

Impacts to vegetation from continuation of Alternative 1 will be long-term, moderate adverse due to continued promotion of invasive plants throughout the Park.

4.3.4.3 Impacts to Vegetation Common to All Action Alternatives

*Endangered, rare and special status species***.** The general scale of this plan does not provide information on specific impacts to potential special status species. All action alternatives will adhere to the proposed Sustainable Trail Guidelines in the protection of endangered, rare and special status plant species. The Guidance will require the avoidance and setbacks from identified species. Some trail elements will be in proximity to known species causing low-disturbance from human activity. With the implementation of the Sustainable Trail Guidelines, impacts of all alternatives on special status species will be long-term, negligible and adverse. Restoration of trails that travel through known areas of rare or special status species are identified for the Virginia Kendall Lake Trail and Ledges Trail, and will have long-term beneficial impacts.

Restoration of trails. The restoration of trails will include revegetation of disturbed areas and former trailways using native seed and plants. Each Action Alternative proposes approximately 12 acres of trail restoration at varying locations, but largely in upland forest vegetation communities. Revegetation actions will adhere to the recommendations of the Sustainable Trail Guidelines. All restoration activities

will have long-term, beneficial impacts to vegetation by the replanting of disturbed areas and the closure of corridors between similar vegetation types, reducing fragmentation, increasing the size of habitat blocks and restoring some areas where invasive plants may exist. Trail acres restored under each alterative were used in calculations of net trail acre changes.

Multi-use trails. Where multi-use trails are proposed through reuse of roads for the trail, the road corridor will be reduced in width through removal of road surface and reestablishment of native vegetation. This will have long-term beneficial impacts to upland forest habitats in the northern and central eastern portions of the park.

Trail facilities. Water trail facilities for river access launch sites will disturb less than 0.2 acres of riparian vegetation in each area identified, approximately 2 acres overall for the Park if all sites were installed as defined in Chapter 2, 2.4.4.1. The introduction of invasive plants from disturbance activities is possible, but due to its small area of disturbance and control of exotic plants, native revegetation can be successful. Water trail facilities are likely to have short-term and long-term, negligible, adverse impacts on vegetation.

Campsites. Campsites will likely cause trampling and vegetative disturbance in isolated areas proposed for the campsites. Increased foot traffic may pose increased risk for spreading of invasive plants. As proposed dispersed campsites located in the upland forest areas that include O'Neil-Buckeye, Dugway-Buckeye, Columbia-Buckeye campsites, will likely have longer term impacts than the meadow and open area campsites from their disturbance. Campsites would disturb approximately 1.0 to 1.5 acres overall if all proposed campsites were installed in the park as described in Chapter 2, 2.4.4.2 of this document. Campsites are expected to have both short-term and long-term, minor adverse impacts on vegetation.

Parking. Proposed parking areas total approximately 10 acres of proposed disturbance if all of the parking facilities were implemented. The majority of parking areas are proposed in existing open areas . Areas where vegetation exists include Red Lock expansion, Blue Hen relocation, Indigo Lake relocation, Old Orchard and the East Vaughn expanded areas. The footprint of vegetation removal is approximately 3.5 acres cumulative of all these areas. New trailhead parking areas may introduce new avenues for invasive plant movement, particularly at Old Orchard and High Meadow, where no facility currently exists. Impacts on vegetation from proposed parking areas will likely be short-term and long-term, minor and adverse.

Overall trail facilities will have long-term negligible to minor adverse impacts on the primary vegetation communities from minor ground disturbance in isolated regions of the park.

4.3.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Proposed actions in Alternative 2A will largely utilize existing disturbed areas minimizing impacts to vegetation in additional areas of the park. The proposed actions will affect approximately 184 acres (0.7 %) of natural vegetation communities within the Park when considering the proposed trail restoration efforts common to all alternatives, an overall reduction of 2 acres from current levels. Table 53 outlines trail impacts within each major vegetation community from Alternative 2A.

The proposed actions will reduce trails mostly in bottomland forested areas and some upland forest areas through restoration of existing trail corridors, resulting in a net reduction of approximately seven acres of disturbance. This will have long-term beneficial effects on vegetation in those areas.

Upland forest will experience a total of 140 acres of impact under Alternative 2A, a net increase of nine acres from current conditions. New trails in forested areas will occur in the area south of the existing Old Carriage Trail. The Old Carriage Trail extension and South Carriage Trail would result in vegetation disturbance in upland forest areas totaling approximately nine acres (70.4%) where unmanaged social trails currently exist. With the removal of trails in upland forest, trail miles will decrease in this vegetation community by two trail acres.

Floodplain forests will experience 6.7 acres of impact and an increase of approximately 0.2 acres at the proposed Ira River trail using an existing social trail. Additional impacts will be minimal due to the use of existing disturbed corridors, placement of trails in open areas and minimal tread widths for trail use within the upland forest areas.

Shrubland and grassland areas would be affected by approximately four acres, an increase of about 0.5 acres of additional trails, including the Terra Vista Natural Study Area, Horseshoe Pond and the former Coliseum site.

Wetland areas would be affected by approximately 45.2 acres, a decrease of about 0.4 acres of trail within the 25' wetland buffer area by the removal of trail described for the restoration of trails.

Overall, long-term, negligible to minor adverse impacts are expected from new trail miles under this Alternative by the minimal net increase of trail acres within primary vegetation communities.

By the overall minimal reduction of overall trail acres and recommendations for the restoration of trails and management of social trails, impacts on the spread of invasive plants will likely be long-term minor and adverse by the limited expansion of trail acres in some areas.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Impacts on vegetation from Alternative 2A will be long-term, negligible to minor, and adverse from the minimal amounts of new trail miles added and an overall net reduction in trail acres when combined with planned trail restoration.

4.3.5.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts to vegetation from Alternative 2B are similar to impacts described for Alternative 2A with the addition of the proposed designation of a portion of the Buckeye Trail for bicycle use. Table 53 outlines trail impacts within each major vegetation community from Alternative 2B. Trail acres within the four primary vegetation communities are similar to Alternative 2A.

Some portions of the Buckeye Trail may need to be rerouted within the upland forest between Brecksville Reservation and Boston Mills Road, which will result in minimal additional vegetation disturbance. Restoration of abandoned areas as a result of rerouting, will be required. The narrow tread width (less than 1 meter) and minimal removal of vegetation utilizing sustainable trail practices will reduce alterations and fragmentation of forested habitats in this area. Potential increased use on this portion of the Buckeye Trail may promote invasive plant proliferation along this trail corridor. The proposed action for bicycle use will utilize sustainable design, have a minimal level of new disturbance, and be localized in one section in the park, but may increase the intensity of the impact slightly compared to Alternative 2A by increased use in this isolated region. Impacts on vegetation from Alternative 2B will be long-term, minor and adverse by minimal net increase of trail acres in primary vegetation communities and increased use within one upland forest region of the Park.

By the overall minimal reduction of overall trail acres and recommendations for the restoration of trails and management of social trails, impacts on the spread of invasive plants will likely be long-term minor and adverse by the limited expansion of trail acres in some areas.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Impacts on vegetation from Alternative 2B will be long-term, minor and adverse by minimal net increase of trail acres in primary vegetation communities and increased use within one upland forest region of the Park.

4.3.5.6 Impacts of Alternative 3A

Direct and Indirect Impacts

The proposed actions in Alternative 3A will affect approximately 211 acres (0.8%) of natural vegetation communities within the Park when considering the proposed trail restoration efforts, an overall increase of 25 acres from current conditions

Upland forest will experience a total of 162 acres (76%) of impact under Alternative 3A, a net increase of 19 acres from current conditions. Impacts are largely from the Rockside-Hemlock Loop Trail, portions of the West Rim Trail, the Everett–Howe Trail connector, the Dugway Trail, and smaller loop trails at Blue Hen Falls and Canal Visitor Center.

Floodplain forests will experience 8.4 acres (3.9%) of impact, an increase of approximately 2 acres. Additional from the rerouting of the Jaite Loop Trail, Hunt-River Trail, Lower Rockside Loop Trail and portions of the West Rim Trail. Transforming existing roads to multi-use trails may further reduce existing disturbed corridors in the park.

Shrubland and grassland areas would be affected by approximately 4.5 acres (2.1%), an increase of about 2 acres of additional trails at High Meadow, Lower Furnace Run, and Hines Hill-Stanford Loop.

Wetland areas would be affected by approximately 48.8 acres (23%), an increase of about 3.2 acres of trail within the 25' wetland buffer area including the West Rim trail.

Invasive plant proliferation may occur on the interpretive trails near visitor resource centers and trailheads and along the Dugway Trail where horses will be allowed. Overall, impacts on vegetation from Alternative 3A will be long-term, minor to moderate and adverse by the increase in trail miles among all major landscapes in the park, and new entrances for potential invasive plant introduction.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Overall, impacts on vegetation from Alternative 3A will be long-term, minor to moderate and adverse due to disturbance of new forest blocks, increase in trail miles among all major landscapes in the Park, and new access points for potential introduction of invasive plants.

4.3.5.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Proposed actions and their impacts to vegetation from Alternative 3B are similar to the impacts described for Alternative 3A, but include additional impacts from the addition of new off-road single-track bicycle trails on the central east and west rims of the park. The proposed actions in Alternative 3B will affect approximately 222 acres (0.9%) of natural vegetation communities within the park when considering the proposed trail restoration efforts, an overall increase of 36 acres. Two off-road bike trails (West Rim Trail and the East Rim Trail) account for much of the additional impacts. Table 53 outlines trail impacts within each major vegetation community from Alternative 3B.

Upland forest will experience a total of 174 acres (78%) of impact under Alternative 3B, a net increase of 30 acres from current conditions.

Floodplain forests will experience 7.7 acres (3.2%) of impact, an increase of approximately 1.2 acres.

Shrubland and grassland areas would be affected by approximately 5.3 acres (2.3%), an increase of about 1.8 acres of additional trails.

Wetland areas would be affected by approximately 48.9 acres (22%), an increase of 3.3 acres of trail within the 25' wetland buffer area.

The increase of overall trail miles from the addition of off-road trails may also introduce new corridors for invasive plants in areas where current access is limited except for social trails. The addition of off-road bike trails within forests and shrub areas that currently are without trails would have long term, moderate, and adverse impacts in an isolated portion of the Park.

Overall, impacts on vegetation from Alternative 3B will be long-term, moderate, and adverse due to the increase in trail miles among all major vegetation communities in the Park, new trails in currently trail-free areas and new entrances for potential invasive plant introduction.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Overall impacts on vegetation from Alternative 3B will be long-term, moderate, adverse due to increase in trail miles within all vegetation communities.

4.3.5.8 Impacts of Alternative 4A

Direct and Indirect Impacts

The proposed actions in Alternative 4A will affect approximately 224 acres (0.9%) of natural vegetation communities within the park when considering the proposed trail restoration efforts, an overall increase of 38 acres from current conditions. Table 53 outlines trail impacts within each major vegetation community from Alternative 4A.

New trails in forested areas will occur in some of the areas described in Alternative 2A and 3A and additional areas including the Sagamore Loop Trail, Mudcatcher Trail, the Everett to Tree Farm link trails, the Gateway Trail, and connector trails from established picnic areas in the Park, and neighborhood connectors.

Upland forest will experience a total of 172 acres (76.7%) of impact under Alternative 3B, a net increase of approximately 29 acres from current conditions, including which would the addition of new trail to many forested areas that are currently trail-free.

Floodplain forests will experience 7.9 acres (3.3%) of impact, an increase of approximately 1.4 acres. New boardwalk trails would occur at the Canal Visitor Center, potentially affecting wetland plant communities.

Shrubland and grassland areas would be affected by approximately 5.8 acres (2.5%), an increase of about 2.3 acres of additional trails including the Tree Farm to Daffodil Trail, Horseshoe Pond Trail and the Hines Hill-Stanford Trail.

Wetland areas would be affected by approximately 50.3 trail acres (22.4%), an increase of 4.7 acres of trail within the 25’ wetland buffer area in areas including the West Rim trail, and CVC boardwalk trail.

In many areas where current trails do not exist, new pathways will be created that may introduce invasive plants. Impacts on the spread of invasive plants will be long-term, moderate, and adverse.

Overall, impacts on vegetation from Alternative 4A would be long-term, moderate and adverse from the disturbance of trail-free vegetation communities and the potential of introducing new pathways for invasive plant introduction.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Overall, impact on vegetation from Alternative 4A would likely be long-term, moderate and adverse.

4.3.5.9 Impacts of Alternative 4B

Direct and Indirect Impacts

Impacts to vegetation due to proposed actions in Alternative 4B would be similar to the impacts described for Alternative 4A with additional impacts from the East Rim trail. The proposed actions in Alternative 4B will affect approximately 238 acres (0.9%) of natural vegetation communities within the Park when considering the proposed trail restoration efforts, an overall increase of 52 acres from current conditions. Table 53 outlines trail impacts within each major vegetation community from Alternative 4B.

The proposed off-road bike trail would utilize some of the proposed hiking trails, including Dugway Trail, Gateway Trail and Armington Trail. An additional 11 acres of trail corridor with a maximum trail width of ten feet in upland forested habitat and approximately one acre in shrubland habitat would occur with the additional trails miles of the mountain bike trail. The wider trails will occur in existing disturbed corridors and the proposed new off-road bike trails will have tread widths that will be less likely to open up the canopy of the upland forest areas.

The off-road bike trail would travel through three additional forest areas where trails currently do not exist and create the potential for pathways for invasive plant introduction by trail users. An increase of trail miles will have impacts to vegetation, but sustainable trail design will be practiced with minimal vegetation removal and the affected area isolated to a portion of the Park.

In many areas where current trails do not exist, new pathways will be created that may introduce invasive plants. Impacts on the spread of invasive plants will likely be long-term, moderate, and adverse.

Alternative 4B would have long-term, moderate adverse impacts from impacts on vegetation communities and the potential of introducing new pathways for invasive plant introduction through new trails in areas throughout the Park.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Overall, impacts on vegetation from Alternative 4B would likely be long-term, moderate and adverse.

4.3.5.10 Impacts of Alternative 5

Direct and Indirect Impacts

The proposed actions in Alternative 5 will affect approximately 217 acres (0.8%) of natural vegetation communities within the park when considering the proposed trail restoration efforts, an overall net increase of 31 acres from current conditions. Table 53 outlines trail impacts within each major vegetation community from Alternative 5.

New trails in currently trail-free areas include the Everett–Howe trail connector, the East Rim trail route, Columbia Run Trail and smaller loop trails at Blue Hen Falls and Canal Visitor Center.

Upland forest will experience a total of 167 acres (76.9%) of impact under Alternative 5, a net increase of approximately 23 acres from current conditions, from the addition of new trail to many forested areas that are currently trail-free.

Floodplain forests will experience 7.9 acres (3.6%) of impact, an increase of approximately 1.4 acres. New boardwalk trails would occur at the Canal Visitor Center, potentially affecting wetland plant communities.

Shrubland and grassland areas would be affected by approximately 5.7acres (2.6%), an increase of about 3.7 acres of additional trails.

Transforming existing roads to multi-use trails may further reduce current impacts on vegetation communities.

Invasive plant proliferation may occur on the interpretive trails near visitor resource centers new trailheads and new corridors for new trails. In many areas where current trails do not exist, new pathways will be created that may introduce invasive plants. This will likely result in long-term, minor to moderate, adverse impacts on the spread of invasive plants.

Overall, impacts on vegetation from Alternative 5 will be long-term, moderate and adverse from new trails in currently trail-free areas, an overall increase in trail miles, and new entrances for potential invasive plant introduction.

Cumulative Impacts

No other cumulative effects other than those described as common to all alternatives are expected.

Conclusion

Overall, impacts on vegetation from Alternative 5 will be long-term, moderate and adverse.

Table 53. Trail Acres within Primary CVNP Vegetation Types

Vegetation Community	Bottomland Forests (within floodplain)	Shrub and Grassland	Upland Forests	Wetlands (forested and non-forested, within 25' wetland buffer)	Trail Acres Restored	Total Primary Vegetation communities in CVNP (Net Acres)
Parkwide Vegetation Acres	1,634 (6.3%)	1,123 (4.3%)	21,821 (85.1%)	1,060 (4.1%)	-	25,638
Alt 1: Trail Acres	6.5	3.5	131	45.6	-	186
Alt 2A: Trail Acres	6.7	3.9	140	45.2	11.6	184
Alt 2B: Trail Acres	6.7	3.9	140	45.5	11.6	184
Alt 3A: Trail Acres	8.4	4.5	162	48.3	12	211
Alt 3B: Trail Acres	7.7	5.3	174	48.9	13	222
Alt 4A: Trail Acres	7.9	5.8	172	50.3	12	224
Alt 4B: Trail Acres	7.9	6.9	183	51.9	13	236
Alt 5: Trail Acres	7.9	5.7	167	48.8	13	217

4.4 Wildlife

4.4.1 Relationship of Trails to Wildlife

Disturbance. Presence of trails can cause direct disturbance of wildlife and wildlife habitat due to the level of noise and motion from trail users.

Disturbance of wildlife from noise and motion by recreational uses can cause changes in wildlife distribution, depending on a species' tolerance to increased human activity. In a summary of recreational impacts on birds, found that rapid movements such as runners were more disturbing than slower hikers. Additionally, children and photographers were especially disturbing possibly due to erratic movements or closer movements, and horses did not seem to disturb birds (Bennett and Zuelke, 1999). Passing or stopping vehicles were less disturbing than people on foot (Bennett and Zuelke, 1999).

Bald eagles (*Haliaeetus leucocephalus*) seem to be particularly sensitive to people on foot in the vicinity of their nests. Human disturbance can result in nest failure by causing eagles to get off of eggs during incubation and eggs die from cold. The U.S. Fish and Wildlife Service (USFWS) recommends a 330-foot buffer from an active eagle nest for non-motorized recreational activities (USFWS 2007). Great Blue

Herons (*Ardea herodias*) also can be sensitive to disturbance by human presence and USFWS recommends a buffer distance of 200 meters from Great Blue Heron colonies (USFWS, 2011).

Habitat fragmentation and edge effects. Trails can cause fragmentation of habitats when they create openings in tree canopy or cause alteration of vegetation along the trail, creating an "edge effect". Edge-effect is a term used "to describe the various consequences, on vegetation and wildlife, that occur as a result of one type of vegetation sharing a border with another"(Rowley et al., 1993). Edge effects include changes in species composition, vegetation, increased predation, exposure to invasive plants, and changes in microclimate from changes in sunlight, humidity, soil moisture and wind (Murcia 1995, Chen et. al., 1999, Harper et al., 2005). Such effects can extend more than 100 meters into a forest. Trails placed in forests and other habitats can have the effect of creating edge and fragmenting forests even without significant clearing of vegetation. For example, trails may impede movement and dispersal of some animals that are reluctant to cross openings caused by trails. In addition, the presence of these linear edges breaks up large habitat areas into smaller habitat fragments.

Many small animal species, particularly birds, small mammals, and amphibians, are sensitive to the size of their habitat type. The larger the habitat area, the higher quality it is and the species will have higher breeding success. In contrast, smaller fragments of habitat are of lower quality and breeding success is also lower. Forest-breeding birds are among the most sensitive to fragmentation. For these species, forests blocks smaller than 50 acres generally have little habitat value. Forest blocks exceeding 100 acres have more value and forest blocks greater than 500 acres provide the most benefits (Environment Canada, 2004).

Most studies of impacts on bird populations caused by recreational openings such as trails, campgrounds, and picnic areas, have found that these edges attract generalist (disturbance-tolerant) species, including many potential nest predators (e.g. crows, jays, squirrels), while more sensitive specialist species decline in abundance (Hickman, 1990; Miller et al., 1998; Rosenberg et al., 2004; Palomino and Carrascal, 2007; Walters, 2010). Miller et al. (1998) and Miller (2000) also found that nest predation was higher near trails than away from them, and suggested that trails of 1-3 meters in width exerted a "zone of influence" of approximately 75 meters.

Movement corridors. Trails are often used by wildlife as movement corridors due to their openness and accessibility. These movements can affect species interactions and habits. For example, predators may gain easier access to interior forest habitats via these corridors, changing habitat quality for both predators and prey.

4.4.2 Applicable Regulations and Guidelines

Endangered Species Act of 1973, as amended. Conservation of ecosystems upon which threatened or endangered species of fish, wildlife and plants depend. Any federal action is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

Bald and Golden Eagle Protection Act. Sets protection measures for Bald and Golden eagle species including disturbance that may cause injury to an eagle, decrease in productivity, or nest abandonment, including interference of normal breeding and sheltering behavior.

Migratory Bird Treaty Act. Sets forth regulations for the protection of migratory birds, including nest of egg of any migratory bird.

Executive Order 13186. Outlines responsibilities of Federal Agencies to Protect Migratory Birds.

NPS Management Policies (2006)

4.4 Biological Resource Management. The National Park Service will maintain as parts of the natural ecosystems of parks, all plants and animals native to the park ecosystems.

4.4.3 Methodology

Major vegetation communities were considered wildlife habitats in this chapter. Direct impacts on wildlife habitats were evaluated including habitat loss, degradation, and fragmentation. For forests and shrubland/grassland areas, a 10-foot wide potential disturbance corridor was quantified for all trails (trail acres/habitat type). This corridor represents a worst-case footprint of disturbance from a trail. It is expected that most trails actually impact a smaller footprint. Forests (upland and bottomland) were treated as one wildlife habitat type for the analysis in this section. While most forest trails would be aligned without significant impacts to mature trees or actual forest cover, this footprint represents effects on the understory in forest areas and actual potential habitat loss in shrubland and grasslands. The approach is the same as that outlined for Impact to Vegetation in Section 4.3.3. Table 54 provides a comparison of impacts on wildlife habitats from the trail footprint. Wetland wildlife and habitat impacts were evaluated based on the number of trail miles located within 25' of wetlands as described in Section 4.2.3.

While forests are not expected to experience direct losses, as trails would be designed to minimize any impacts to trees and vegetation, the effects of fragmentation were considered. While fragmentation by trails may affect any habitat, forests are the predominant habitat type in the Park, and are arguably most impacted by fragmentation by trail systems. For this analysis all forest blocks greater than 50 acres were selected in a GIS, totaling 26,170 acres. A 75 meter zone of effect around all trails was applied to existing forest cover in the Park and the sizes of the remaining unaffected, unfragmented forest blocks were documented and compared among the Alternatives. In essence, the results describe the size and distribution of "unaffected" forest habitats that remain after considering trail impacts. Blocks were grouped in the following categories: 0-50 acres, 50-100 acres, 100-500 acres, and >500 acres, representing "Poor", "Fair", "Good," and "Very Good" forest habitat block sizes. Area of forest within the actual "impact zone" was also calculated. Table 55 provides a breakdown of the remaining unfragmented forest habitat blocks after considering the trail corridor effects.

Lastly, disturbance was evaluated by the distance between known nesting areas of sensitive species (eagles, herons) and trail elements. Human disturbance of wildlife is evaluated for all wildlife habitat types. Assembly of information and evaluation was based upon research literature, available information on habitats in the park, and discussions with park and park partner staff in the fields of wildlife biology and management.

Intensity Thresholds

Negligible. Actions would result in impacts on wildlife that would be so slight that they would not be of any measurable consequence at a population level. Abundance and diversity of species would remain with no measurable change. Impacts on special-status species would result in changes that are barely detectable to a population or individuals of such species or its habitat.

Minor. Actions would result in a detectable effect that would be localized, small and of little consequence to species and their habitats. The action may change the abundance or distribution of species, but not affect the viability of local populations. Impacts to special-status species would result in measurable or perceptible changes to individuals of a species, a population or its habitat, but would be localized within a relatively small area and the overall viability of the species would not be affected.

Moderate. Actions would result in clearly detectable effects that would be localized with consequences at the local species level. The action may change the abundance or distribution of species within the park but not affect the viability of regional populations. Changes to population numbers, number of species present, and habitat would occur, but species would remain viable. Impacts on special-status species would result in measurable and or consequential changes to individuals of a species, a population or its habitat within the park.

Major. Actions would result in an obvious detectable effect that would have substantial consequences to wildlife populations and their habitats at a regional scale. The change could result in severely adverse and possible permanent consequence upon the species. Impacts to special-status species would result in measurable and/or consequential changes to a large proportion of individuals of a species or a population or a large area of habitat. The action would change the abundance and distribution of local and regional populations to the extent that may result in loss of species viability and potential extirpation and conditions where species would not likely recover.

4.4.4 Impacts of the Alternatives

4.4.4.1 Actions Common to All Alternatives

Direct and Indirect Impacts

Wetland species and habitat impacts. The current trail system has approximately 37 miles of trail within 25’ of wetlands, including boardwalk systems that cross such habitats. Each action alternative proposes either a slight decrease or up to a 5.2 mile increase in the number of trail miles near wetlands. Wildlife associated with wetlands near trails may experience occasional disturbances from visitors using the trails. No alternative proposes any action that would reduce wetland size, though several trails may involve boardwalk construction that will be evaluated under future compliance. As such the impacts on wetland wildlife species and their habitats is expected to remain long-term, minor and adverse under any alternative.

Cumulative impacts. Past, present, and foreseeable future actions that could impact wildlife and wildlife habitat include emerging development surrounding the Park, increased loss of habitat, temporary disturbance from infrastructure projects for roads and other facilities within the park and associated changes in habitat as result of climate change. All of these actions may cause temporary or permanent

disturbance to wildlife and its movement in the park, resulting in both short-term and long-term, negligible to moderate and adverse impacts. Future wildlife management actions in designated areas, including those proposed within the White-tailed Deer Management Plan currently in development may affect local wildlife populations beneficially. Overall, cumulative impacts on wildlife will be short-term and long-term, minor and adverse.

4.4.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

The current trail footprint directly impacts 137.5 acres of forest habitats and 3.5 acres of shrub/grassland habitats in the park (Table 54).

The small amount of impacts on shrub/grassland habitats would have long-term, negligible adverse effects on species associated with those areas.

When considering forest fragmentation, there are many (n=272) "Poor" quality forest habitats <50 acres in size, these total only about 1,900 acres (Table 55). An additional 3,009 acres of "Fair" forest habitats in 44 blocks also exist. Most forest area in the park (13,544 acres) fits into blocks exhibiting "Good" habitat quality (n=58). There are also 7 large blocks greater than 500 acres of "Very Good" forest habitat totaling approximately 4,700 acres. Over 3,000 acres of forest are within the impact zone of the trail system. Overall, long-term, minor adverse effects on forest-associated wildlife are expected from forest fragmentation and degradation, especially for sensitive species (e.g., forest interior birds).

The Towpath currently passes through the nesting area buffer zone for eagles north of the Station Road trailhead in the Pinery Narrows area. Seasonal closures currently occur for the Pinery Narrows bridle trail segment adjacent to the Towpath when eagles are nesting. Towpath Trail users need to observe posted trail restrictions along the segment within the bald eagle closure as well, minimizing the effects of the trail on bald eagles. Other wildlife viewing areas include the Beaver Marsh along the Towpath at Ira Trailhead, and the Ledges Trail system. Impacts on wildlife from such human disturbance are short-term, negligible, and adverse.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Impacts to wildlife under Alternative 1 are likely to be long-term, minor and adverse due primarily to the overall continued fragmentation of forest habitats in the Park.

4.4.4.3 Impacts Common to All Action Alternatives

Direct and Indirect Impacts

Impacts of facilities. The areas proposed for water trail facilities, campsites and parking areas are largely in open disturbed areas of the Park. Campsites may cause disturbance and increase fragmentation to wildlife habitats in the forested areas associated with the Buckeye-O'Neil, Buckeye-Columbia and

Buckeye-Dugway campsites causing some displacement or change in distribution patterns from the increased access for visitors to these currently undisturbed areas. Since the use of the campsites are intended to be low density and low use with the campsite footprint very small relative to the affected forest block, the impacts to wildlife are likely to be long-term, negligible to minor and adverse.

Parking areas that may cause disturbance to wildlife include Old Orchard, Blue Hen, and Red Lock by their removal of vegetation or creation of new disturbance in forested areas. Since all of these proposed parking areas will be located on the edge of the forest block, reducing its impact to the interior of the forest blocks, the impact to wildlife will likely be long-term, negligible and adverse.

Restoration of Trails. The removal of trails in some areas of the Park will limit formal access in largely forest areas that may provide beneficial impacts on wildlife that reduce fragmentation and wildlife disturbance in localized areas of the Park.

4.4.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

The trail footprint under Alternative 2A directly impacts 146 acres of forest habitats and 3.9 acres of shrub/grassland habitats in the Park (Table 54). Alternative 2A proposes trails in two forest blocks that are currently without trails. These blocks are impacted by a portion of the Fitzwater Connector Trail and the Terra Vista Trail.

The small amount of additional impacts on shrub/grassland habitats would have negligible long-term adverse effects on species associated with those areas.

Under Alternative 2A, forest fragmentation levels remain largely unchanged for the “Very Good” and “Good” habitat blocks (Table 55). The primary effect is additional fragmentation of “Fair” habitats into “Poor” habitats as evidenced by changes in the number of blocks and amount of acreage in those categories. Approximately 360 acres of forest habitat would be moved into the “Poor” category from the “Fair” category. An additional 300 acres of forest is added to the trail impact zone under this Alternative. Overall, continuing long-term, minor, and adverse effects on forest-associated wildlife are expected from this small increase in forest fragmentation and degradation, especially for sensitive species.

Disturbance to wildlife is likely to be minimal for trails at Terra Vista and the Coliseum site where nesting birds and butterflies frequent because the proposed trails are located on the perimeter of these sites and on existing disturbed areas. No additional impacts from disturbance of wildlife are expected.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

A minimal change in affected forest blocks will likely maintain the existing long-term, minor, and adverse impacts on wildlife and their habitats.

4.4.4.5 Impacts of Alternative 2B

The areas affected by trails in Alternative 2B are the same as described in Alternative 2A (Tables 54 and 55). The only difference that may affect wildlife is the addition of designated bicycle use on the existing portion of the Buckeye Trail traveling through a large forested habitat block near the Brecksville Reservation.

The addition of bicycles on the existing Buckeye Trail will not directly impact forests or cause fragmentation, but may increase disturbance to wildlife by increased intensity of use above its existing use. Since the areas of effect are limited to one trail it is not likely to contribute more than negligible long-term adverse effects on local populations.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

A minimal change in affected forest blocks, similar to Alternative 2A, and the addition of mountain biking on one trail will likely maintain the existing long-term, minor, adverse impacts on wildlife and their habitats under Alternative 2B.

4.4.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Alternative 3A increases impacts on forest habitats from the trail footprint by almost 33 acres and shrub/grassland habitats by 2 acres (Table 54).

The small amount of impacts on shrub/grassland habitats would have long-term, negligible to minor, adverse effects on species associated with those areas.

Alternative 3A includes two trails that will fragment larger forest blocks, including South Carriage Trail, and the Tree Farm Extension Trail.

Under Alternative 3A, forest fragmentation levels increase for the “Very Good” and “Good” habitat blocks, with both experiencing the loss blocks in that category (Table 55). The amount of “Very Good” forests is reduced by over 650 acres (-1 block), and the “Good” forests are reduced by almost 900 acres (-4 blocks). The net effect is additional fragmentation into “Fair” and “Poor” quality habitats as evidenced by changes in the number of blocks and amount of acreage in those categories. Another 625 acres of forest has been moved in the “Poor” category, and over 1000 additional acres of forest is added to the trail impact zone under this alternative.

Overall, these fragmentation effects will have long-term, minor to moderate adverse effects on forest-associated wildlife are expected from this small increase in forest fragmentation and degradation, , especially for sensitive species.

The West Rim Trail is within 300' of the existing bald eagle nesting area and travels adjacent to the Fawn Pond area and may be subject to being closed during nesting season given its proximity to existing sensitive nesting areas. The Coliseum Trail is placed along the perimeter of the grassland/forest edge so as to minimize any impacts to the grassland nesting birds in the site. It is expected these trails will have long-term, negligible to minor, adverse impacts.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Alternative 3A will likely have long-term, minor to moderate, adverse impacts on wildlife primarily from increased habitat fragmentation and loss.

4.4.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Alternative 3B increases direct impacts on forest habitats from the trail footprint by over 44 acres and shrub/grassland habitats by 1.0 acre (Table 54). The areas of impact will be similar to the areas described in Alternative 3A with the addition of the new trails for off-road bicycle use on the east and west central rim areas of the park.

The small amount of impacts on shrub/grassland habitats would have long-term, negligible to minor, adverse effects on species associated with those areas.

The proposed off-road bicycle trails, including areas for the West Rim Trail and the East Rim Trail will fragment four large forest blocks.

Under Alternative 3B, forest fragmentation levels increase for the "Very Good" and "Good" habitat blocks, with both experiencing the loss blocks in that category (Table 55). The amount of "Very Good" forests is reduced by over 650 acres (-1 block), and the "Good" forests are reduced by almost 1500 acres (-4 blocks). The net effect is additional fragmentation into "Fair" and "Poor" quality habitats as evidenced by changes in the number of blocks and amount of acreage in those categories. Another 750 acres of forest has been moved in the "Poor" category, and over 1250 additional acres of forest is added to the trail impact zone under this Alternative.

Overall, these fragmentation effects will have impacts greater than those in Alternative 3A, but would still be long-term, minor to moderate adverse impacts on forest-associated wildlife from an increase in forest fragmentation and degradation, especially for sensitive species.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Alternative 3B will likely have long-term, minor to moderate, adverse impacts on wildlife from increased fragmentation and loss of habitats.

4.4.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

Alternative 4A increases direct impacts on forest habitats from the trail footprint by over 42 acres and shrub/grassland habitats by 2.3 acres (Table 54). The small amount of impacts on shrub/grassland habitats would have negligible long-term adverse effects on species associated with those areas.

Alternative 4A includes several trails that will fragment larger forest blocks, including Tree Farm Extension Trail, the new Riding Run loop, Columbia Run Trail, the Plateau to Howe Connector Trails, Ira-Hampton Trail and the neighborhood connector from Echo Hill. Under Alternative 4A, forest fragmentation levels increase significantly for the "Very Good" habitat blocks (Table 55). The amount of "Very Good" forests is reduced by over 3400 acres (-5 blocks). These larger blocks would be fragmented into smaller pieces as evidence by the "Good" forests increasing by about 440 acres (+1 block), "Fair" habitats increasing by over 460 acres (+5 blocks), and "Poor" habitats increasing by almost 940 acres (+ 139 blocks). Over 1,500 additional acres of forest is also added to the trail impact zone under this Alternative.

Overall, these fragmentation effects will have long-term, moderate adverse effects on forest-associated wildlife form forest fragmentation and degradation, especially for sensitive species.

The West Rim Trail is within 300' of the existing bald eagle nesting area and travels adjacent to the Fawn Pond area. The Mudcatcher trail is within 300' of the large Blue Heron nesting area. The West Rim and Mudcatcher trails may be subject to being closed during nesting season given their proximity to current sensitive nesting areas. The Coliseum trail may cause some disturbance to the bird nesting area, but its placement along the perimeter of the site will reduce disturbance to nesting birds. It is not expected these trails will have anything but long-term, negligible to minor adverse impacts.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Alternative 4A will likely have long-term, moderate adverse impacts on wildlife that from a significant level of fragmentation of large forest habitat blocks.

4.4.4.9 Impacts of Alternative 4B

Direct and Indirect Impacts

Alternative 4B increases direct impacts on forest habitats from the trail footprint by over 53 acres and shrub/grassland habitats by 3.4acres (Table 54). The areas of impact will be similar to the areas

described in Alternative 3A with the addition of the new trails for off-road bicycle use within the east central rim area of the park.

The small amount of shrub/grassland habitats affected would have long-term, negligible to minor, adverse impacts on species associated with those areas.

Alternative 4B includes several trails that will fragment larger forest blocks as described in Alternative 4A. Additionally, the East Rim trail will fragment four larger forest blocks in the east central and southern portions in the Park.

Under Alternative 4B, forest fragmentation levels increase for the "Very Good" habitat blocks, similar to Alternative 4A (Table 55). The amount of "Very Good" forests is reduced by over 3400 acres (-5 blocks). These larger blocks would be fragmented into smaller pieces as evidence by the "Good" forests increasing by about 259 acres (+3 blocks), "Fair" habitats increasing by over 400 acres (+4 blocks), and "Poor" habitats increasing by over 1000 acres (+ 160 blocks). Over 1,700 additional acres of forest is also added to the trail impact zone under this alternative.

Overall, these fragmentation effects are the largest of any alternative (including Alternative 4A) and will have long-term, moderate adverse effects on forest-associated wildlife from forest fragmentation and degradation, especially for sensitive species.

Similar to Alternative 4A, the West Rim Trail is within 300' of the existing bald eagle nesting area and travels adjacent to the Fawn Pond area. The Mudcatcher trail is within 300' of the large Blue Heron nesting area. The Coliseum trail may cause some disturbance to the bird nesting area, but its placement along the perimeter of the site will reduce disturbance to nesting birds. It is not expected these trails will have anything but long-term, negligible to minor, adverse impacts.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Alternative 4B will likely have long-term, moderate, adverse impacts on wildlife from a significant level of fragmentation of large forest habitat blocks and impacts on shrub/grassland habitats.

4.4.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

Alternative 5 increases impacts on forest habitats from the trail footprint by over 37 acres and shrub/grassland habitats by 2.2 acres (Table 54).

The small amount of shrub/grassland habitats affected would have long-term, negligible to minor, adverse impacts on species associated with those areas.

Alternative 5 includes several that will fragment larger forest blocks, including South Carriage Run, Five Falls Trail, Columbia Run Trail, connectors from Plateau to Howe, Ira-Hampton Trail and one forest block for the proposed areas for the off-road bicycle trail.

Under Alternative 5, forest fragmentation levels increase for the "Very Good" habitat blocks (Table 55). The amount of "Very Good" forests would be reduced by almost 1200 acres (-2 blocks) and "Good" forests would decrease slightly by about 80 acres (-1 blocks). "Fair" habitats would remain nearly the same but "Poor" habitats would increase by over 785 acres (+ 131 blocks). Over 1,250 additional acres of forest is also added to the trail impact zone under this Alternative.

Overall, these fragmentation effects will have long-term, minor to moderate, adverse effects on forest-associated wildlife from forest fragmentation and degradation, especially for sensitive species.
The Coliseum may experience some disturbance to the bird nesting area, but its proximity along the perimeter of the site will reduce any disturbance impacts. The Mudcatcher Trail is within 300 feet of the large Blue Heron nesting area. Large forest areas of greater than 500 acres, where new trails may increase in larger interior forest areas include the Dugway trail. Since the High Meadow trail is intended to travel along the edge of the forest block, its disturbance and fragmentation will be minimal. It is not expected these trails will have anything but long-term, negligible adverse impacts.

Cumulative Impacts

No cumulative effects beyond those common to all alternatives are expected.

Conclusion

Alternative 5 will likely have long-term, minor to moderate, adverse impacts on wildlife from increased fragmentation in large forest blocks and loss of habitats.

Table 54. Wildlife Habitat Impacts from Trails by Alternatives (Acres)

Alternative	**Forests**	***Change***	**Shrub/Grassland**	***Change***
Alternative 1	137.5	---	3.5	--
Alternative 2A	146.7	+9.2	3.9	+0.4
Alternative 2B	146.7	+9.2	3.9	+0.4
Alternative 3A	170.4	+32.9	4.5	+2.0
Alternative 3B	181.7	+44.2	5.3	+1.0
Alternative 4A	179.9	+42.4	5.8	+2.3
Alternative 4B	190.9	+53.4	6.9	+3.4
Alternative 5	174.9	+37.4	5.7	+2.2

Table 55. Quality, Size and Number of Unfragmented Forest Habitat Blocks by Alternative

Alternative	Very Good		Good		Fair		Poor		
	> 500 acres		100-500 acres		50-100 acres		Less than 50 acres		
	#	Total acres	#	Total acres	#	Total acres	#	Total acres	Forests within Impact Zone
Alternative 1	7	4,732	58	13,544	44	3,009	272	1,883	3,003
Alternative 2A	7	4,679	58	13,264	29	2,672	323	2,250	3,306
Alternative 2B	7	4,679	58	13,264	29	2,672	323	2,250	3,306
Alternative 3A	6	4,067	54	12,465	45	3,113	360	2,508	4,018
Alternative 3B	6	4,067	55	11,995	46	3,205	384	2,636	4,268
Alternative 4A	2	1,320	59	13,985	49	3,471	411	2,821	4,574
Alternative 4B	2	1,320	61	13,803	48	3,413	432	2,891	4,744
Alternative 5	5	3,525	57	12,623	44	3,101	403	2,668	4,254

4.5 Impacts on Soils

4.5.1 Relationship of Trails to Soils

*Soil Erosion Caused by Trail Design***.** Trails can cause soil compaction, soil loss and its stability and movement increasing erosion rates and altering natural drainage patterns. Trail design can affect soils by its placement on highly erodible soils, steeper slopes or where soils have hydric characteristics (Wilson-Seney, 1994, Leung, Marion, 2001, Lanehart, 1998).

Trail impact assessments have found that heavily used trails had significantly more soil erosion. Trails located on ridgetops and upper slopes exhibited the greatest erosion. Recommended solutions of these soil erosion issues involved trail location to valley walls with side-hill construction methods (Leung and Marion, 2000). Proximity to streams can also increase the susceptibility of trails to erosion due to excessive wetness and periodic flooding of trail treads.

A study evaluating trail conditions, found trail design has a substantial influence on levels of trail degradation (Leung and Marion, 2006). These included flat grades of 0-2%, excessive grades greater than 10%, and trails that directly ascend slopes. When trail grades are low, muddiness often occurs; when trail grades are high, soil erosion cannot be controlled (Leung and Marion, 2006).

*Soil Erosion caused by Trail User Types***.** Studies have shown that trail use by horses produce greater sediment yields than trail use by other users, including off-road bicycling because of the increase load bearing weight on the trail tread (Wilson and Seney, 1994, Marion, 2006).

A trail impact assessment conducted at another eastern National Park, found that heavily used trails had significantly more soil erosion and tree root exposure. Trails receiving a high proportion of horse use were significantly wider, muddier and had more multiple treads (Leung and Marion, 2000).

4.5.2 Applicable Regulations and Guidelines

NPS Management Policies (2006)

4.8.2.4 Soil Resource Management. The Service will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources.

4.5.3 Methodology

Soils information utilized for the impact analysis include the Soil Survey Geographic (SSURGO) database for Cuyahoga and Summit Counties by NRCS, observations by park staff on effects on soils from trail activities, and scientific literature on trail impacts to soils. Two trail impact related factors the NRCS evaluates is the k-factor of a soil type and its suitability for recreational trails and recreational uses. As defined by NRCS, the "k" factor is an erosion factor that indicates the susceptibility of a soil to sheet and rill erosion by water (NRCS, 2010). Values of K range from 0.02 to 0.69, where a higher value indicates increased soils susceptibility to sheet and rill erosion by water.

Suitability for trails that involve hiking and horseback riding is prescribed by the "paths and trails" rating of NRCS. Ratings are based on soil properties that affect trafficability and erodibility (NRCS, 2010). For the purpose of the analysis and the conceptual nature of the proposed actions, a 25' buffer on each side of the centerline of the proposed trail alignment was uses in the analysis.

Steepness of trails having greater than 15% slope at a distance of 500 feet or greater were also identified, through a GIS analysis of existing and proposed conceptual trail alignments against available topographic data. The 15% slope and 500 feet distance is based upon various studies of sustainable grade and decreased soil stability.

Tables 56, 57, and 58 provide a summary of the analysis.

Intensity Thresholds

Impacts on soils in the park were assessed based on the two soil suitability factors: proximity to steep grades and the utilization of the Sustainable Trail Guidelines. Impacts compared the existing conditions and the proposed actions and the effects they will have on soils and resource conditions, as a result of location and proposed action. Intensity thresholds of soil impacts are defined as follows:

Negligible. The action would not result in a noticeable change or barely detectable on soils or a geologic feature. No additional measures for trail design beyond general Sustainable Trail guidance would be required.

Minor. The action would result in a slight, localized change specific to a trail location. Soil and geologic resources may be slightly altered, but would not increase the potential for erosion. Trail design and management may require minor additional measures to stabilize soil and prevent increase soil erosion.

Moderate. The action would result in detectable changes in soils or geologic resources. Potential for soil erosion in the trail area would increase and cover greater than 25 acres, parkwide. Trail design and management may require additional measures to stabilize soil and minimize increase of soil erosion.

Major. The action would result in permanent loss of soil or geologic resources to the Park and region. The soil loss would be noticeable and require extensive trail design and management measures to stabilize soil and minimize increased soil erosion.

4.5.4 Impacts of the Alternatives

4.5.4.1 Impacts Common to All Alternatives

Temporary Construction Activities. All trail elements will require some level of construction where soil disturbance would occur. Best site management practices will occur, but the temporary construction activities may have short-term, minor, adverse impacts to soil resources by temporary expanded disturbance. Revegetation and restoration of disturbed sites upon completion will be conducted.

Cumulative Impacts of Urbanization. Present and continuing urbanization adjacent to the Park would continue to impact soils due to increased soil compaction and soil loss, both short and long-term, minor to moderate and adverse. Preventive measures continue to be implemented with storm water management best practices. Practices of ecological design principles of compact and conservation development and soil erosion control during construction are being utilized more often. Construction projects will result in short-term temporary, minor, adverse impacts to soil conditions both within and outside of the Park.

4.5.4.2 Impacts of Alternative 1: No Action

Direct and Indirect Impacts

Alternative 1 would continue to exist and operate at its current level. No new trails would be constructed, with the exception of trails and improvements outlined in section 2.2.3 of the Alternatives Chapter of this document. No guidance would be provided from updated Trail Guidelines, mitigation, signs or standards for the current trail system in addressing areas with soil conditions that are causing erosion and change in natural drainage patterns. Unmanaged social trails will persist with no comprehensive strategy to reduce their contribution to soil compaction and erosion.

Existing trails travel through typical soil conditions that are found parkwide. When measuring the k-factor of erodibility of soils of the existing trail system, approximately 69 miles (40%) of trail have a high k-factor, 70 miles (40.2%) have a medium k-factor, and 13.92 miles (8%) have a low k-factor.

Soils on which trails now exist have a range of suitability limits for recreation, paths and trails: 70 trail miles (40.4%) are “not limited” for this use, 21.5 miles (12.4%) are “somewhat limited”, 60 miles (34.5%) are “very limited”, and 20 miles (11.9 %) are “not rated” or “null”. There are currently 22 trails that have segments greater than 500’ in length with a steepness of greater than 15%. Overall, approximately a third of the trails that exist today are located on “limited” (i.e., “somewhat limited” or “very limited” soil suitability classes) and over 50% have segments with steep slopes, which may increase their

vulnerability for degraded conditions and resource impacts and increase their need for stabilization and additional structures.

Under this alternative, activity on the trail would continue to degrade soils conditions that are wet or muddy, where significant equestrian use occurs, and where trails are located on steep or highly erodible soils. The impacts would continue and increase with rising visitor use, and the lack of comprehensive trail guidelines for design, maintenance and management related to minimizing impacts to soils. Unmanaged social trails would continue to cause potential degraded soil conditions in areas of the Park. Alternative 1 would result in long-term, minor to moderate, adverse impacts to soil resources.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Continued and increased trail use on degraded soil conditions, the existing unmanaged social trail network, and the absence of carrying capacity thresholds for trial closures during muddy conditions will likely have long-term, minor to moderate, adverse impacts to soil resources.

4.5.4.3 Impacts Common to All Action Alternatives.

Sustainable Trail Guidelines. These Guidelines will help the NPS apply best practices in high erosion areas or realigning proposed trails to minimize impacts to soils. Where erosion conditions persist on trails, the Trail Guidelines will prescribe management recommendations that will reduce and eliminate these impacts. The Trail Guidelines will also foster a strategy to address the unmanaged social trails within the Park to further reduce soil impacts. This proposed action will have a long-term beneficial impact to soils within CVNP by reducing trail placement in soil areas that are susceptible to erosion and degradation.

Restoration of Trails. Restoration of trails, through their removal or realignment, will reduce trail impacts in areas most susceptible to wet, muddy conditions that contribute to soil impacts. This action will have a long-term beneficial impact to soils within CVNP by removing areas susceptible to degraded soil conditions.

Impacts of Trail Facilities and Amenities. Each paddle launch site will be confined to an area less than 2,500 square feet adjacent to the river's edge. The sites with proposed access to the river do not have a grade change greater than 5% slope.

The addition of campsites within the Park will utilize existing open areas, limiting any large vegetation removal. The campsites will cause the potential for soil exposure and compaction due to the tent pads. The number of acres of campsites for the entire Park is less than one acre, causing campsites minimal contribution to soil impacts in the park. Studies have shown that dispersed rotational "zone" campsites, tend to be less effective in managing resource impacts over having few sites in central high use areas, essentially, "maximizing spatial concentration of use and impact" (Marion and Cole, 1996). The proposed campsites utilizing a dispersed management approach may result in these resource impact patterns, more so than the more permanent campsites with established tent pads. Additionally, fewer campsites throughout the park than proposed will result fewer impacts to soil exposure. Utilization of

best management practices and monitoring of degraded systems on campsites will be part of the implementation.

The addition of 20 acres of parking areas would occur in areas already disturbed, except for relocation of the Blue Hen parking area, relocation of Indigo Lake parking area, expansion of Red Lock parking area and new parking at High Meadow. Best management practices and use of permeable paving materials where applicable will further reduce storm water impact and soil erosion into the tributaries and river. All proposed parking expansion and new areas are less than one acre per site resulting in very small areas of impact on particular soil conditions within the park.

Some trail amenities may require temporary, small scale soil (less than 25 square feet) disturbances during construction.

Trail facilities and amenities will likely have short-term, negligible, adverse impacts to soil resources during construction due to the minimal size of disturbance. Overall, long-term, minor effects on soil resources are expected from disturbance from access and use of launch sites, campsites, and new and expanded parking areas.

4.5.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Alternative 2A prescribes the use of existing vacant roads, and converting portions of existing roads or existing unmanaged social trails to designated trails. In addition, a small number of short distance trails with limited grade change are proposed. No additional trails are proposed on slopes greater than 15% in grade. Overall, there is not an increase of trails in soils with a high k-factor. Overall, little or no increase in trails on steep slopes or “very limited” soils for recreational trails is expected, limiting vulnerability to degraded conditions within the Park and needs for increased stabilization and structures. Through the utilization of existing disturbed areas, placement on areas with sustainable grades, use of Sustainable Guidelines, and minimal new trail miles in “limited” areas, actions in Alternative 2A will not require significant measures to minimize soil impacts. Utilization of design principles to minimize soil erosion will occur where trail use is expected to be higher, including interpretive trails connected to trailheads, visitor facilities, and the Towpath. The addition of three designated campsites and expanded parking at Red Lock, Terra Vista and East Vaughn Equestrian, will contain minimal soil disturbance and compaction activities in areas currently undisturbed with the exception of the disturbed site for Terra Vista. Soil impacts from Alternative 2A will be long-term, negligible to minor, and adverse.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Impacts to soils from Alternative 2A is expected to be long-term, negligible adverse from no change in trail miles in areas of soils with "very limited" suitability for recreational paths, no change in affected soils areas with high erodibility, no additional trail miles on steep grades, and minimal additional design and stabilization measures necessary for implementation.

4.5.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

The impacts of Alternative 2B on soil resources are similar as described for Alternative 2A except for the addition of bicycle use on existing portions of the Buckeye Trail. The affected portion of the Buckeye Trail between Boston Mills Road and Station Road currently has erosion issues as a result of steep grades and portions being within wet areas. Realignment of the trail to accommodate this new use will assist in managing soil impacts to the trail. Additional soil impacts as a result of the bicycle use may occur due to bicycles creating long swaths of wear, which may make the trail surface more prone to channelizing the soil, creating gullies for water to flow (Latrop, 2004). Impacts on soil resources from Alternative 2B will be long-term, negligible to minor and adverse by its minimal increase in trail acres in "very limited" soils and utilization of Sustainable Trail Guidelines.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Alternative 2B will likely have long-term, negligible to minor and adverse impacts on soils from a minimal increase of new trails in undisturbed areas and minimal additional stabilization measures required for implementation. The utilization of existing trails with steep grades and soils with "limited" recreation suitability for off-road bicycle use will have long, term minor adverse impacts from realignment and practices set forth in the Sustainable Trail Guidelines.

4.5.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Alternative 3A would increase the number of trail acres in undisturbed areas in the Park. The number of trail miles with high k-factor soils would increase six trail miles to 75 trail miles. For recreational trail suitable soils, Alternative 3A would result in an increase of six trail miles to 66 miles in "very limited" soils. Nine new trails would have segments in areas where grades exceed 15%, including Seven Falls Trail, Gateway Trail, Rockside-Hemlock Trail, West Rim trail, CVC Short Loop trail, Blue Hen Loop Trail and Highland Connector Trail. Additional stabilization measures or engineering would be required in these portions or review of realignment to reduce steep segment lengths. Use of Sustainable Trail Guidelines will reduce alignments and soil disturbance activities of trails in poor soil conditions. New uses will largely consist of stabilized multi-use connectors, new low use hiking trails and stabilized boardwalks. Trails where erosion may be susceptible include the Ira River Trail, the new Dugway Equestrian Trail, and the Howe-Everett Connector Trail for equestrians and hikers due to low or high

steepness, and higher weight bearing use. Stabilizing material and additional engineering may be required for these trails to minimize erosion impacts. The additional trail facilities of two trailside designated campsites, one expanded parking area and one new parking area will increase soil disturbance and compaction but will be isolated and less than 0.5 acre at any location. With these conditions, impacts to soils in the park are expected overall to be long-term, minor, and adverse.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Alternative 3A would result in long-term, minor, adverse impacts by short-term construction activities, increased trail miles in soils with "very limited" recreation suitability and new trails proposed in areas where steep grades are present.

4.5.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts
The impacts of Alternative 3B on soil resources are similar as described for Alternative 3A except for the addition of two off-road, single-tract bicycle trails. Alternative 3B would increase the number of trail acres in undisturbed areas in the Park. The number of trail acres with high k-factor soils increase by 15 trail miles to 84 miles. Trail acres of soils with "very limited" recreation suitability would increase from existing conditions by 10 miles to 70.5 trail miles. New off-road, single-track bicycle trails, are proposed in areas where the soil erosion k-factor are identified as high. Recreational trail suitability varies among the proposed mountain bike areas. The Five Falls Trail area is identified with "moderate" or "not limited" recreation suitability. The Upper Dugway area, areas near the Krejci Dump restoration site, and High Meadow Trail also have areas that are suitable for recreational trails. Construction of off-road bicycle trails would be designed and sited in relation to soil conditions to reduce erosion and rutting that may occur, and to avoid steep areas. Stabilization and additional engineering may be required on portions of both the east and west rim trails where steep conditions exist. The addition of the Snowville parking area will disturb soil resources and increase compaction but will be localized, less than 0.5 acre, and utilize sustainable design methods. Impacts to soils will be long-term, minor to moderate, and adverse with increased trail miles in soils with "very limited" recreation suitability and the potential need for additional measures for stabilization.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Impacts to soils will be long-term, minor to moderate and adverse with increased trail miles in soils with "very limited" recreation suitability, increases in trails where steep grades exist, and potential need for additional measures for stabilization.

4.5.4.8 Impacts of Alternative 4A

Alternative 4A will increase the number of trail miles in undisturbed areas. The number of trail miles within high k-factor soils increase by 29 miles for a total of 90 trail miles. Alternative 4A would contain 77 trail miles that have soil conditions identified as "very limited" for recreational trail suitability, a 17 mile increase from existing conditions. Portions of fourteen proposed trails could include steep areas consisting of slopes greater than 15%, including the Buttermilk Falls Trail, Columbia Trail, Maplewood Trail, Ira-Hampton Trail, and Blue Hen Loop Trail. Additional stabilization and engineering would be required for these segments to reduce impacts to soil resources. The additional trail facilities that include one trailside designated campsite and one expanded parking area will increase soil disturbance and compaction but will be minimal of less than 0.5 acre and localized. Impacts to soil resources are expected to be long-term, moderate, and adverse impacts by increase in trail miles in areas with limited recreational trail suitability and in areas where steep grades exist.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Impacts to soil resources is expected to have long-term, moderate and adverse impacts by increase in trail miles in very limited suitable soils, the potential need for additional design measures to limit soil erosion, and increase in trail miles in areas with steep grades.

4.5.4.9 Impacts of Alternative 4B

The impacts of Alternative 4B on soil resources are similar as described for Alternative 3A except for the addition of the proposed off-road, single-track bicycle trail. Alternative 4B would increase the number of trail acres in undisturbed areas. The number of trail acres with high k-factor soils increase by 36 trail miles to 105 trail miles. Alternative 4B would include 83 trail miles within soil conditions that are identified as "very limited" for recreational trail suitability, an increase of 23 trail miles from existing conditions.

New off-road bicycle trails, are proposed in areas where the soil erosion k-factor are identified as high or medium. Recreational trail suitability varies among the proposed off-road bike trail areas. The Upper Dugway area and Krecji Dump restoration area have areas that are suitable for recreational trails. Construction of mountain trails would be designed and sited in relation to soil conditions reducing erosion and rutting that may occur. Portions of the off-road bike trail travel where grades exceed 15% near the Old Akron-Peninsula to Route 303 section, portions near Dugway and portions along Boston Mills Road. Hiking and off-road bicycle trails proposed throughout the park introduce a significant number of new trail miles where none currently exist and that are located in soil conditions that would require site design methods to minimize erosion and prevent long-term soil impacts. Site planning and the use of increased engineered practices to reduce impacts to soil resources from steep grades will be required. Increased use on the off-road trails by foot and bike traffic will increase adverse soil conditions such as rutting, compaction and widening.

Alternative 4B will result in long-term, moderate, and adverse impacts by new trail miles being proposed in areas that may be vulnerable to degraded conditions or require additional stabilization, trails where steep grades exist in the area, and increase in user groups on trails.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Alternative 4B will result in long-term, moderate, adverse impacts to soils from increased use, increase in natural surface trails in undisturbed areas of the park and proximity of proposed trails in steep grade areas of the Park that may require additional measures to stabilize soils in these locations.

4.5.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

The impacts of Alternative 5 on soil conditions are similar for associated trail elements as described under all of the alternatives.

Alternative 5 would increase the number of trail acres in undisturbed areas from existing conditions. The number of trail acres within high k-factor soils increase by 13 trail miles to 82 trail miles. Trails located in soil conditions that are identified as very limited for recreational trails would increase by 8 trail miles from existing conditions to 68 trail miles.

New off-road bicycle trails, are proposed in areas where the soil erosion k-factor are identified as high or medium. Recreational trail suitability varies among the proposed off-road bike trail areas. The Upper Dugway area and Krecji restoration area have areas of soils that are suitable for recreational trails. Construction of off-road, single-track bicycle trails would be designed and sited in relation to soil conditions reducing erosion and rutting that may occur. Portions of the mountain bike trail travel where grades exceed 15%. These areas include the section between the Old Akron-Peninsula to Route 303 section, and some areas on the Dugway trail. Site planning and the use of increased engineered practices to reduce impacts to soil resources from steep grades will be required. Hiking and bicycle trails proposed throughout the Park introduce a significant number of new trail miles where none currently exist and located in soil conditions that would require site design methods to minimize erosion and prevent long-term soil impacts. Increased shared use on the off-road trails will increase adverse soil conditions such as rutting, compaction and widening.

Alternative 5 will result in long-term, minor to moderate and adverse impacts by new trail miles being proposed in areas that may be vulnerable to degraded conditions or require additional stabilization, trails where steep grades exist in the area, and increase in user groups on trails.

Cumulative Impacts

No cumulative effects other than those common to all alternatives are expected.

Conclusion

Alternative 5 will result in long-term, minor to moderate, adverse impacts to soils from increased use, increase in natural surface trails in undisturbed areas of the park and proximity of proposed trails in steep grade areas of the Park that may require additional measures to stabilize soils in these locations.

Table 56. Trail Miles in Soils with High Erodibility Factors (K)

Alt 1	Alt 2A	Alt 2B	Alt 3A	Alt 3B	Alt 4A	Alt 4B	Alt5
69	69	69	75	84	90	105	82

Table 57. Trail Miles in Soils Very Limited for Recreational Paths

Alt 1	Alt 2A	Alt 2B	Alt 3A	Alt 3B	Alt 4A	Alt 4B	Alt 5
60	60	60	66	70.5	77	83	68

Table 58. Number of trails with segments 500' in length or greater that exceed 15% grade

Alt 1	Alt 2A	Alt 2B	Alt 3A	Alt 3B	Alt 4A	Alt 4B	Alt 5
22	0	0	+9	+11	+14	+15	+7

4.6 Cultural and Scenic Resources

4.6.1 Relation of Cultural and Scenic Resource to Trails

Visitation to cultural resources can compromise the quality of the cultural resource if the movement of visitors is not designed properly or the level of visitor use is large enough to create impacts to the resource. Ground disturbance of new or restored trails would have greatest consideration of impact to cultural resources in the Park.

Scenic views are part of the cultural landscapes of the Park. Trails can compromise or access these views based upon their placement and design. Of the six cultural landscape themes identified for the park, the agricultural landscape theme and its scenic qualities could most likely change from new uses near them. The remaining themes may be affected but only marginally and in very isolated conditions.

4.6.2 Applicable Regulations and Guidelines

Director's Order #28, Cultural Resource Management Guideline. The NPS, as the steward of America's most important cultural resources is charged to preserve them for the enjoyment of present and future generations.

36 CFR National Historic Preservation Act. The Secretary of Interior shall administer the National Register of Historic Places and National Historic Landmarks, and their management.

Director's Order 28A, Archeology. Common management framework pertaining to archeological resources within or that may affect the National Park system.

36 CFR Part 79. The curation of Federally-owned and administered archeological collections.

Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The standards and guidelines to preserve, rehabilitate and restore cultural landscapes.

NPS Management Policies (2006)

5.0 Cultural Resource Management. The NPS will protect, preserve, and foster appreciation of the cultural resources in its custody and demonstrate its respect for the peoples traditionally associated with those resources through appropriate programs of research, planning and stewardship.

5.3.5.1 Archeological Resources. Archeological resources will be managed, preserved, researched, maintained, and be made available for education as the NPS outlines in this policy section.

5.3.5.2 Cultural Landscapes. The treatment of a cultural landscape will preserve significant physical attributes, biotic systems, and uses when those uses contribute to historical significance.

4.6.3 Methodology

The analysis includes the alternatives and their level of impact to the Park's archeological resources, historic structures, cultural landscapes, and farms and fields within the existing Rural Landscape Management Program, known as the Countryside Initiative. The analysis included a qualitative assessment on the review of existing park policies on the treatment of historic structures and consultation with the park's Cultural Resources Management team (historical architect, historical landscape architect, historian, and Midwest Region archeological advisor). The analysis for cultural resources included the alternatives and the proximity of trail elements to cultural resources in the Park. Proposed Trail elements were evaluated based upon their proximity and trial use type within 100 feet of properties listed in the National Register of Historic Places (NRHP), known archeological areas, and within 10 feet of elements and properties within the Countryside Initiative. Evaluation distances were based upon recommendations from the park historical architect, historical landscape architect and archeologist. For the purpose of analyzing potential impacts to cultural and visual resources, the thresholds of change of the intensity of an impact are defined as follows.

Intensity Thresholds

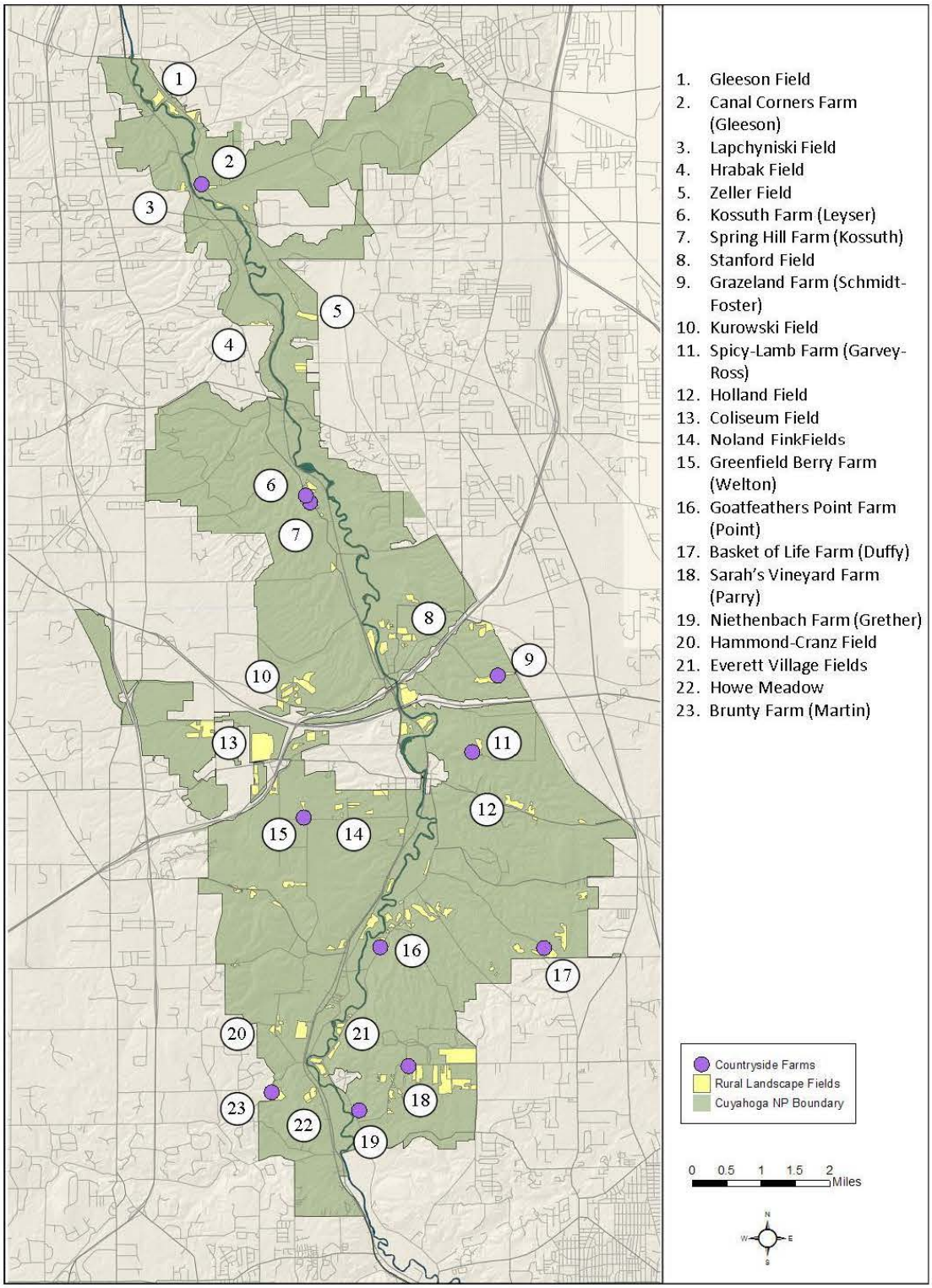
Negligible. Impact is at the lowest levels of detection-barely measurable with no perceptible consequences to archeological resources, historic structures, cultural landscapes and rural landscape program properties.

Minor. Archeological: Disturbance of a site(s) result in little, if any, loss of its potential to describe and explain human behavior.
National Register of Historic Places: Impact would not increase the rate at which the historic structure is lost and/or influence the loss of historic character of the structure.
Cultural Landscape: Impact(s) would not affect the character of defining patterns and features of a property listed in the National Register of Historic Place, a cultural landscape, or a farm within the Rural Landscape Management Program.

Moderate. Archeological: Disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that it loses its ability to describe and explain human behavior. Such an impact would allow sufficient time for inventory, evaluation, documentation, and duration of collections and associated records.
Historic Structures: Impact would moderately increase the rate at which the historic structure(s) or the historic character of the structure is modified or altered.
Cultural Landscapes. Impact(s) would alter a character defining pattern(s) or feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized.

Major. Archeological Disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it loses its ability to describe and explain human behavior.
Historic Structures: The historic structure would be lost, or the historic character of the structure would be lost.
Cultural Landscapes: Impact(s) would alter a character defining pattern(s) or feature(s) of the cultural landscape, diminishing the integrity of the landscape to the extent that is no longer eligible to be listed in the National Register.

Figure 13: Countryside Initiative Fields and Farms Near Trail Elements



Source: CVNP

4.6.4 Impacts of the Alternatives

4.6.4.1 Impacts Common to All Alternatives

Section 106 Compliance. NHPA Section 106 compliance would be completed, on a project-by-project basis, for all trails proposed in the Preferred Alternative.

Archeological Resources. In general, most archeological survey work at the Park occurs in conjunction with projects that require ground disturbance. The planning process for these projects typically supports the completion of archeological inventory work prior to the actual ground disturbing activity. This inventory work is the initial step taken to provide data about the location of resources and the level of their significance. In turn, potential impacts on archeological resources are reduced through measures such as site avoidance, project redesign, or other site protection measures. Whenever possible, such measures will be implemented rather than archeological excavations, since protecting and preserving these important and nonrenewable cultural resources is the preferred NPS treatment of archeological resources.

The different alternatives considered in this plan propose undertakings that include the development of trails (new, expanded, and/or removals), parking lots, campsites, and paddle launches, some of which would require ground disturbance to accomplish. To avoid or mitigate adverse impacts to significant archeological sites, the following would be required:

1) Phase I archeological inventory of any locations where ground disturbance is anticipated and that have the potential to contain archeological resources and have not been previously inventoried;
2) Evaluative Phase II archeological testing of newly or previously documented archeological sites that are within the Area of Potential Effect (APE) and potentially would be impacted by components of the trail plan as proposed. The results would be applied in making an appropriate determination on the site's significance and potential eligibility for listing in the National Register of Historic Places (NRHP);
3) Finding of effect made for any newly or previously documented archeological sites within the APE for the trail plan that could not be protected through avoidance, redesign, or engineering methods; and/or
4) Phase III data recovery investigations of any significant archeological sites that are, or are deemed eligible for, listing in the NRHP. Archeological data recovery projects must include a written Mitigation Plan and Memorandum of Agreement between the park and the State Historic Preservation Office and Tribal Historic Preservation Offices (THPO), where appropriate, that is filed with the Advisory Council on Historic Preservation. The SHPO and NPS develop the plan and agreement in full cooperation. Phase III testing would only be used if all other methods of mitigating the adverse impact were demonstrated to not be feasible.

The scope, if any, of required archeological investigations for the proposed trail plan would be determined on a case-by-case basis for each location where ground disturbance is anticipated to occur or where a trail (or other component) would intersect a significant archeological site. The NPS's Midwest Archeological Center will work directly with Park project planners in determining the appropriate level.

Trail elements where sites are known or where archeological survey would likely need to occur are identified for each Alternative and their individual trail elements.

Cumulative Impacts. Additional parking areas or expansion of existing parking areas may be proposed within 100 feet of the Boston Mills and Stanford NRHPs to support trail plan needs under the Boston Mills Area Development Plan/Environmental Assessment. If these parking areas do occur, they would have long-term, negligible to minor, adverse impacts on these NRHP sites.

Continued use of neighborhood social trails will continue under this alternative, resulting in long-term, negligible to minor and adverse impacts on cultural resources.

4.6.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

*National Register of Historic Places***.** The current system maintains trails within 100 feet of 12 properties listed in the National Register of Historic Places (NRHP) within the Park.

Archeological Resources. Isolated known archeological resources throughout the Park may be affected by near-by trails and visitors utilizing unmanaged social trails.

Countryside Program and Other Agricultural Landscapes. Trails affecting current Countryside Initiative properties are largely limited to the Towpath Trail and Valley Bridle Trail.

Cultural resources within close proximity to trails will continue to be vulnerable to surface disturbance and unavoidable damage due to visitor use patterns and current trail alignments, potentially affecting National Historic Register Districts, known archeological sites or Countryside Initiative properties. Social trails would not be managed or evaluated for cultural resource impacts. Alternative 1 would have negligible to minor adverse impacts on cultural resources from trails in close proximity to known and potentially unknown cultural resources in the Park.

Cumulative Impacts

Social trails from adjacent developments will continue to be used without a management or resource evaluation strategy to address use of these trails and their potential impacts on cultural resources. The no action alternative would have long-term, minor adverse cumulative impacts on cultural resources.

Conclusion

Impacts on cultural resources in Alternative 1 will be long-term, negligible to minor and adverse due to their vulnerability of ground disturbance and level of use in some areas without a comprehensive plan for their management. Existing social trails and unauthorized river access will continue to pose potential risks to unknown archeological resources.

4.6.4.3 Impacts Common to All Action Alternatives

Sustainable Trail Guidelines. The use of the Sustainable Trail Guidelines (Appendix C) during all phases of the trail development process pertaining to the protection and management of cultural resources will be utilized to avoid impacts to the greatest extent possible. If cultural resources cannot be avoided for proposed trail elements, a mitigation strategy would be developed in consultation with the Park's Cultural Resource Management team and the Ohio State Historic Preservation Office.

Impacts from Trail Facilities. The proposed water trail facilities may include facilities in the Boston Mills and Peninsula National Register Districts. Facility design and siting of the facilities may have a long-term, negligible to minor, adverse impact to this District for scenic and visibility resources within the Districts. The other launch facilities and their proximity to cultural resources include the proposed Hunt Farm launch facility utilizing the road right of way adjacent to the privately owned Szalay Farm and near the Hunt Farm NRHP site. The Cuyahoga River was a major corridor for movement of early settlers. Evaluation of each proposed launch facility for archeological resources in the selected alternative would be part of the design process as set forth in the Sustainable Trail Guidelines. Impacts to archeological resources could potentially be long-term, negligible to minor and adverse. The Hunt Farm launch site will have a long-term, negligible to minor, adverse impact to an active agricultural landscape. The remaining water trail facilities will have no effect on the Countryside Initiative Program elements.

Proposed campsites common to all action alternatives will include one campsite within 100 feet of NRHP areas, the Towpath-Old Carriage campsite (within the Ohio & Erie Canal District). The Towpath-Old Carriage Campsite may alter the visual resources of the District and but likely long-term, negligible to minor, and adverse due to the size and proposed siting. Campsites are also proposed within proximity of the private Szalay Fields north of Hunt Farm and NPS farm fields near Ira. All sites will be accessed on the perimeter of these fields having long-term, negligible to minor adverse impacts. The Cuyahoga River was a major corridor for movement of early settlers and some of the upland areas where campsites are proposed have not had archeological surveys conducted. Campsites may have long-term, negligible to minor, adverse impacts to archeological resources due to some of them being in close proximity to the river. Negligible to minor adverse impacts to two NRHP listings will be likely. The remaining campsites will have no effect on NRHP properties. Two campsites, North Hunt Farm and East Ira will have long-term, negligible to minor, adverse impacts to Countryside Initiative lands, but no effect from the other proposed campsite locations. The minimal size, minor facility development and use by a limited number of visitors will cause long-term, negligible to minimal impact to the cultural resources within close proximity to the campsites.

The new parking area for Ira paddle access near the private Szalay fields and the improved parking area near the Coliseum Habitat Management Area would have long-term, negligible to minor, adverse impacts to the Countryside Program and agricultural landscape related to maintaining the views and rural character of the Park. Known archeological resources are within 100 feet of the proposed expanded parking for Canal Visitor Center and Vaughn East. These sites will have a long-term, negligible to minor, adverse impact to archeological resources and will need to be evaluated for mitigation of impacts. New parking facilities at, Ira Paddle and Old Orchard, and relocation at Blue Hen and Indigo Lake will require initial archeological screening and survey. Application of the Sustainable Trail Guidelines will occur to design trail amenities that complement and not impact the characteristics and integrity of cultural resources in the Park. Impacts from trail amenities within defined proximity of cultural resources will be evaluated and mitigation practices will be implemented to avoid or minimize impacts.

Overall, water trail facilities and amenities may have long-term, negligible to minor, adverse impacts on NRHP properties, Countryside Initiative program elements and archeological resources. Impacts to archeological resources will need to be evaluated through site-specific surveys to ensure mitigation of impacts.

*Restoration of Trails***.** The removal and realignment of trails proposed in all action alternatives includes areas within the Virginia Kendall NRHP District. The social trail targeted for removal within the Ledges is not listed in the NRHP nomination as a contributing feature. The proposed action will, therefore, not impact the District's designation and will have long-term, beneficial effects by reducing impacts to the resources within the area. The proposed removal of a portion of the Lake Trail for rare plant protection does alter a contributing feature identified in the National Register designation and will have a long-term, minor to moderate, adverse impact to the NRHP. Restoration of trails will have no effect to Countryside program properties or archeological resources since no proposed actions are within proximity of these resources. Additional survey may be required on future restoration areas as set forth in the Sustainable Trail Guidelines.

4.6.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

*National Register of Historic Places***.** Alternative 2A proposes new trails within three NHRP listings: Michael Duffy Farm, Valley Railway Historic District, and Terra Vista Archeological District, associated with the Armington Trail, Fitzwater Connector and Terra Vista Hike Trail. The Terra Vista improved parking area will be the only parking facility proposed with 100 feet of the Terra Vista Archeological District. Due to its existing disturbance and conditions of the site, it will have no effect to the NRHP site. Since these proposed trails and trail facilities would occur on existing disturbed surfaces, they will have long-term negligible to minor adverse impacts on views within the specified NRHP site.

Archeological Resources. Proposed trails with potential or known archeological resources including the Old Carriage Trail extension and South Carriage Trail may be impacted and require additional evaluation for their alignment and feasibility due to the presence of resources. The Old Carriage Extension as a multi-use trail will have minimal ground disturbance related to its trail surface preparation and construction. If the proposed multi-use connectors would require alignment in undisturbed areas instead of the proposed roadbeds, additional archeological surveys would be required. Archeological resources on these sites may experience negligible to minor adverse impacts though these impacts may be mitigated.

Countryside Program and Other Agricultural Landscapes. The Armington Trail near the Duffy Farm and the Old Akron-Peninsula Connector Trail near the Spicy Lamb Farm (Garvey/Ross Farm) may affect the rural character views of these areas from the introduction or expansion of trail uses. The Coliseum Trail will impact the views and the scenic values of the current habitat management area from State Route 303. The Stone Road campsite, will have long-term, negligible to minor, adverse impacts to Countryside Initiative lands due to its proximity to agricultural landscapes. Impacts to the rural character and views to the associated Countryside Initiative properties will likely be long-term, negligible to minor and adverse.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Alternative 2A contains designated trails within three additional NHRP listings in comparison to Alternative 1. The proposed trails will utilize existing disturbed areas for the trail surface at all three sites, minimizing their impact. Impacts on NRHP's at these three locations are expected to be long-term, negligible to minor and adverse. Three proposed trails will travel near three Countryside Initiative properties located along the perimeter with minimal site disturbance. However, some change in the rural character and views on these sites is expected to have long-term, negligible to minor adverse impacts on the agricultural landscape. Two proposed trails are within areas with archeological resources which may have long-term, negligible to minor, adverse impacts on archeological resources, though these effects may be largely mitigated.

4.6.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts on cultural resources are similar as described for Alternative 2A except for the addition of bicycle use on a portion of the existing Buckeye Trail. The use of an existing trail surface and alignment will have no effect on NRHP and Countryside Initiative program areas since the trail is not within 100' of any of these areas. The existing route does have two known archeological resources within 100' of the trail. Any realignment that improves conditions for the new use and current trails will adhere to the Sustainability Trail Guidelines and be evaluated for archeological resource impacts and mitigation measures. Alternative 2B will have long-term, negligible to minor adverse impacts to archeological, NRHP and Countryside properties as associated with all trail elements. Bicycle use on the Buckeye Trail will have long-term, negligible, to minor adverse impacts to known and potentially new archeological resources.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Alternative 2B will have long-term, negligible to minor adverse impacts on archeological resources, NRHP site, and Countryside properties as associated with all trail elements. The addition of bicycle use on the Buckeye will have long-term, negligible to minor, adverse impacts on known and potentially new archeological resources, but not to a level that would increase its intensity threshold.

4.6.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

National Register of Historic Places. Proposed trails within NRHP listings include the Towpath-Valley Connector trail (Valley Railway Historic District), Jaite Loop Trail and bridle trail (Jaite Mill Historic District), Hines Hill-Stanford Loop Trail (George Stanford Farm), Hunt- River Loop Trail, (Hunt-Wilke Farm), Five Falls Trail (George Wallace Farm), and Armington Trail (Michael Duffy Farm). Of these trails, Armington Trail will utilize existing disturbed areas but may change the rural character of the site with

increased trail use. The additional designated campsite proposed for the West Rim is within 100' of the Hrabak National Register property. Facility design and siting of the campsite will not affect the Hrabak property. Impacts to NRHP's will be long-term, negligible to minor, and adverse from their minimal disturbance for trail surface and minimal design of new trail facilities.

Archeological Resources. Proposed trails with previously undocumented archeological resources include Gateway Connector Trail, South Carriage Trail, Old Carriage Connector Extension, Highland Road Connector Trail, Everett- Hale Trail, off-road Buckeye Trail extension, Lower Furnace Run Trail, West Rim Trail, Upper CVC Trail, Jaite Trail and the Hines Hill–Stanford Loop Trail. With the exception of the Highland Connector Trail, Gateway Connector trail and Old Carriage Connector Extension, all of the proposed trails will consist of natural surface trails with raised bridges or boardwalks in portions of the trails with minimal excavation. Highland Connector Trail, Gateway Connector Trail, and Old Carriage Connector Trail may have long-term, minor to moderate, adverse impacts if mitigation measures cannot be accomplished. The Hunt Farm River Loop Trail may include a boardwalk with a potential increase in ground disturbance. If bike lanes require separated pathways outside of the right-of-way, on Riverview and Wheatley roads, a review of archeological resources would be required. Other proposed trails will need to be evaluated on a case-by-case basis for archeological resources, which may result in long-term, negligible to minor, adverse impacts to archeological resources. New parking facilities at High Meadow will require initial archeological screening and survey.

Countryside Program and other Agricultural Landscapes. Five Countryside Initiative properties are within 10 feet of proposed trails in Alternative 3A. These include the Hunt-River Loop trail adjacent to the privately owned Szalay fields, Tree Farm Expansion Trail adjacent to the Noland-Fink fields, High Meadow trail within the Kurowski Fields, Gateway adjacent to the Holland Fields, and Armington Trail near the Basket of Life (Duffy) Farm already described. All of these trails will exist along the perimeter of the fields, but may alter the rural character of these areas. An additional trailside campsite, Upper CVC, is proposed near the Lapchynski field located west of the Canal Visitor Center. New parking areas at High Meadow, part of the Kurowski fields, would have long-term, negligible to minor, adverse impacts to the Countryside Program and agricultural landscape related to maintaining the views and rural character of the Park. All trails and facilities will be accessed on the perimeter of these fields having long-term, negligible to minor, adverse impacts. Impacts to the Countryside Initiative properties will be long-term, negligible to minor and adverse.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Impacts on NHRP's will be long-term, negligible to minor, and adverse from an increase in trails within or adjacent to six NRHP properties but no significant change in character or alteration that would affect their designations. Impacts on Countryside Initiative properties will be long-term, negligible to minor and adverse with proposed trails along the perimeter of five identified areas. Impacts on archeological resources will be long-term, negligible to moderate and adverse from thirteen proposed trails within 100 feet of known sites, trails with a increased tread width and surface disturbance requirements, and some areas that may require additional archeological survey during site layout.

4.6.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Impacts on cultural resources from Alternative 3B will be similar as described for Alternative 3A except for the addition of proposed new off-road bicycle trails on the east and west rim.

National Register of Historic Places. The West Rim trail will have no effect on NRHP listings. No additional impacts are expected to occur because the east rim trail will utilize existing routes and proposed routes that include the Five Falls trail and the existing Bike and Hike trail and its relation to the George Wallace Farm.

Countryside Program and other Agricultural Landscapes. The Countryside Initiative properties within 10 feet of the proposed off-road bicycle trails include the Schmidt-Foster and Johnson Fields on the east rim trail and the Kurowski fields on the West Central Mountain Bike trail. The trails will be aligned around the perimeter of these areas, but may impact the rural character of these sites. Impacts on Countryside Initiative properties will increase with the addition of new off-road bicycle trails, but not to the extent where an increase in the intensity threshold occurs.

Archeological Resources. No previously documented archeological sites are present in the proposed off-road bike trail areas. The presence of archeological resources may be minimal due to the upland locations, however, additional survey may be required where information is not currently available. Since the off-road bike trails do not affect any known archeological resources and is located in upland locations where resources are typically not abundant overall impacts of Alternative 3B to archeological resources will be long-term, negligible to minor. If upon survey of the area, archeological resources are found, impacts on archeological resources will likely have long-term, negligible to moderate adverse impacts.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Impacts on NRHP sites from Alternative 3B will be long-term, negligible to minor, and adverse. Impacts on Countryside Initiative properties will likely be long-term, negligible to minor and adverse from the proximity of some proposed actions to six designated fields and farms. The proximity of thirteen proposed trails within 100 feet of previously undocumented archeological sites, potential increase of disturbance from multi-use trails and potential additional archeological survey for some areas, including off-road bicycle trails will likely result in long-term, negligible to moderate, and adverse impacts on archeological resources.

4.6.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

National Register of Historic Places. Proposed trails are within 100 feet of eight NRHP listings**.** With the use of appropriate trail surfaces , aligning trails on the perimeter of sites and use of mitigation measures, impacts on NRHPs will be long-term, negligible to minor and adverse due to their associated visibility within each NRHP.

*Archeological Resources***.** Areas described in previous alternatives with similar trail elements and the addition of the Ira-Hampton, Ira-Howe, Columbia Run, Everett- Plateau, CVC Boardwalk and Station Road- 82 Connector are within 100 feet of previously undocumented archeological resources. An archeological survey may be needed in other areas including: Blue Hen, Buttermilk Falls, Maplewood, Shady Grove, neighborhood connectors, Mudcatcher, Sagamore, Dugway, and Tree Farm-Daffodil trail. Known archeological resources are within 100 feet of the proposed expanded parking at the Cancasi-Mudcatcher site. These sites will have a long-term, negligible to minor, adverse impact to archeological resources and will need to be evaluated for mitigation of impacts. Impacts on archeological resources from Alternative 4A may be long-term, negligible to minor, and adverse.

Countryside Program and Other Agricultural Landscapes. Proposed trails are within 10 feet of ten Countryside Initiative properties. The proposed trails are along the perimeter of these areas, but may impact the rural character of the sites from limited human use. Impacts on the Countryside Initiative properties from Alternative 4A will be long-term, negligible to minor, and adverse.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Impacts from the proposed actions in Alternative 4A on NRHPs will be long-term, negligible to minor, and adverse with their associated visibility within eight NRHP listings. Impacts on the Countryside Initiative properties from Alternative 4A will be long-term, negligible to minor, and adverse from minor changes to the rural character at ten sites. Archeological resources may have long-term, negligible to minor adverse impacts from areas described in previous alternatives with similar trail elements and need for potential additional archeological survey evaluation for eleven proposed trails.

4.6.4.9 Impacts of Alternative 4B

Cultural resource impacts from Alternative 4B are similar as described for Alternative 4A except for the addition of a new off-road bicycle trail along the central east rim of the park. The proposed bike trail will have a long-term, moderate adverse impact on the Duffy NHRP site from its increased use and type of recreational use. Affected Countryside Initiative properties also include the Duffy Farm and the proposed Countryside Initiative facility at the Black Acre Farm. The rural character of these farms may experience long-term, negligible to minor, adverse impacts. Additional archeological survey may be required for areas proposed along the Central East Rim trail. Impacts on archeological resources will be long-term, negligible to minor and adverse.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Impacts from the proposed actions in Alternative 4B on NRHP sites will be long-term, negligible to moderate and adverse with their associated visibility within eight NRHP sites, the proposed actions and their associated visibility within eight NRHP listings and the bike trail within the Duffy NRHP site. Impacts on Countryside Initiative properties from Alternative 4B are expected to be long-term, negligible to minor, and adverse from minor changes in the rural character to ten sites and the proposed bike trail. Archeological resources may have long-term, negligible to minor, adverse impacts from areas described in previous alternatives with similar trail elements and need for potential additional archeological survey evaluation for eleven proposed trails.

4.6.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

Impacts on Cultural Resources from Alternative 5 are similar for associated trail elements as described under all of the Alternatives.

National Register of Historic Places. Proposed trails are within 100 feet of nine NRHP listings**.** With the use of appropriate trail surfaces , aligning trails on the perimeter of sites and use of mitigation measures, impacts on NRHP sites will be long-term, negligible to minor, and adverse due to their associated visibility within each NRHP site.

*Archeological Resources***.** Areas described in previous alternatives with similar trail elements thirteen proposed trail elements are within 100' of previously undocumented archeological resources. Archeological survey may be needed in other areas including: Blue Hen Trail, Buttermilk Falls Trail, Neighborhood connectors, Mudcatcher Trail, Dugway Trail, and portions of the off-road bicycle trails. Impacts on archeological resources from Alternative 5 may be long-term, negligible to minor, and adverse.

Countryside Program and Other Agricultural Landscapes. Proposed trails are within 10 feet of five Countryside Initiative properties. The proposed trails are along the perimeter of these areas, but may impact the rural character of the sites from limited human use. Impacts on Countryside Initiative properties from Alternative 5 will be long-term, negligible to minor, and adverse.

Cumulative Impacts

No additional cumulative effects are expected beyond those identified as common to all action alternatives.

Conclusion

Impacts from the proposed actions in Alternative 5 on NRHP sites, Countryside Initiative properties will be long-term, negligible to minor, adverse with their associated visibility and minor changes to the rural character of the park. Archeological resources will likely have long-term, minor to moderate, adverse impacts from the proximity of two trail elements to known resources and the need for potential additional archeological survey evaluation for eight proposed trails.

4.7 Impacts on Visitor Use and Experience

4.7.1 Relationship of Trails with Visitor Use and Experience

Visitation and carrying capacity. Although visitation in the Park has remained relatively unchanged in the past five years, visitation during peak visitation periods causes some areas in the Park to be perceived as overcrowded by the park visitor. Overcrowding occurs when parking lots reach full capacity and number of encounters of users on the trail and impacts to park resources increase. Crowding in the Park can also be perceived by trail visitors based upon their experience on a trail and their individual desire to encounter other trail, campsite or river paddle users during their visit. For example, encountering other trail users on more developed trails, such as the Towpath Trail, is more acceptable than encountering trail users on less developed primitive trails such as the Buckeye or Valley Bridle trails (Manning 2011).

Trail User Experiences and Accessibility. The Park can serve a wide variety of trail users and provide a variety of experiences due to the varied terrain of the Valley, park resources, and its proximity to metropolitan areas. As studies over the years have suggested,

> "Diversity in tastes for outdoor recreation can be attributed to a wide variety of factors including types of recreation activities, socioeconomic and cultural characteristics of visitors, attitudes about management, preferences for levels of services and facilities, sensitivity to crowding and conflict, experience level, degree of specialization, place attachment and motivations for recreation participation. The diversity of experiences can be applied equally to campsites and water trail uses (Manning, 2011)."

Trail accessibility can also attribute to a visitor's trail experience. Accessibility can also include a wide variety of occurrences over the span of a human life. These can include mobility challenges for small children and the elderly, temporary physical capabilities, and permanent physical disabilities.

Trail Use Conflict. In a survey of 83 outdoor recreation managers of multi-use trails, half reported no user conflicts or few if any on their trails (Federal Highway Administration). The most common, when conflicts did exist, occurred between hikers and bikers, followed by equestrians and bikers. Inconsiderate behavior between different trail user groups were reported between hikers, equestrians and off-road bicycle users in a NPS study of backcountry recreation trails (Federal Highway Administration). In another study, indirect approaches (e.g., education, information) and partnerships can reduce conflict issues among trail user types (Arnberger et al., 2002).

Opportunities for Information and Education. Visitor experience on trails can be affected by how visitors are able to orient themselves to and through a trail system, the information they are provided on features along the trail, and participation in programs that provide in-depth learning about trail and park resource features. As with the variety of trail experiences visitors seek, the same is true on the amount of information and education available on trails, based upon their level of development of a particular trail. Typically, more formal information and education is provided on the developed trails and only basic trail orientation information is provided on less developed primitive trails.

Public Health and Safety. Due to the outdoor nature of trails, resource conditions and urban impacts, trails and trail facilities can cause public health and safety issues pertaining to a trail user's ability, adverse weather conditions and degrading park resources, such as water quality. The conditions of a trail system can have an impact on visitor experience and the use of trails in the Park.

4.7.2 Applicable Regulations and Guidelines

NPS Management Policies (2006)

1.10 Partnerships. The service will seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by section 802(a) of the National Parks Omnibus Management Act of 1998 (16 USC 1a-2(1)).

4.9 Soundscape management. The Service will restore to the natural condition wherever possible to those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts.

7.1 Interpretive and Educational Programs. Every park will develop an interpretive and educational program that is grounded in (1) park resources, (2) themes related to the park's legislative history and significance, and 3) park and Service-wide mission goals.

8.2 Visitor Use. Visitor activities will be provided that are appropriate to the purpose for which the park was established, will foster an understanding of park resources and values and can be sustained without causing unacceptable impacts to park resources and values.

8.1 Appropriate Use. Uses of the park will be allowed that are appropriate to the purpose for which the park was established, and can be sustained without causing unacceptable impacts.

8.2.5 Visitor Safety. The Service and its concessioners, contractors and cooperators will seek to provide a safe and healthful environment for visitors and employees.

9.2.2 Trails and Walks. Trails and walks will be planned and developed as integral parts of the each park's transportation system and incorporate principles of universal design.

9.3 Visitor Facilities. Visitor facility development will be limited to that which is necessary and appropriate and designed, built and maintained in accordance with accepted NPS standards for quality and the NPS commitment to visitor satisfaction.

4.7.3 Methodology

Visitor use and experience can be associated to activities that are uniquely suited to the natural and cultural resources that: 1) foster an understanding of and appreciation for park resources and values, 2) promote enjoyment through an direct association or interaction with a park resource, and 3) contribute to the health and personal fitness of park visitors (NPS ,2006a). To analyze visitor use and experience, data was compiled based upon current and proposed trail types, trail use patterns, public scoping input, research on visitor experience issues, and consultation with Park staff and Park partners. The following factors were part of the analysis and evaluation of the alternatives and their impacts to visitor use and experience.

Visitation and carrying capacity. Using trail use data collected in 2010 and 2011 and long-term visitation patterns, the alternatives were evaluated on their potential to address crowding. For the purposes of this analysis crowding is defined as when the capacity of facilities and trails are above current capacity or where increased use may change a perceived trail use experience and the level of contacts with other trail users.

Trail user experiences and accessibility. The alternatives were evaluated by the number of different types of trails offered, their proximity to trail facilities, and number of trail connections first between CVNP trail areas and secondly CVNP trails to regional trail systems outside of Park

Trail User conflict. The alternatives were evaluated on the number of types of trail users and their proximity to other trails, and trail facilities and their level of use.

Opportunities for education and interpretation. The alternatives were evaluated on the level of development and types of park features available along the proposed trail.

Public Health and Safety. The alternatives were evaluated by their level of exposure to adverse conditions, including distance from trail facilities and park resource conditions.

Intensity Thresholds

The following impact intensity levels were established for impacts on the socioeconomic environment:

Negligible. Impacts to trail experiences or opportunities would be barely detectable and/or would affect few visitors. Visitors would likely not be aware of the effects.

Minor. Impacts to trail experiences or opportunities would be detectable but slight. Few visitors would be affected or have a perception of visitor conflict.

Moderate. Impacts to trail experiences or opportunities would be readily apparent. Many visitors would be affected and express opinion about the effects.

Major. Impacts to trail experiences or opportunities would be readily apparent and have consequences. Most visitors would be affected and likely express a strong opinion about the effects.

4.7.4 Impacts of the Alternatives

4.7.4.1 Impacts Common to All Alternatives

Application of Accessibility Guidance. All Action Alternatives will adhere to the accessibility guidance set forth in the Park's Sustainable Trail Guidelines. Accessibility to all of the trails will be available at varying degrees of difficulty. This action will have long-term beneficial impacts to trail user experience and accessibility.

Cumulative Impacts. The expansion of new trail experiences along the Cuyahoga River, north and south of the park, potential new trail uses in Cleveland Metroparks, new trails in local communities, improved on-road bike conditions within the region and within the Park, and other trail connections to the Park, will provide long-term beneficial impacts to visitor use and experience.

Water trail planning beyond park boundaries is currently underway for the entire length of the Cuyahoga River. This will offer new visitor experiences on the river including day-long and multi-day trips, and opportunities for education and interpretation of the river system. The implementation of the City of Akron Combined Sewer Overflow Long-Term Control Plan will affect the river quality conditions for paddling activities and human contact in the river but may take many years before changes in water quality are observed.

Any actions to remove or modify the Brecksville Dam on the Cuyahoga River will have a beneficial effect on paddling use and facilities at Station Road, associated with water trail safety, and portage facilities that may be required. The NPS Boston Mills Area Development Plan (currently underway) may affect the viability and location of any potential facilities and trails in the Boston area.

4.7.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

Current trails and parking areas will continue to be congested during peak seasonal use. No management system will be set in place to evaluate carrying capacity for trail use. Opportunities for new trail uses and expansion of long and short distance or loop trail systems will not exist with zero new trail miles proposed. New trails or improvements of existing trails for accessibility will occur as individual projects are developed. Improved connections from communities will not occur. User conflict among bicycle users and hikers will continue on the Towpath but may be reduced due to ongoing education and outreach on trail etiquette. Trails will continue to have degraded conditions in some locations that risk injury to poor footing. Impacts to visitor use and experience are expected to be long-term, minor to moderate, and adverse.

Cumulative Impacts

There are no additional cumulative impacts from Alternative 1.

Conclusion

Continued congestion in high use trail areas, will affect visitor experience on the trails in the Park. Visitation, trail user experience and user conflict from Alternative 1 is expected to have impacts to

visitor use experiences that are long-term, minor to moderate, and adverse by visitation, limited trail user experiences, and current user conflicts on high use trails. Opportunities for education and interpretation on trails and public health and safety issues will likely not affect visitor use experiences because no additional trail facilities or trails introduced in Alternative 1.

4.7.4.3 Impacts Common to All Action Alternatives

Establishment of Carrying Capacities. The Park will establish indicators and metrics for all action alternatives to gauge trail use and their relative capacity to sustain for future generations of users. Indicators will be established from information of current trail use, projected trail use, types of trail use, and parking lot use during the average peak season. Carrying capacity indicators will assist the Park in managing use levels on particular trail segments where conditions for visitor experience are diminished or altered. Use of carrying capacity indicators will be beneficial to the trail user by providing information to match acceptable levels of trail use and the trail user's desired trail experience appropriately. This action will have long-term beneficial impacts to visitation.

New Opportunities for Information and Education. All action alternatives will utilize the trail development guidance set forth in the Sustainable Trail Guidelines. Programming opportunities are described under each alternative in this analysis section. Utilization of technology to orientate and educate trail users will have beneficial impacts to the visitor experience on the trails by providing real-time information on trail characteristics and conditions, new ways to learn about park resources and to inform the trail user of programs and other visitor experiences associated with the trail system. This action will have long-term beneficial impacts to the visitor experience.

Trail Restoration. The removal and realignment on portions of the primitive portions of the Park may affect some of the circulation patterns on these trails, especially where parallel duplicate trails become a single trail for multiple uses. This may increase visitor contact between trail user types on the Buckeye and Valley Bridle trails. However, since both of these trails experience low use, increased user conflict will be rare and have a long-term, negligible, adverse impact to visitor use experience. Impacts to visitor use and experience will be beneficial by the realignment of trails from improved trails conditions for the trail user.

Impacts of Trail Facilities

Direct and Indirect Impacts

The introduction of designated access points to the Cuyahoga River for kayaking and canoeing will provide a new trail use experience to the Park visitor not currently recognized by Park operations or Park use activities. Accessibility at paddle launch sites will be made available and be assigned a level of difficulty during the planning and design phase of each site. User conflict may occur in high visitor use areas at Boston Store, Hunt Farm, and Lock 29. New programming and interpretation opportunities exist for this new type of trail use, relative to river conditions and ecology. Orientation for access and operations would be required and will need to be coordinated with other trail information. Impacts to visitor use and experience as it pertains to public health and safety of the trail user will be long-term, minor to moderate and adverse due to water trail user exposure to the current water quality conditions following rain events, river conditions park-wide, and at potential hazard areas particularly at locations of Lock 29and Station Road and the Route 82 dam. Added use for new trail activities of existing parking facilities that currently reach use capacity for some water trail access locations are expected to have

long-term, minor, adverse impacts to visitation from increased overcapacity of parking facilities during peak use. Trail user experience, accessibility, and education and interpretation opportunities will have long-term, beneficial impacts on visitor use and experience from the opportunity to utilize the river with improved facilities for all users, and a new venue for park resource learning and interpretation. Long-term, minor, adverse impacts from increased trail user conflicts are expected at high use trail facilities where use is currently high and congested.

The introduction of an expanded campsite program in the park will provide new opportunities for trail experiences in the Park. Some campsite users may utilize nearby trailhead facilities that reach capacity levels during peak use, including Frazee and Red Lock. Expansion of some parking facilities and campsite use being dispersed from facilities will reduce the parking demand from visitation and have beneficial impacts to visitor use and experience.

The campsites are located to provide experiences to trail users of all abilities, with some located near the Towpath in developed areas of the Park and other campsites located along the primitive Buckeye Trail with fewer amenities nearby. All campsites will meet the guidance for outdoor recreation accessibility facilities. Towpath campsites will have easier access and the Buckeye Trail campsites will have greater difficulty for accessibility, due to terrain and resource conditions.

Trail user conflict may occur in the developed campsites areas where trail use is high. Visitor use and experience may have long-term, minor, adverse impacts from crowded parking conditions in areas where campsite users may utilize high use parking areas and where parking capacity is reached during peak seasonal use occurs. This may occur particularly at Hunt Farm, Red Lock and Lock 29. New programming and interpretation opportunities will be beneficial to the visitor experience by telling the story of park resources to trail users. Health and safety impacts of campsites relate to two conditions; the proximity of campsites to the river and their use during high water levels and the proximity to restroom facilities in the primitive campsites.

Impacts to visitor experience from expanded campsites will have long-term, minor, adverse impacts from visitation related to new use adjacent to the highly use Towpath trail, increased use on the low visitor use Buckeye Trail, and sharing of parking facilities where capacity is limited. Long-term, beneficial impacts on visitor experience are expected from the campsites providing new trail experiences to a wide variety of skill levels through the design of developed and primitive campsites throughout the Park.. Long-term, negligible, adverse impacts on visitor experience are likely due to user conflict in high use areas along the Towpath. Long-term beneficial impacts for visitor experience will likely occur from education and interpretation opportunities through expanded trail facilities. Long-term, moderate, adverse impacts on visitor use and experience from public health and safety are likely with proximity to water resources, current water quality conditions, and limitations to proximity to established restroom facilities and the feasibility to provide new facilities.

Improving, relocating, and expanding parking areas will provide beneficial impacts to the visitor experience to reduce congestion in areas including Hunt Farm and Lock 29. Any increased competition for parking at Pine Lane is not expected to cause impacts on visitors. The proposed relocation of the Blue Hen parking area will provide beneficial impacts to the visitor experience for all user types in this location.

New and expanded parking areas will have long-term beneficial impacts on visitor experience in areas where high seasonal use currently occurs. Parking areas will provided convenient, dispersed, access

points to the trails providing long-term beneficial impacts to trail user experiences. Trail user conflicts would have long-term, minor to moderate, adverse impacts where multiple user groups and high use occur at parking areas. Opportunities for education and interpretation will not be affected. Improved parking areas will improve safety of vehicular traffic and circulation within facilities, but may increase where equestrian trailers exist in high use areas, resulting in long-term, negligible to moderate, adverse impacts.

Trail amenities will have beneficial impacts to the trail experience for visitors that will further enhance the enjoyment and safety on the trails within the Park, especially during poor weather conditions. An adverse impact will be the limited expansion of water for trail users, due to infrastructure restrictions.

Overall, trail facilities and amenities will provide long-term beneficial impacts to visitor use experience by improving facilities for visitation, new and expanded trail user experiences and new opportunities for education and interpretation. Long-term, minor to moderate, adverse impacts on visitor use and experience will likely occur by potential trail user conflict in high use areas by new uses and public safety and health issues associated with river conditions for human contact and human waste management at campsites.

4.7.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Alternative 2A provides limited new trail experiences to the Park that include four new, short distance interpretive hiking trails, one new medium distance cross-country ski trail, improvements and expansion of existing bridle trails, and five new multi-use trails. Alternative 2A also includes improvements and additions to existing trails, minor connections between the Park's trail network and limited multi-use connections to adjacent communities. The range of types of trail experiences will not significantly change from Alternative 1, with the exception of expansion of multi-use trail opportunities. Multi-use connections in five locations will provide alternative transportation options in the north and southern regions of the park. Linkages by the multi-use trails to major visitor activity centers in the Park will occur between Boston and Brandywine areas, Towpath to Plateau Area for hikers only, and Terra Vista to Canal Visitor Center for hikers only. Impacts to visitor use and experience are expected to be beneficial from the limited expansion of new trails and multi-use connections Alternative 2A provides. Remediation of trail user conflicts by dispersing trail users will be limited to the Terra Vista trail connector and multi-use trails providing beneficial impacts to visitor use and experience. Equestrian trailer parking will have minor impacts on visitor experience by increase in crowding to parking areas where shared parking is proposed at East Vaughn. The new Old Orchard parking area will provide a single use parking facility for equestrian users, which will minimize user conflict and is located in a low use area. Limited opportunities for education and interpretation would be available at the Coliseum Boardwalk Trail and Terra Vista trail where park resource story opportunities exists providing beneficial impacts to visitor use and experience. Terrain conditions on the Stanford Trails and Old Akron-Peninsula Connector Trail will be challenging, limiting their use for all skill levels and may pose safety issues that may have long-term, minor, adverse impacts on the public safety and health of the trail user and their overall visitor experience.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum and Terra Vista sites may affect the use of trails in this Alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible, and adverse.

Conclusion

Impacts on visitor use and experience will be long-term and beneficial through the expansion of parking facilities in high use areas to accommodate carrying capacity of park visitation. Long-term beneficial impacts will also likely occur from the limited increases in new trail areas for a variety of trail users, opportunities for education and interpretation on two new trails and opportunities to reduce trail user conflict on high use trails through dispersement of trail users on new hiking and multi-use trails. Public health and safety issues will be have long-term, minor, adverse impacts from the terrain of two multi-use trails. Overall the impacts of Alternative 2A on visitor use and experience will be long-term negligible, and adverse.

4.7.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts to visitor use and experience are similar as described for Alternative 2A except for the addition of a 10-mile segment on the existing Buckeye Trail between Boston Mills Road and Station Road for off-road bicycle use. Trail user conflicts between bikers and hikers may occur but be minor due to the overall low hiker use of the trail. They may be higher near Blue Hen and Station Road where trail use is moderate to high during peak summer use. User conflict will be further reduced with the designation of shared trail use on the existing Valley trail for hikers as an alternative thru-trail route. Because the trail would utilize the existing trail, it would provide a point-to-point trail with no opportunities for loops, hence trail traffic on a single-track would cause conflicts among trail users traveling different directions. Visitor use and experience will have long-term, minor to moderate, and adverse impacts from increased trail user conflicts that may occur with the addition of bicycle use on the Buckeye Trail. The use of existing parking areas at Station Road and Blue Hen may increase congestion and capacity at these areas. Expansion at Blue Hen will assist in diminishing this impact. The introduction of bicycle use in Blue Hen and Brecksville Metroparks regions will have long-term, minor, adverse impacts to visitor use experience from increased visitation at some park facilities. Off-road, single track bicycle use through a forested area with varying terrain will provide a new visitor experience within the park. The trail however will be limited, due to its terrain to serve a range of off-road bike experience levels. Additionally, the Buckeye Trail is considered a primary primitive trail experience for trail users in the park. Introducing off-road bicycle use on this trail will diminish this coveted trail experience unique in the Park. Since there will be long-term, beneficial impacts to visitor use experience from expanding new trail use experiences in the Park and long-term, moderate, and adverse impacts to a highly regarded primitive trail experience, overall impacts to visitor use and experience from trail experiences will be long-term, minor, and adverse. Opportunities for education and interpretation will have beneficial impacts to visitor use and experience by providing a new approach to exploring this area of the Park. The mountain bike trail is limited in access with its sole connection from the Towpath Trail at Station Road. The use of sustainable trail guidelines will have beneficial impacts on visitor use and experience by the improvement of trail conditions for this trail segment.**Cumulative Impacts**

Potential prescribed burning for vegetation management at the Coliseum and Terra Vista sites may affect the use of trails in this Alternative due to temporary closures during this vegetation management activity.

Expansion of off-road, single track bicycle trails in the Cleveland Metroparks will provide expanded opportunities for the off-road bicycle trail user group and disperse use throughout the region. This will be a long-term beneficial impact from expanded opportunities for CVNP trail users, but since it may increase visitor conflict among other trail users in isolated areas, the impacts are somewhat mitigated.

Overall cumulative impacts to visitor use and experience would be long-term, negligible to minor and adverse.

Conclusion

In addition to the impacts described in Alternative 2A, Alternative 2B will likely have long-term, beneficial impacts on visitor use and experience from new off-road bike trail uses and the new opportunities for education and interpretation. Long term, minor, adverse impacts to visitor use experience will occur from new uses on an existing primary primitive trail, increased visitation at existing facilities and potential for increase trail user conflicts among trail users on the proposed off-road bike trail segment. Overall impacts to visitor use and experience from proposed actions in Alternative 2B will likely be long-term, minor and adverse.

4.7.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Alternative 3A expands the visitor experiences for trail users in the Park with the addition of new trails including four new hiking trails, ten new interpretive trails, three new or expanded cross-country ski trails, expansion and one new bridle trail, and six new multi-use trails connecting to the Bike and Hike trail. Short-distance trails for pedestrian use from the Towpath Trail will assist in dispersing use in congested areas of the Towpath. Increase in visitation is likely with the introduction of new trails, but with expanded facilities and dispersal of uses, impacts will be long-term, minor and adverse.

Alternative 3A offers a wide variety of trail experiences including shorter loops near current and proposed activity areas. These areas include Rockside Station, Canal Visitor Center, Brandywine-Stanford-Boston Mills-Jaite, Blue Hen, Lock 29, and Hunt Farm-Everett. Alternative 3A introduces longer distance trails and connections between existing trail systems that include West Rim and the Howe to Everett connector. The variety of trails, trail uses and locations offers a range of difficulties and landscapes for the trail user to experience based upon their skill level, amount of time available and desire for a trail experience near facilities and activities or primitive and solitude. Multi-use connectors and bike lanes will provide beneficial impacts to neighboring communities for new connections for alternative transportation to the Park and for utilizing the Park as a corridor for thru travel to other areas of the region. Multi-use connectors will also assist in dispersing use along the Towpath to expand off-road bicycle opportunities. With the expansion and variety of trails introduced in Alternative 3A, overall impacts on visitor use and experience from trail user experiences will be long-term and beneficial. Trails in new areas of the Park but accessible from primary visitor facilities or proposed facilities will offer opportunities for education and interpretation resulting in long-term and beneficial

impacts. Trail user conflict will be potentially reduced by utilizing low use trails for shared use resulting in beneficial impacts to visitor use and experience. New trails are largely proposed in close proximity to existing or proposed visitor facilities reducing access for safety purposes. The utilization of the Sustainable Trail Guidelines will assist in providing trail surfaces and trail conditions that limit risk of injury. Through the proximity of trails to visitor facilities and improvements of trail conditions, impacts to visitor use and experience with regards to public health and safety will be long-term and beneficial.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum site may affect the use of trails in this Alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible and adverse.

Conclusion

Long-term beneficial impacts on visitor use and experience will likely occur from Alternative 3A from expansion of new trail experiences for a variety of trail users and abilities, expansion of multi-use connections, new opportunities for education and interpretation within new trails, and potential reduced trail user conflict with the expanded trail system aimed to disperse use. Increase in visitation is likely with the introduction of new trails, with likely long-term, minor and adverse impacts to visitor use and experience. Overall, impacts to visitor use and experience from Alternative 3A will be long-term, negligible and adverse.

4.7.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Impacts to visitor use and experience are similar as described in Alternative 3A except for the addition of two new off-road, single track bicycle trails within the central portion of the Park. The bike trails will be new trails installed in the park with portions shared by hikers and cross-country skiers.

The new off-road bicycle trails identified in Alternative 3B provide remote and separate locations to enter and exit the designated trails from other trail uses with the exception of some isolated regions of the park. There will be long-term, minor to moderate and adverse impacts to visitor use and experience from increased visitation in the high visitor use area at Brandywine Falls, where the East Rim trail is linked between the Bike and Hike trail. With the addition of off-road bike trails in a high use visitor area, visitation may be affected by over capacity of the parking area at Brandywine during peak use periods. New parking facilities at High Meadow, Snow Road, and expansion of the Boston Mills Bike and Hike trailhead, administered by Metroparks, Serving Summit County, will assist in reducing impacts on visitor use and experience at other entry points to the off-road bike trail.

Trail user conflicts will have long-term, minor to moderate, adverse impacts on visitor use and experience by potential user conflicts in small isolated areas of Brandywine trailhead and the Old Carriage Trail Connector extension by the introduction of new uses and increased trail traffic. Because the cross-country ski season and off-road bicycle trail use is typically during two different seasons, no adverse impacts would occur between these two user groups.

Long-term, minor, and adverse Impacts on visitor use and experience will occur from education and interpretation for increased education on new trail use etiquette and impacts will be long-term and beneficial for new programming and interpretation through a new trail use. Overall impacts on visitor use and experience from education and interpretation will likely be long-term, negligible and adverse. The trail user experience on these trails will be beneficial to the off-road bike trail user, as both loops provide opportunities for a variety of skill levels for off-road bike use that can introduce families to this trail experience and also be used by experienced riders. Because of their locations, a variety of trail and park experiences could occur from a single trailhead or use of the trail. On the east rim, proximity to Brandywine and connection through the Stanford Connector can offer a variety of experiences to connect to the off-road bike trail. On the West rim, a hiking only link to Blue Hen Falls and Buttermilk Falls will allow the off-road bike trail user to utilize bike racks at High Meadow and visit these park features or hike a portion of the Buckeye Trail. The design of the off-road, single-track bike trails in Alternative 3B will have beneficial impacts on visitor use and experience of off-road bike trail users, and be beneficial to non-off-road bike trail users by their remoteness and separation from the majority of other trail use types offered in the park. The range of trail expansion for a variety of trail uses, skill levels and their locations provide beneficial impacts on overall visitor use and experiences. Campsites proposed on the Buckeye Trail will not be accessible for off-road bike users which may be long-term, negligible to minor, and adverse to the visitor experience for off-road bikers.

Long-term, negligible to minor, adverse impacts on visitor use and experience on public health and safety will be negligible to minor with the introduction of a new trail use in semi-remote areas of the Park that will require volunteer bike patrol systems in cooperation with the Park.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum site may affect the use of trails in this Alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible and adverse.

Conclusion

Impacts on visitor use and experience will be similar to Alternative 3A with the addition of impacts from off-road, single-track bicycle trails offered in Alternative 3B. Impacts on visitor use and experience are expected to be long-term, minor and adverse from increased visitation and new trail uses in some areas where high visitation currently occurs. Impacts on visitor use and experience from education and interpretation programming opportunities will likely be long-term, negligible and adverse. Impacts will be long-term, beneficial for expanded ways to use trails in new areas of the Park without interruption of other trail use experiences. The marginal remoteness of the off-road bike trails and their challenging terrain may have long-term, negligible to minor, adverse impacts to visitor use and experience for the public health and safety of the trail use. Overall impacts on visitor use and experience will likely be long-term, negligible, and adverse.

4.7.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

Alternative 4A provides the most extensive trail system among the alternatives with the majority of new trails proposed being for hiking and trail running use. Alternative 4A provides twelve new interpretive trails, eight new hiking trails, four multi-use connector trails, five connections of existing hiking trails for longer distance hiking experiences, two new and expanded cross-country trails and improvements and expansion of equestrian trails in areas where they currently exist. Visitation and carrying capacity will increase with new trail opportunities and facilities but may be dispersed with the introduction of new trailheads, such as at the High Meadow Trail and Mudcatcher Trail, and the improvements to parking facilities.

Impacts on visitor uses and experience will be long-term, negligible and adverse from the effects of visitation by the expansion of trail loop and improvements of the trail facilities to accommodate new trail users.

Long-term, beneficial impacts on visitor use and experience will occur from reduced or no effects on trail user conflict from the expansion of designated off-road bicycling opportunities, expansion of loops for a variety of trail users, and dispersal of uses in new locations.

Trail experiences will be geographically limited with the majority of new trails in the central and southern portions of the Park. The expansion of longer distance loops, short distance loops, accessible routes to visitor center facilities, and connections between existing trail systems through a variety of park landscapes will provide the widest variety of trail experiences for the widest variety of skill levels of trail users and park visitors. Connections to neighborhoods, multi-use connectors to communities and other regional trail networks and bike lanes in partnerships with local and regional jurisdictions will be a beneficial impact in providing new trail experiences entering and exiting the Park. Trails in Alternative 4A will provide the greatest new trail access to park resource features including Mudcatcher waterfalls, Buttermilk Falls, the Columbia Run viewshed and Maplewood Overlook. Overall, impacts on visitor use and experience will likely be long-term beneficial impacts from the variety of trail user experiences offered and the opportunities for expanded education and interpretation on new trails and their access to Park features.

Long-term, minor and adverse impacts on visitor use experience will occur regarding the public health and safety of the trail user with extensive new trails proposed in more remote locations of the Park at longer distances between facilities.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum site may affect the use of trails in this alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible and adverse.

Conclusion

Impacts on visitor use and experience from Alternative 4A will be long-term, negligible and adverse by the design and distribution of the proposed trails to accommodate potential new visitation patterns. Long-term, beneficial impacts are likely from the variety and expansion of trail user experiences, the dispersement of trail users to limit trail user conflict and the opportunities to education and interpretation on trails accessible to park features. Long-term minor and adverse impacts on visitor use and experience may result in effects on public health and safety from the expansion of trails in remote areas with challenging terrain. Overall, impacts on visitor use and experience from Alternative 4A are expected to be long-term, negligible and adverse.

4.7.4.9 Impacts of Alternative 4B

Impacts on visitor use and experience are similar as described for Alternative 4A, except for the addition of a new 15-20 mile off-road, single-track bicycle trail on the east rim of the Park.

Visitation may increase from the introduction of a new use, but will be located in existing low use areas resulting in long-term negligible impacts to visitor use and experience.

Alternative 4B also offers opportunities for long and short distance mountain bike trail experiences at varying skill levels. This incorporates the concept of a longer distance trail through the Park connecting to shorter loop systems in the northern, central and southern regions of the Park. Providing this variety of new trail experiences for a new use with limited interaction with other trail uses in the park will have long-term beneficial impacts on visitor use and experience.

Long-term, minor, adverse impacts on visitor use and experience will occur from trail user conflict but will be limited due to the proximity of the off-road bike trail with existing trails, and limited trail intersections with the Buckeye and Valley Bridle trails. The trail intersections on these trails, near Pine Lane, and Cross-Country trail, near Virginia Kendall, currently have low trail use. New and existing parking areas for off-road bike trails will be beneficial by reducing congestion in existing high use areas and utilizing existing parking areas for expansion such as Little Meadow, and the Hike and Bike trailheads at SR 303 and Boston Mills where use is low and moderate.

Long-term, negligible and adverse impacts on visitor use and experience will occur from new opportunities for programming but the need to educate all trail users on the presence of new trail user groups.

The off-road bike trail will have long-term, negligible, adverse impacts on visitor use and experience regarding public safety due to the trail's proximity to public roads along Route 303 and Truxell road.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum site may affect the use of trails in this Alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible and adverse.

Conclusion

Alternative 4B will have impacts on visitor use and experience similar to what is described in Alternative 4A with the additional impacts of off-road, single-tract bike trails. Long-term beneficial impacts are expected by the introduction of new trail user experiences for a variety of skill levels of off-road bike trails. Long-term, negligible adverse impacts will occur from increased visitation patterns from new trail uses and experiences, increased education and interpretive programming for off-road bike trail use and expanded bike use in proximity to high volume road areas. Long-term, minor adverse impacts are expected from trail user conflicts on limited low use portions of the off-road bike trail and their intersection with other use type trails. Overall, impacts on visitor use and experience from Alternative 4B are expected to be long-term, negligible and adverse.

4.7.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

The impacts of Alternative 5 on visitor use and experience are similar for associated trail elements as described under all of the alternatives.

Alternative 5 provides the widest variety of trail experiences for visitors. Alternative 5 expands short hike trails accessible from the Towpath Trail and primary visitor contact centers and links existing loop trails to provide longer primitive trail experiences. In addition, a new trail unit would be established for the High Meadow, Blue Hen, Columbia and Buttermilk Falls trail system. New multi-use connectors to the Bike and Hike trail will provide regional connection opportunities. Limited expansion of equestrian trails will occur, but improvements to their existing trails and maintenance of current regional connections will improve and sustain trail user experiences. Alternative 5 will provide a multi-loop off-road, single track bicycle trail system that will introduce a new use to the Park. The variety of trail user experiences and their geographic distribution provided in Alternative 5 will have long-term, beneficial impacts to visitor use and experience.

Visitation will likely increase with the introduction of new trails and new uses, but with expanded facilities and dispersal of uses, impacts on visitor use and experience will be long-term, minor and adverse.

Trail user conflict will be limited from the dispersal of trail use throughout the park and providing use of the off-road bicycle trail separate from existing high use areas within the park resulting in long-term, minor and adverse impacts on visitor use and experience.

Since new uses and expansion will provide opportunities for education and interpretation but also require outreach on new uses within the Park, impacts on visitor use and experience will likely be long-term, negligible and adverse.

Public safety and health conditions will be similar to other alternatives and their associated trails and uses, related to remoteness and conditions on some trails and their proximity to trail facilities. Long-term, minor and adverse impacts are expected on visitor use and experience from these public safety and health issues.

Cumulative Impacts

Potential prescribed burning for vegetation management at the Coliseum site may affect the use of trails in this alternative due to temporary closures during this vegetation management activity. Overall cumulative impacts on visitor use experience will be long-term, negligible and adverse.

Conclusion

Alternative 5 will have long-term, beneficial impacts on visitor use and experience from expanded trail user experiences throughout the park. The expanded trail system will have long-term, minor and adverse impacts on visitor use and experience from increased and new visitation use patterns, limited trail user conflicts in isolated areas and increased public safety precautions on primitive trails in remote areas. Long-term, negligible, adverse impacts will occur on visitor use and experience from expanded education and interpretation opportunities. Overall impacts on visitor use and experience from Alternative 5 are expected to be long-term, negligible and adverse.

4.8 Impacts on Socioeconomic Conditions

4.8.1 Relationship of Trails with Socioeconomic Conditions

Impacts on local governments, residents and adjacent land owners. Numerous national and regional studies have demonstrated that trails generally increase property values of adjacent residential areas (NPS, 1995; Karaeniz, 2003). No specific studies have been conducted for the residential areas surrounding the Park to date. Trails and trail facilities can also affect governments and residents due to traffic changes and pressures on emergency and safety services from visitation to the Park.

Trails adjacent to private property may experience increased noise from trail users, especially where high use may occur. Siting of trails on private property may require federal land acquisition resulting in reduction in property tax revenue to local municipalities. Siting trails on other public lands will require cooperative agreements for management and maintenance.

Trails and bike lanes can provide benefits to public roads by reducing congestion and carbon emissions and expanding infrastructure with alternative transportation options. Trails and bike lanes can affect the safety of roads by directing non-motorized users to roads, by trails crossing roadways where both high trail use and high road traffic may occur, and when limited sightlines due to road grades or trail location may occur.

Impacts on business. Numerous studies have been conducted demonstrating trails provide business opportunities for trail-based businesses. Trail-related business opportunities include services for food, lodging, clothing and equipment, which result in generating revenue and an increase in employees for local businesses (Rails Trails Conservancy, 2007a). Trail-related business opportunities have been shown across the country to be successful investments for local communities. On the Missouri River State Trail, 28% of businesses along the trail had increased the size of their investment since the trail had opened (American Hiking Society). Increased park visitation can have both adverse and beneficial socioeconomic impacts by creating more opportunities for visitor expenditures for local businesses and services, but

also by increasing congestion and infrastructure damage due to increased traffic. New trails and trail facilities will require contract services for project management, design and construction that will add temporary employment to the region for the next 15 years. In addition, a recent study demonstrated that bicycle and pedestrian improvement projects associated with road improvements such as bike lanes will create 14 jobs per $1 million in project spending compared to 7 jobs per $1 million for typical road construction projects (Garrett-Peltier, 2010).

4.8.2 Applicable Regulations and Guidelines

Director's Order #47, Soundscape Preservation and Noise Management. NPS will, to the fullest extent practicable protect, maintain, or restore the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources.

Director's Order #48A, Concession Management. Per NPS Policy 10.1, commercial visitor services will be authorized through concession contracts or commercial use authorizations unless otherwise provided by law.

NPS Management Policies (2006)

1.10 Partnerships. The service will seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by section 802(a) of the National Parks Omnibus Management Act of 1998 (16 USC 1a-2(1)).

4.9 Soundscape management. The Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds and will protect natural soundscapes from unacceptable impacts.

8.12 Leases. In accordance with 36 CFR Part 18, the NPS may enter into a lease for the use of any park property if determination of meeting criteria set forth by this policy are made by the appropriate regional director.

8.2 Visitor Use. The NPS will provide appropriate, high quality opportunities for visitors to enjoy the parks and will maintain within the parks, an atmosphere that is open, inviting and accessible to every segment of American society.

8.27 Tourism. The Service will support and promote appropriate visitor use through cooperation and coordination with the tourism industry.

9.2 Transportation Systems and Alternative Transportation. The NPS, will, where appropriate, emphasize and encourage alternative transportation system which may include non-motorized modes of access to and moving within parks.

9.3 Visitor Facilities. The Park Service will encourage the development of private sector visitor services in gateway communities to contribute to local economic development, encourage competition, increase choices for visitors, and minimize the need for in-park facilities.

10 Commercial Visitor Services. Commercial visitor services will be authorized through concession contracts or commercial use authorizations, unless otherwise provided by law.

4.8.3 Methodology

This section analyzes the impacts of the alternatives on the socioeconomic environment within the Park boundary and surrounding areas adjacent to the Park. The analysis considers information from socioeconomic research on trails, input received during public scoping, and existing data available from the Park and local and regional entities.

The following areas of impacts are evaluated:

Impacts on local governments, residents and adjacent land owners. The proximity of trail elements to various types of land ownership is evaluated. Elements within 300 feet of private land were identified based upon perceived noise levels and 1000 feet (approximately ¼ mile) related socioeconomic studies on beneficial and adverse impacts of trails to private property (Cavanaugh, Tocci, 1998, Crompton, 2001). Increased trail miles, location of trails and trail uses by municipality were documented to evaluate impacts of alternatives on municipalities. The analysis evaluated impacts on public roads from increased interactions of trail users to the local roadways system, including number of trail-road crossings and level of use on trails and generally observed on roads.

Impacts on business. The impacts of the alternatives on local and regional commercial business opportunities may occur with increased use, new trail uses, location of use and connections. Alternatives were also evaluated on the beneficial and adverse impacts of trail and trail facility construction projects for local and regional businesses. The analysis also evaluates how potential increased visitation under the alternatives will impact the socioeconomic environment. A general analysis of increased use will occur as increased trail miles are offered, new location of trails and types of trail uses are introduced.

Intensity Thresholds

The following impact intensity levels were established for impacts on the socioeconomic environment:

Negligible. Effects on local and regional socioeconomic environment (including commercial activities) would not be detectable or would be barely detectable with no discernable impact on the character of the social and economic environment.

Minor. Effects on local and regional socioeconomic environment including commercial activities would be small but detectable and geographically localized (neighborhood level).

Moderate. Effects on local and regional socioeconomic environment including commercial activities would be readily apparent or observable across a wide geographic area (parkwide, municipalities), and would affect many people and could have noticeable effects on the social and economic environment.

Major. Effects on local and regional socioeconomic environment including commercial activities would be easily detectable or observable, affect a large segment of the population, extend across much of a

community or region (Cuyahoga and Summit County- wide) and likely have a substantial effect on the social and economic environment.

4.8.4 Impacts of the Alternatives

4.8.4.1 Impacts Common to All Alternatives

Cumulative effects. New planned connections for greenways and trails surrounding the Park may increase visitation into the Park. These corridors may spur the growth of other business opportunities, infrastructure improvements and municipal services near the Park boundary. New business opportunities to service increased number of trail users from other greenways and trails would have long-term beneficial impacts. Additional services on other greenways and trails may be required at the local level and will have long-term, minor adverse impacts on local governments.

4.8.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. Construction, removal or restoration of new trails and facility construction will occur under Alternative 1 on a project by project basis under individual compliance procedures. Formal designated connections to communities will be limited and unmanaged social trails will continue to exist near adjacent neighborhoods. Use of unimproved neighborhood roads to access the trails will continue. Unauthorized trail use will continue with access from community roads and adjacent neighborhoods. Land ownership will not change in the Park from trails and trail facilities. On-road biking will occur without improved infrastructure to accommodate use. Overall, Alternative 1 may have long-term, minor to moderate, adverse impacts on local municipalities and adjacent landowners.

Impacts on business. Visitation will continue to grow, but will be limited to existing uses. Construction projects for trail projects will continue on a project by project basis. There will be negligible effects on business or construction opportunities.

Cumulative Impacts. No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives

Conclusion. The absence of a comprehensive strategy for trail construction, restoration, removal, social trail management and connections to communities, affecting neighborhood and parkwide use of the trail will result in long-term, minor to moderate adverse impacts on local governments, residents and adjacent landowners. No effects on public roads, business opportunities or construction activities will occur. The overall effects of Alternative 1 on the socioeconomic environment are expected to be long-term, negligible and adverse.

4.8.4.3 Impacts Common to All Action Alternatives

Trail Facilities

*Impacts on costs to visitors***.** Costs for permits for new campsites will utilize the current fee system for campsite use. A new permit system for water trail use in the park will be implemented by the NPS. A standard operating permit policy and fee system will be established prior to park operations of river access and its facilities. Long-term, negligible and adverse impacts from marginal costs to visitors for water trail use would be expected.

Impacts on local governments, residents and adjacent land owners. None of the trail facilities will require private or other public lands. One proposed paddle launch facility, near Hunt Farm, is adjacent to private property. Municipal services may increase with expanded and designated use of the river related to safety in cooperation with the NPS. This may be reduced with the incorporation of a water-based Trail Blazer patrol program. The proposed campsite at Towpath-Old Carriage is within 1,000 feet of residences near the Greenwood Village neighborhood. Since the campsites are seasonal and will contain a permitted number of users, the impacts to land ownership will be long-term, negligible and adverse. Impacts from water trails will likely be long-term, negligible to minor and adverse from the potential increase of municipal services assistance associated with the new use. New and expanded parking areas at Coliseum, Hunt Farm, and Lock 29 are within 1,000 feet of commercial and residential areas. Increased visitation will likely occur from new and expanded uses of trail facilities. Impacts on local governments and residents will likely be long-term, minor and adverse from noise and nuisances associated with these facilities.

New and expanded parking facilities and trailheads in the Park may increase traffic entering and exiting existing roadways in particular areas. Two water trail launch sites, the Red Lock and Hunt Farm sites will be within close proximity of public roads where high seasonal trail use occurs at the road crossings. Localized increases in traffic from new parking facilities entering from public roads will occur. New trail facilities will have long-term, negligible adverse effects on local residents and governments from changes in traffic patterns.

Impacts on business. Should river access be implemented under any action alternative, specific business opportunities within the Park related to use of the water trail and paddle launch sites (such as new concession contracts), would require an assessment of economic feasibility, need and appropriate use in relation to the Park's mission before any new services were developed and offered in the Park. Similarly, a canoe livery operation within the Park would be considered for further analysis and consideration through a separate concessioner feasibility plan. Expansion of campsites will also offer commercial business opportunities near the park for camping supplies and other tourism activities. Long-term beneficial impacts to commercial business opportunities would be expected from water trails and campsites and no effect from parking facilities. Short-term beneficial impacts from construction activities will likely occur from the expansion and new facilities.

Overall, trail facilities will have long-term negligible and adverse impacts on costs to visitors for marginal costs for water trail use permits, long-term minor and adverse from noise associated with some facilities and their proximity to non-NPS lands, long-term negligible and adverse from increase uses and additional entry points from public roads for expanded trail facility uses from public roads, and short-term and long-term beneficial impacts on business for new business and construction opportunities associated with expanded trail facilities and uses.

4.8.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. Proposed multi-use connectors and the South Carriage trail will be adjacent to private property or non-NPS public land. The South Carriage trail, Old Carriage Connector extension trail and Perkins trail reroute will occur within 300' of existing residential areas. Noise may occur on new trails adjacent to other landowners, but use is expected to be low, dispersed and seasonal. The addition of three new multi-use connectors to the Bike and Hike Trail will assist in providing connections to the adjacent communities and remove users from existing neighborhood roads entering the Park, such as Holzhauer Road. Sounds may be affected by these adjacent users, but use is expected to be low as a result of introducing dispersed use and access to the trail from a variety of entry points. Property ownership of existing park lease properties may be affected for the Stanford Connector Trail and Perkins Trail reroute south of Ira Road.

Portions of Sagamore Road and Stanford Road may be vacated and converted to multipurpose trails. This will require agreement with local municipalities and transfer to NPS and Metroparks for conversion to occur. Municipal services may be reduced with vacated portions of Sagamore, Stanford and Old Akron-Peninsula Roads for multi-use trail use and partnership agreements with NPS and Metropark partners. New multipurpose trails may reduce bicycle traffic on existing roads. New trails that will cross existing roadways, will occur on two new trails, Terra Vista connector Trail on Canal Road and the Towpath to Valley Picnic area connector Trail, on Riverview Road. Signage and marking may be required. New parking areas for Terra Vista, may impact traffic entering and exiting existing roadways and are located within 1,000 feet of a residential area.

Overall, long-term, minor and adverse impacts are expected on local residents, adjacent land owners and local governments.

Impacts on business. The small increase in trail miles, limited new uses, and limited trail connections will offer limited new commercial opportunities and would generally maintain the current conditions. Construction projects for trail projects will be required and be moderately substantial with the multipurpose connector trails. These projects will require contractor services for planning, design and construction. The remaining proposed trails will utilize existing social trails with minor realignments and improvements requiring minimal or no contract services. Impacts will be short-term and beneficial from new construction opportunities and long-term beneficial for local businesses.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Utilization of public roads for multi-use trails in localized portions of the Park will have long-term, minor adverse impacts on local governments, residents and adjacent landowners. Long-term, beneficial impacts are expected on business from commercial business opportunities, increased visitation, and construction opportunities, through the minor expansion of multi-use trails and new trail facilities.

4.8.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. Impacts would be similar to Alternative 2A with the addition of the off-road bicycle use on the west-central rim of the Park. The trail will utilize the existing trail or be realigned in the same area and will not impact new adjacent property owners nor create sounds due to its distance from adjacent property owners. Over a third of the trail would utilize land owned by Cleveland Metroparks and a small portion owned by Metro Parks, Serving Summit County. Agreement to utilize their land for this new use would be required. Municipal services related to emergency response will be negligible to minor with this additional use with the establishment of an IMBA certified Bike Patrol Program that assists with first aid and initial emergency response.

The addition of this new use at the Blue Hen improved parking area may impact traffic patterns on Boston Mills Road. The introduction of off-road bicycle use in this area will increase trail users crossing at Snowville and Columbia Roads. Long-term, negligible, adverse impacts on local traffic and road safety from the increase of trail user crossings may occur at these locations.

Impacts to local governments, residents and adjacent landowners will be long-term, minor to moderate adverse, due to the multi-use trails expansion and the use of non-NPS land for a portion of the off-road bicycle use on an existing single-track trail.

Impacts on business. The addition of off-road bicycle use on existing trails may increase tourism and business opportunities as a new use to the Park. Construction and contract services will be required but minimal due to the use of an existing trails system and the intended design of the trail as a less developed trail class. Impacts to new business opportunities and construction activities will be long-term and beneficial through introduction of new and expanded recreation activities.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Multi-use trail expansion on municipal roadways, small number of road crossings, and use of non-NPS lands for off-road bike trail use will have long-term, minor to moderate adverse impacts on local governments, residents and adjacent land owners. Introduction of new and expanded recreation activities in the Park will have long-term and beneficial impacts on business from new business opportunities and construction activities.

4.8.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. New trails or trail facilities will be expanded including some trails within 300 feet of the Park boundary near low-density residential properties. These include Rockside-Hemlock Trail, West Rim trail, Five Falls trail, Highland Connector Trail, Howe-Everett Connector Trail, Tree Farm trail Expansion trail, High Meadow Trail and Hunt Farm Loop Trail. Noise may occur on new trails adjacent to other landowners, but use is expected to be low, dispersed and seasonal. The addition of three new multi-use connectors to the Hike and Bike Trail will assist in providing connections to the adjacent communities and remove users from existing neighborhood roads entering the Park. Increased noise may occur on new trails adjacent to other land owners, but use is expected to be low, dispersed and seasonal.

The Rockside-Hemlock Trail and West Rim trails are proposed on land owned by the City of Independence and Cleveland Metroparks. These entities would need to agree to the utilization of their lands for these purposes. NPS lease properties may be affected by the Stanford Connector trail, Howe-Everett Connector trail, Tree Farm Expansion Trail, Upper Dugway Trail , Perkins Trail reroute, Lower Furnace Run Trail, CVC Upper Loop Trail and Hines Hill-Stanford Loop Trail. NPS would need to determine the future of these leases if these proposed trails are implemented.

Portions of Sagamore Road and Stanford Road may be vacated and closed and converted to a multipurpose trail. Needs for municipal services may be reduced with vacated portions of Sagamore Road, Stanford Road and Old Akron-Peninsula Road. New multipurpose trails may reduce bicycle traffic on existing roads.

New trails that will cross existing roadways will occur on seven new trails, Rockside-Hemlock Trail, West Rim Trail, Lower Furnace Run Trail, Perkins Trail reroute, Equestrian Jaite Trail, Highland Connector Trail, and the Towpath to Valley Picnic area connector. Signage and marking may be required. New parking areas for the, High Meadow, Ira Paddle and new Equestrian at Vaughn/Highland may impact traffic entering and exiting existing roadways.

Proposed bike lanes would affect transportation facilities by expanding the designation of alternative transportation routes in the Park, increase bicycle traffic on improved roadways, and require the need for signage and infrastructure for these on-road use changes.

Visitation will continue to grow as projected and increase tourism for new uses or activities in the Park. Introduction of bike lanes throughout the Park may reduce vehicular traffic and parking demands during peak seasonal use.

New trails within proximity to adjacent property owners, utilization of NPS lease properties and other public lands for trails, changes to traffic patterns and road crossings and potential municipal services for river use are expected to have long-term, minor to moderate adverse impacts on local governments, local residents and adjacent land owners.

Impacts on business. Commercial business opportunities will continue and have potential to expand with the expanded trail miles and their use. Also connections with bike lanes between the Park and communities may expand existing or incubate new commercial businesses to serve users of these

routes. Construction projects for trail projects may increase and be moderately substantial with the additional trail miles requiring boardwalks and bridges, multipurpose connector trails and bike lanes that will require contractor services for planning, design and construction. Beneficial impacts on businesses are expected to be long-term from expanded recreation activities and non-motorized access points from adjacent communities and short-term from the increase number of trail miles requiring substantial construction activities.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives,

Conclusion

Eight new trails within proximity to adjacent property owners, changes in NPS lease properties, two trails requiring other public lands for construction, and new bike lanes and road crossings are expected to have long-term, minor to moderate adverse impacts to local governments, residents and adjacent land owners. Short-term and long-term beneficial impacts on businesses would be expected from the expanded recreational opportunities and trail construction projects.

4.8.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Impacts on local governments residents and adjacent land owners. The impacts will be similar to Alternative 3A with the addition of off-road, single-tract bicycle trails on the east and west central portions of the Park. The East Rim Trail will be within close proximity to low-density residential areas near Highland and Boyden Roads and require a road crossing on Highland Road. The West Rim Trail will consist of one road crossing on Columbia Road (a low use road). New or expanded areas of parking at High Meadow, Snowville (a high use road) and the Boston Mills Road Bike and Hike trailhead for off-road bike trail users may increase the number of vehicles exiting and entering these roadways. Increased needs for municipal services related to emergency response will be somewhat mitigated with the establishment of an IMBA certified Bike Patrol Program that assists with first aid and initial emergency response.

With new off-road bicycle trails near residential areas and increased road crossings, including some that are in proximity to low-density residential areas, impacts are expected to be long-term, minor to moderate and adverse.

Impacts on business. Visitation may increase with a new trail user group being introduced for recreation opportunities in the Park. Long-term beneficial impacts for commercial business opportunities will result from the introduction of new recreation activities. Short-term beneficial impacts are expected for minor construction activities associated with new off-road bike trails.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives, except for the introduction of off-road, single-tract bicycle trails. The introduction of off-road bike trails by Cleveland Metroparks may increase visitation in localized areas, increasing business opportunities and construction activities with both short-term and long-term beneficial effects.

Conclusion

Alternative 3B would result in long-term minor to moderate adverse impacts on local governments, residents and adjacent landowners. Both long-term and short-term beneficial impacts on businesses from new opportunities from new recreational activities and construction activities are expected.

4.8.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. New trails or trail facilities will be expanded including some trails within 300' feet from the Park boundary. These include, West Rim Trail, Mudcatcher Trail, Upper Dugway Trail, Howe-Everett Connector Trail, Tree Farm to Furnace Run Trail, High Meadow trail, Hunt Farm Loop Trail, Maplewood Trail, Riding Run expansion, Ira-Howe Trail and Ira-Hampton Trails. Noise may occur on new trails adjacent to other landowners, but use is expected to be low, dispersed and seasonal. The addition of three new multi-use connectors to the Bike and Hike Trail will assist in providing connections to the adjacent communities and remove users from existing neighborhood roads entering the Park.

The West Rim Trail is proposed on land owned by the Cleveland Metroparks and the Northeast Ohio Regional Sewer District. Riding Run expanded loop would exist on Metroparks Serving Summit County lands. These entities would need to agree to the utilization of their lands for these purposes. Property ownership of existing park lease properties may be affected for the Stanford Connector Trail, Howe-Everett Connector Trail, Upper Dugway Trail, Perkins Trail reroute, Lower Furnace Run Trail, Hines Hill-Stanford Loop Trail, and Mudcatcher Trail. Designated connections to neighborhoods through off-road and on-road connections will be beneficial to increase connections to neighborhoods and formalize them to alleviate social trails along the boundaries of the Park.

Portions of Sagamore Road , Stanford Road and Old Akron Peninsula Road would be vacated and closed and converted to a multipurpose trail. This will require an agreement with local municipalities and transfer to NPS and Metroparks. New multipurpose trails may reduce bicycle traffic on existing roads. New trails that will cross existing roadways will occur on nine new trails; West Rim Trail, Lower Furnace Run Trail, Perkins Trail reroute, the Towpath to Valley Picnic area connector trail, Ira-Howe trail , Ira-Hampton trail , Buckeye trail reroute near Ira, Sagamore Trail and the Gateway to Armington Trail. Impacts may be greater at Stanford Road due to potential high visitor use and Pine Lane, Coliseum, and Vaughn/Highland due to higher traffic volumes. Signage and marking may be required. Alignment of the Old Akron- Peninsula Connector Trail will require coordination with the Camp Ledgewood facility and its associated overflow parking area. New parking areas for the Mudcatcher expansion may impact traffic entering and exiting existing roadways.

The impacts on local governments, residents and adjacent land owners would be long-term, minor to moderate, adverse from increase of trail miles near some neighborhoods, change in land use for multi-use connector trails, some trails on other public lands, and an increase in trail crossings on public roads.

Impacts on business. Visitation will continue to grow as projected and increase tourism for new uses or activities in the Park. Introduction of bike lanes throughout the Park may reduce vehicular traffic and parking demands during peak seasonal use. Alternative 4A creates new trail heads and multi-use connectors to disperse visitation throughout the park. Improvements to trail facilities and alternative non-motorized options for entering the park will have long-term and beneficial impacts to increased visitation. Increased visitation and connections with bike lanes between the Park and communities may expand existing or incubate new commercial businesses to serve users of these routes. Construction projects for trail projects may increase and be moderately substantial with the additional trail miles, multipurpose connector trails and bike lanes that will require contractor services for planning, design and construction. Alternative 4A will include both short-term and long-term beneficial effects on business.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives, except where trails are proposed on local jurisdictional land. This includes the Columbia Trail on property owned by Metro Parks, Serving Summit County. Impacts on Alternative 4A, should local jurisdiction not choose to allow or implement these trails, will likely be long-term, minor and adverse from reduced trail system opportunities.

Conclusion

Eleven new trails within proximity to adjacent property owners, three trails requiring other public lands or non-NPS roads for construction, and new bike lanes and road crossings are expected to have long-term, minor to moderate adverse impacts on local governments, residents and adjacent land owners. Short-term and long-term beneficial impacts on businesses would be expected due to expanded recreational opportunities and trail construction projects.

4.8.4.9 Impacts on Alternative 4B

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. Impacts would be similar as described for Alternative 4A except for the addition of off-road, single-tract bicycle trails on the east rim. Municipal services related to emergency response will be negligible to minor with this additional use with the establishment of an IMBA certified Bike Patrol Program that assists with first aid and initial emergency response. The acquisition of one private land property on Hines Hill Road would assist in an optimal alignment of the trail but not required. Alignment of the East Rim trail is near low-density residential areas near Boston Mills road and Old Akron-Peninsula Road. The trail will be accessed from the Bike and Hike trail to link to other recreation opportunities. The East Rim Trail will require crossing four public roads along the east region of the Park. Smaller loops of the bike route and use of multi-use connector trails between road crossings will minimize road crossings. Noise may occur on new trails adjacent to other landowners, but use is expected to be low, dispersed and seasonal. Overall impacts

of Alternative 4B on local governments, residents and adjacent owners will be long-term, moderate and adverse.

Impacts on businesses. Short-term and long-term beneficial impacts on business would be similar to Alternative 4A, but with additional benefits from a new user group, increased visitation and additional construction needs.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives, except for the addition of the off-road bicycle trail. Should Cleveland Metroparks expand their off-road bicycle trail opportunities in nearby reservations, visitation for this use may increase on the Bike and Hike connector trail as the primary connector between regional mountain bike trail systems. Secondly, if the Hines Hill multi-use connector occurs, increased use in this localized area of the off-road bicycle trail will also have an impact on the access point at the Boston Mills-Bike and Hike trailhead, managed by Metroparks, Serving Summit County. Overall cumulative impacts on Alternative 4B will be long-term, minor to moderate and adverse.

Conclusion

Alternative 4B would result in long-term minor to moderate adverse impacts on local governments, residents and adjacent landowners that are similar to Alternative 4A, except for the additional road crossings for the off-road bike trail and increased localized use on the Bike and Hike Trail as a connector between proposed loops on NPS lands. Both long-term and short-term beneficial impacts on businesses from new opportunities from new recreational activities and construction activities are expected.

4.8.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

Impacts on local governments, residents and adjacent land owners. New trails or trail facilities will be expanded including some trails within 300 feet from the Park boundary with low-density residential use. These include Five Falls trail, Highland Connector Trail, Howe-Everett Connector Trail, Mudcatcher Trail, Ira-Hampton Trail, Ira-Howe Trail, High Meadow Trail and Hunt Farm Loop Trails. The addition of five new multi-use connectors to the Bike and Hike Trail and opportunities for three neighborhood connectors will assist in providing connections to the adjacent communities and remove users from existing neighborhood roads entering the Park. Noise may occur on new trails adjacent to other landowners, but use is expected to be low, dispersed and seasonal.

The Columbia Trail and access points from the Bike and Hike trail for the off-road, single-tract bicycle trail are proposed on land owned by the Metro Parks, Serving Summit County. Changes to existing NPS lease properties may occur for the Stanford Connector Trail, Howe-Everett Connector Trail, portion of the off-road bike trail, Perkins Trail reroute, Lower Furnace Run Trail, CVC Upper Loop Trail and Hines Hill-Stanford Loop Trail.

Portions of Sagamore Road, Stanford Road and Old Akron-Peninsula Road would be closed and converted to a multipurpose trail. Municipal services may be reduced with vacated portions of

Sagamore and Stanford Roads for multi-use trail use. New multipurpose trails may reduce bicycle traffic on existing roads. New trails that cross existing roadways will occur on seven new trails, Lower Furnace Run Trail, Perkins Trail reroute, Equestrian Jaite Trail, Highland Connector Trail, Old Akron Peninsula Connector Trail, and the Towpath to Valley Picnic area connector. Signage and marking may be required. Proposed bike lanes would provide benefits by expanding the designation of alternative transportation routes in the Park.

Alternative 5 would have long-term, minor to moderate adverse impacts on local governments, residents and adjacent land owners.

Impacts on business. Long-term beneficial impacts on business are likely to occur from potential expansion of commercial business opportunities associated with the existing and expanded trail miles, proposed trail uses and new connector trails to communities. Short-term beneficial impacts are expected from the increase number of trail miles requiring substantial construction activities.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives, except for the local jurisdiction on the proposed Columbia Trail and use of the Bike and Hike trail. Should Metro Parks, Serving Summit County fail to allow construction of the Columbia trail on their property, long-term, minor adverse impacts may occur from limited trails in localized areas. Should Cleveland Metroparks expand their off-road bicycle trail opportunities in nearby reservations, visitation for this use may increase on the Bike and Hike connector trail as the primary connector between regional off-road bike trail systems. Secondly, if the Hines Hill multi-use connector occurs, increased use in this localized area of the off-road bike trail will also have an impact on the access point at the Boston Mills-Bike and Hike trailhead, managed by Metroparks, Serving Summit County. Overall cumulative impacts on Alternative 5 will be long-term, minor to moderate and adverse.

Conclusion

Eight new trails within proximity to adjacent property owners, changes in NPS lease properties, one trail requiring other public lands for construction, and new bike lanes and road crossings are expected to have long-term, minor to moderate adverse impacts on local governments, residents and adjacent land owners. Short-term and long-term beneficial impacts on businesses would be expected from expanded recreational opportunities and trail construction projects.

4.9 Impacts on Park Operations

4.9.1 Relationship of Trails to Park Operations

Without the proper park operations in place, trails can have degraded conditions, visitor conflict can increase, park resources can be impacted, visitor safety can be compromised and visitor programs and information may not be provided adequately.

Park operations. All Divisions of the Park are involved in operating and managing trails and trail facilities to ensure safety while protecting park resources. As with any park system, any increase of facilities, their location, use, and relationship to natural, cultural and scenic conditions may require additional staff, new operating procedures or new or enhanced partnerships. In addition, maintenance of existing facilities that have been improperly designed can impact park staff operations and distribution of park budget resources. The operation of other park facilities that are not directly trail related but may be affected by the Trail Alternatives through increased use, new uses or opportunities may require evaluation of how these facilities are operated, including visitor centers and contact facilities, trail equipment and permits.

Partner operations. The management of trails may impact existing and new partnerships by affecting partner program and operations.

Local jurisdiction operations. Coordination of park operations with local jurisdictions such as communities and Metropark systems will be required due to the varied land ownership of some new trail systems.

4.9.2 Applicable Regulations and Guidelines

NPS Management Policies (2006)

1.10 Partnerships. The service will seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by section 802(a) of the National Parks Omnibus Management Act of 1998 (16 USC 1a-2(1)).

9.1.4.1 Maintenance. The Service will conduct a program of preventive and rehabilitative maintenance and preservation to 1) provide a safe, sanitary, environmentally protective and esthetically pleasing environment for park visitors and employees 2) protect the physical integrity of facilities; and 3) preserve or maintain facilities in the optimum sustainable condition to the greatest extent possible.

1.9.1.6 Volunteers in the Parks. The NPS will continue to use its authority under the Volunteers in the Parks Act of 1969 to utilize volunteers and their important contributions to National Parks.

8.2.5 Visitor Safety and Emergency Response. The NPS will provide visitor safety within the constraints of the 1916 Organic Act.

4.9.3 Methodology

Park management and operations refers to the staff available to adequately protect and preserve vital park resources for an effective visitor experience. This impact analysis evaluated the effects of the alternatives on staffing, contract services, partnerships, volunteers, and other park facilities. It was assumed, under all alternatives, that base Park funding would be maintained at current 2011 levels and partnership funding opportunities increase to develop a funding portfolio of a variety of sources to maintain and operate the trails.

The impact analysis is largely qualitative rather than quantitative, because of its conceptual level of planning and uses projected estimates of staffing needs. Park staff knowledge was used to evaluate the impacts of the Trail Alternatives. Current staffing levels associated with the current mileage of trail being managed by NPS, was utilized to characterize the potential projected increase of staff and operational resources for changes proposed in the various Trail Alternatives. Current staffing was estimated at 1 FTE (Full time employee) for every 7.13 trail miles. As the number of trail miles and facilities change, the level of needed staffing using this FTE per mile estimate and the change from current parkwide staffing is projected.

Intensity Thresholds

The following impact intensity levels were established for impacts on park operations:

Negligible: Impacts on park operations would be barely detectable by visitors and park staff. No additional staff would be required to sustain operations.

Minor: Impacts on park operations would be noticeable to park staff, but rarely to visitors. Changes to very isolated conditions would likely affect park operations. Operations for trails and trail facilities will be conducted by existing or minor additional staffing and partner operations of less than a 5% increase of current staffing levels of the park. Coordination with local jurisdictions will increase but be minimal.

Moderate. Impacts on park operations would be apparent to both staff and visitors, but likely affect a small portion of the park. Operations for trails and trail facilities would require increase staff and partner operations of greater than 5%, but less than 10% increase of current staffing levels of the park. Coordination with local jurisdictions will be in focused areas throughout the park.

Major: Impacts on park operations would be readily apparent to both staff and visitors and would likely affect larger areas or parkwide operations. Operations for trails and trail facilities would require substantial increase in staff and partner operations and may require operational changes parkwide. Increase from current staffing levels of greater than 10% would be required. Coordination with local jurisdictions will be parkwide.

4.9.4 Impacts of the Alternatives

4.9.4.1 Impacts Common to All Alternatives

Cumulative impacts. Greenway, trail and bikeway planning by regional Metroparks, local municipalities and regional governments may increase visitation to the Park by non-motorized transportation choices. Increased visitation and potentially new entry points as a result of these plans may require additional park operations. Expansion of off-road, single-tract bike trails at Mill Stream, Brecksville and Bedford Cleveland Metroparks Reservations, may increase park patrolling and trail conditions with non-authorized use entering the CVNP from these adjacent park systems. Expanding residential and commercial development or redevelopment surrounding the Park may increase visitation and undesignated entry points into the Park, resulting in long-term, minor, adverse impacts to park operations and management.

River use will likely increase outside and inside of Park boundaries regardless of NPS decisions on water trail designation due to the expansion of water trail facilities and their use north and south of the Park by other public and non-profit organizations, the possible removal or modification of the Route 82 dam, and implementation of the Akron Long–Term CSO Control Plan. The increase of river use will increase Park operations and the need for cooperation with municipal and state agencies. The expansion of river use on the Cuyahoga River beyond Park boundaries and improvements to river resource conditions will likely have long-term minor adverse impacts to Park, partner and local jurisdiction operations from increased river use by visitors.

4.9.4.2 Impacts of Alternative 1

Direct and Indirect Impacts

Impacts on Park operations. Under Alternative 1, the NPS would maintain staff as it existed in 2011 for the operation, protection, programming and stewardship of Park trails. Beginning in 2012, the Trails Forever program will marginally increase funding for annual maintenance operations on an annual basis. Trail conditions will continue to degrade partly from staffing shortages in maintenance. Maintenance will continue to manage unsustainable trails currently in the Park. Design and construction on trail projects would continue as funding becomes available and when staff is available to develop and coordinate projects. Non-permitted uses and access on social non-designated trails will continue with no coordinated Park operations and protection of Park resources in these areas. Park Partners will continue operations related to trails as they currently exist. Some areas will require capital maintenance due to the extensive needs and conditions of specific trails but due to budgets and staffing, be delayed in their implementation. The lack of Sustainable Trail Guidelines will limit improved efficiencies for Park operations and the management of Park trails. There are no new facilities proposed that require operational needs. The need to increase current staffing levels to manage the trails and their operations successfully will likely have long-term, minor and adverse impacts on Park operations.

Impacts on partner operations. Partnership operations will continue with the need to continue to increase their role in supporting trail operations through Trails Forever and likely have long-term, negligible adverse impacts.

Impacts on local jurisdiction operations. No impacts on local jurisdiction operations are expected.

Cumulative Impacts

No additional cumulative impacts are expected in Alternative 1.

Conclusion

Park operations will experience long-term, minor, adverse impacts from the need to increase staff to fully operate the trails successfully. Partnerships will continue with the need to continue to increase their role in supporting trail operations through Trails Forever and likely experience long-term, negligible adverse impacts. No effect to local jurisdictions would likely occur.

4.9.4.3 Impacts Common to All Action Alternatives

Restoration of Trails. Removing and rerouting trails will reduce maintenance needs on highly susceptible trails of resource damage. Utilization of the Sustainable Trail Guidelines help prioritize and manage the trail system by improving efficiency, improving trail conditions and minimizing impacts to Park operations, thereby having long-term beneficial impacts to Park operations.

Impacts from new trail facilities. The introduction of designated non-motorized use of the river and launch facilities will require a number of park operations to be developed and increase for each division at the Park. A river patrol and rescue component will need to be broadened for the current operations for the Cuyahoga River. This will require at least one additional park ranger dedicated to the river during seasonal use periods.

Additionally, a river use permit system would require administrative operations to be created and managed by the Park or park partner organization. Expansion of river monitoring stations to maintain, monitor and manage reporting river quality conditions during season use periods from the current two to three stations would require one additional seasonal employee or volunteers to manage.

Maintenance of paddle launch sites and river conditions, such as debris will be minimal once installed, but may require annual inspections of the launch facilities and general maintenance of access areas. The introduction of formal river use designation in the Park will provide opportunities for new programs and educational opportunities for one of the primary natural features in the Park. This may require a shift of existing interpretation staff focusing a portion of annual programming to river use activities or requiring one interpretive employee focused on river use programs and interpretation and additional river equipment needs such as canoes and kayaks and associated safety equipment. Education and signage regarding river use will need to be developed and administered to portage sites by park staff or contract services. Volunteer and partnership opportunities for managing and patrolling the river would assist the park and reduce operations impacts. Training and coordination, similar to the existing Trailblazer program, would need to be instituted and managed by division of Visitor Protection or other applicable partner or division in the Park.

Design and construction would be required for each site by Park staff or contract services. Impacts will occur in the short-term to add and train staff and long-term to maintain funding and training for staff , once in place for water trail operations Introduction of designated river use access points will increase visitation to existing high use parking areas, including, Ira, Hunt Farm, Lock 29, Boston Store, and Red Lock.

The expansion of campsite facilities will require additional staff for operations and management. This will include a part-time ranger for patrol of campsites during seasonal use periods. Maintenance operations where permanent restrooms are provided and general maintenance of all sites will be required. Maintenance access will be limited on the remote sites along the Buckeye Trail and the west Fawn Pond site. Resource management will establish monitoring of sites for resource damage requiring additional work for existing staff or expansion of the resource management monitoring program staff.

The expansion of trailside and riverside campsites will provide new opportunities for programming and interpretation in the Park, requiring additional seasonal staff or modification of existing staff program design and potentially increased camping equipment needs, during the seasonal use period. Signage and education will be required for each campsite installed that will include directional signage and rules and regulations. Extending the existing permit system of the Visitor and Resource Protection Division and the Conservancy for CVNP to campsites would be required.

Design and construction activities would be required for each site by Park staff or contract services. All of the sites are located on NPS lands, but in close proximity to adjacent Metroparks facilities and along the Buckeye Trail, managed by the Buckeye Trail Association. Design, construction and maintenance of other trail amenities will also be required.

Expansion of nine parking areas will have impacts on Park operations. Increased operations for snow plowing due to expanded areas would be required, especially in a primary winter use area, Tree Farm. The introduction of new parking areas and trailheads will require additional or reorganized staffing for patrolling and visitor protection, maintenance, and new areas for snow plowing particularly at proposed cross-country ski areas, which include South Old Carriage Trail, Expanded Tree Farm Trail and High Meadow Trail. A range of four to eight new parking areas identified in the alternatives would require operations for design, construction, management of contract services, annual and seasonal maintenance, signage and visitor information and visitor protection patrolling. All parking areas with the exception of the proposed expansion of the Bike and Hike-Boston Mills parking area are on NPS property. Coordination with Metro Parks, Serving Summit County would be required for facility improvements at this area.

Overall, impacts on Park operation would be short-term and long-term, minor to moderate, adverse from its increase for staffing and operations required for new facilities and long-term, negligible to minor, adverse from increased design and contract service coordination, increased construction and ongoing maintenance for trail facilities, increased coordination with local jurisdictions on new facilities, particularly river use.

Overall, impacts on partner operations would be long-term, negligible to minor, adverse impacts from the need for minor additional operations from new and expanded trail facilities, particularly campsite permitting.

Overall, impacts on local jurisdiction operations would be long-term, negligible adverse impacts from increased visitation to facilities through adjacent lands and multi-jurisdictional coordination for river use.

4.9.4.4 Impacts of Alternative 2A

Direct and Indirect Impacts

Impacts on Park operations. Alternative 2A will result in a 10% net increase in new trails from the existing trail system. This would include the construction of two miles of interpretive hikes on existing disturbed areas that will require relatively minimal construction. The Coliseum Trail, Horseshoe Pond Trail and Ira River Trail may require boardwalk systems requiring substantial design and construction by park staff or contract services. Rerouting of equestrian and hiking trails will require in-house or contract design and maintenance but would reduce overall long-term maintenance for the Park. Extensive design and construction may be required for the multi-use connectors, but long-term maintenance will be less due to their development class.

Improvement and establishment of formal trailhead facilities would be required at Terra Vista and the Coliseum site. The management for the monitoring activities at the Terra Vista Natural Study Area may be affected by increased visitation but may also be beneficial by established operations for this trail unit and minimized by the use of the existing monitoring paths. Design and construction of South Carriage Trail utilizing existing ad-hoc trails or new design would be required. Minor opportunities for programming for new trails would primarily be on new interpretive trails at Terra Vista, Coliseum and Ira River trails. Bike patrol operations may increase due to the additional multi-use connectors and cooperation with Metro Parks, Serving Summit County. Since the increase in trail miles is minimal, Park operations would require less than five additional staff to operate the proposed actions in Alternative 2A.

Access to trails proposed within close proximity to existing trail facilities or near an existing public road with the exception of the South Carriage Trail system which does not have a designated trailhead associated with it. Utilization of existing facilities with the exception of improved or new uses at Terra Vista, Coliseum and Old Orchard will minimize any additional facility operations. Minor increase in visitation where multi-use trails enter the park (Frazee, Brandywine/Boston, Peninsula, and Fitzwater) may increase operational needs at these facilities.

The limited expansion of trail miles and the associated facilities would require an increase of staffing of 4% or less from current Park operation staff levels. Park operations would experience short-term and long-term, minor adverse effects from design, construction and management of proposed trails, and an increase of less than five staff to operate the limited expanded trail system.

Impacts on partner operations. An increase in opportunities for the Bike Aboard service related to proximity to multi-use trails at Stanford and Peninsula may occur. The Towpath-Valley Picnic Trail connector does propose to cross CVSR tracks and will require coordination with railroad operations for this trail connection. Partner operations will likely experience long-term, negligible to minor, adverse impacts from the proposed actions due to a minimal increase in trail miles in proximity to existing partner facilities and programs.

Impacts on local jurisdiction operations. Park operations related to maintenance and visitor protection involving Metro Parks, Serving Summit County will increase with the new multi-use connections to the Bike and Hike trail including Sagamore Trail, Stanford Trail and the Old Akron-Peninsula Connector Trail that would re-utilize existing roadways. Cooperation with municipalities on new trailheads and trails at

Terra Vista and Coliseum would be required. Impacts on local jurisdiction operations will be long-term, minor and adverse.

Cumulative Impacts

No additional cumulative impacts are expected under this alternative beyond those identified as common to all alternatives.

Conclusion

Alternative 2A will likely have impacts on Park operations staffing that are short-term, negligible to minor and adverse during initial construction projects and then long-term, minor and adverse for ongoing operations. Partner operations will experience long-term negligible to minor adverse impacts from the expansion of bike trail networks to their facilities and additional need for support of new trails. The operation of local jurisdictions will likely experience long-term minor adverse impacts from the multi-use connectors and their proximity to their facilities. Overall impacts on park operations will be long-term minor and adverse.

4.9.4.5 Impacts of Alternative 2B

Direct and Indirect Impacts

Impacts on Park operations. Impacts to Park Staff Operations from Alternative 2B would be the same as described for Alternative 2A with the addition of off-road bicycle use on the current Buckeye Trail between Boston Mills Road and Station Road. This new use will require new patrolling by park staff or through partnership with volunteer bike safety patrols for this segment. Realignments and redesign will improve trail conditions to reduce maintenance needs to the trail. NPS currently does not maintain this trail. New partnerships can be established with new user groups for maintenance and stewardship of new use. Because of its use on an existing trail and utilization of existing trailheads at Blue Hen and Station Road, visitor protection and maintenance would not require additional resources for new facilities User education would be required to provide awareness, rules and regulations regarding new use, but could be conducted by existing staff with minor impacts. Impacts to staff and facility operations with the addition of off-road bicycle use will be long-term and negligible from the minimal additional law enforcement and interpretation and use of existing facilities.

Impacts on partner operations. Partnership cooperation with the Buckeye Trail Association will continue. Redesignating the Buckeye Trail in the Park will create multiple stewardship partners for the trail, which can be beneficial to improve the stewardship of the trail for all users. Impacts on partner operations will be long-term and beneficial from the increase of new groups for stewardship and management.

Impact on local jurisdiction operations. Coordination of operations with Cleveland Metroparks and Metroparks Serving Summit County would be required due to the multiple land ownership on the Trail by these entities. Local Metropark system operations will experience long-term moderate and adverse impacts from new trails constructed on their lands.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives except those related to the introduction of off-road bicycle use. Expansion of off-road bike trails in close proximity to regional park systems and connecting potential off-road bike trails in Cleveland Metroparks will increase coordination and partnerships for patrolling and controlled management of the off-road bike trail use within a specific area of the Park, resulting in a long-term beneficial impact to Park operations.

Conclusion

Impacts on Park operations with the addition of off-road bike use will be long-term, negligible to minor and adverse due to minimal staffing increases (less than 5%), utilization of existing facilities, and minimal additional needs for the off-road bike trail designation. The addition of new stewardship groups to support the management Impacts on partner operations will be long-term negligible and adverse. Impacts on local jurisdiction operations will be long-term moderate and adverse from new trails built on their lands. Overall impacts on Park operations will be long-term, minor to moderate and adverse.

4.9.4.6 Impacts of Alternative 3A

Direct and Indirect Impacts

Impacts on Park Operations. Alternative 3A will result in a 29% net increase in new trails from the existing trail system. The design, construction and maintenance of the new trails will vary with significant resources needed for proposed boardwalk systems or substantial infrastructure for Blue Hen improvements, boardwalks for Hunt Farm Trail, Ira Trail and Coliseum Trail, new cross-country trails at High Meadow Trail and Tree Farm Trail, the multi-use Gateway Trail and Highland Trail and the new equestrian trail at Upper Dugway Trail. New operations will be required for new trail systems and trailheads at Dugway Trail, High Meadow Trail, Coliseum and Old Orchard. Access to trails will be limited on West Rim trail, South Carriage Trail for all operations. Expanded operations will require the need for additional staffing of between 5-10 employees, a 5-10% increase of current staffing levels. New trails and trail connections to visitor facilities may increase visitation and use. These locations include the Howe- Everett connector trail, Stanford-Hines Hill Loop, Upper CVC and West Rim trails, Rockside trails, Hunt Farm trail and Gateway Connector trail. Additional coordination with local jurisdictions will be required for the multi-use connectors involving three local jurisdictions and Metroparks Serving Summit County. With the proposed trail additions and small increase in facilities, increase in staff as described for staffing will be required for Park operations. Impacts on Park operations under Alternative 3A will be long-term, moderate and adverse from its expansion of trails and facilities to a level that current staffing would not be able to sustain successfully.

Impacts on Partner Operations. Impacts on partner operations include the increase of trail miles for volunteer stewardship, coordination where shared use trails are proposed or crossing CVSR at Rockside, Towpath at Valley Picnic and the West Rim and Upper CVC trail. Partnerships will continue and require an increase to support the increase in trails and trail facilities throughout the park and their proximity to primary visitor areas. Impacts on partner operations under Alternative 3A will be long-term, minor to moderate and adverse for the increase of support required.

Impacts on Local Jurisdiction Operations. Impacts on local jurisdiction operations will be long-term, minor and adverse from increased coordination with three local jurisdictions and Metroparks, Serving Summit County for the proposed multi-use connector trails.

Cumulative Impacts

Cumulative impacts expected under this alternative beyond those identified as common to all include Increased coordination and partnerships with local jurisdictions and Metroparks for defined bike lanes Overall, cumulative impacts in combination with proposed actions in Alternative 3A will be long-term, negligible and adverse.

Conclusion

Impacts on park operations under Alternative 3A will be long-term, minor to moderate and adverse from the requirement of five but less than ten additional staff, a 5-8% increase of park staff from existing operations. Impacts on partnership operations will be long-term minor to moderate and adverse from the increase of support required for the expanded trail system. Effects on local jurisdictions will be long-term, minor and adverse from the multi-use connectors and limited jurisdictions involved. Overall impacts on park operations will be long-term, minor to moderate and adverse.

4.9.4.7 Impacts of Alternative 3B

Direct and Indirect Impacts

Impacts on Park Operations. The addition of off-road, single-track bicycle trails to the system combined with other trail elements described in Alternative 3A will result in 47 additional miles of trail, a net increase of 39% from the existing trail system. These trails will require additional patrol by Park staff, the introduction of an expanded Trailblazer program or new volunteer patrol group. Maintenance and stewardship of the off-road bicycle trail will be minor or negligible with utilization of the Sustainable Trail Guidelines and the assistance of a stewardship partnership with the local mountain bike organizations and volunteers. Increase in programs will require a change in park interpretation programming or additional staff for new programs focused on off-road bike trails. In addition to the new trails, increased use at new trailheads and parking proposed at High Meadow, Snowville and expanded Boston Mills Bike and Hike will require Park operations for visitor protection and maintenance. These trails have easy access for park operations due to their proximity to existing roads at regular intervals along the routes and the Bike and Hike for the East Rim. The South Carriage Trail will be accessible only from Holzhauer Road or the Red Lock trailhead. Increase in Park staffing and facility management for off-road bike trails in combination with proposed actions of Alternative 3A will likely be long-term, moderate and adverse impacts on Park operations.

Impacts on Partner Operations. Since the utilization of new user group volunteers and partnerships will assist in providing support to the off-road bike trails, impacts on partner operations will not increase or change from Alternative 3B.

Impacts on Local Jurisdiction Operations. Since the proposed off-road bike trails are within close proximity to Metro Parks, Serving Summit County and within multiple jurisdictions, these jurisdictions

will likely experience long-term, minor to moderate adverse impacts, particularly from the East Rim trail by increased coordination with NPS and potential increased use from their adjacent facilities.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all except for those related to the additional off-road bike trails. Limited access to potential off-road bike trails in Cleveland Metroparks may increase park operations for unauthorized use in CVNP to access proposed CVNP off-road bike trails on west rim, but will increase coordination of Park operations with both Metroparks for access from Bike and Hike Trail on East Rim trail resulting in long-term, minor adverse impacts. Overall, cumulative impacts in combination with Alternative 3B will be long-term, moderate and adverse.

Conclusion

Impacts on Park operations will be long-term, moderate and adverse from new trails for off-road bike use requiring minimal additional or similar staffing and trails and associated facility management from Alternative 3A. Impacts on partner operations will likely be long-term, minor to moderate and adverse due to the additional resources needed to sustain the expanded trail system. Local jurisdiction operations will likely have long-term, minor to moderate adverse impacts from the multi-use connectors and proximity of the east rim trail to park facilities managed by Metro Parks, Serving Summit County. Overall impacts on Park operations will be long-term, moderate and adverse.

4.9.4.8 Impacts of Alternative 4A

Direct and Indirect Impacts

Impacts on Park Operations. Alternative 4A will result in a 48% increase of new trails from the existing trail system. Trails and trail facilities will require additional staff by the Park, Park partners or contract services to build, maintain and operate the proposed expanded trail system. The use of the Sustainable Trails Guidelines and removal of unsustainable trails will reduce maintenance needs on trails, particularly on low use trails. Some trails will meet challenges for access including Maplewood Overlook Trail, West Rim Trail, the East Rim Trail south of Station Road and the Plateau to Tree Farm Connector Trail. Substantial construction and engineering would be required for trails at Mudcatcher Trail, Blue Hen Trail, Buttermilk Falls Trail, Gateway Trail, Maplewood Overlook Trail, Coliseum Trail and Echo Hill Connector Trail. New trailheads will require additional operations for visitor protection, visitor information and facility maintenance at High Meadow Trail, Old Orchard Trail, Mudcatcher Trail and Coliseum Trail. Expanded use at Maplewood and Shady Grove picnic areas will require additional park operations at these existing facilities. Due to the significant increase in trail miles, new locations and limited access in some new locations, Park operations may require additional staff of more than 10, a 10% increase from current park staff, to operate the trails successfully.

Other visitor facilities will be impacted by increased visitation where trails are proposed for access. These include the CVC Boardwalk Trail, West Rim Trail, multi-use connectors, Stanford-Hines Hill Trail, Gateway Hike Trail, Howe-Everett-Plateau connector Trail, Hunt Farm Trail, Ira-Howe trail and Ira-Hampton Trail. New trailheads at the Mudcatcher Trail in addition to High Meadow Trail, Old Orchard Trail and Coliseum Trail will increase operations to facilities. Park operations will likely experience

impacts that are long-term, moderate to major, adverse from the additional staff required to manage the parkwide expansion of the trail system and its facilities.

Impacts on Partner Operations. Trail stewardship needs by volunteers will increase due to an increase in trail miles. Trails requiring operations coordination with CVSR include the Towpath-Valley Picnic Trail and West Rim trail. Impacts on Partner operations will likely be long-term, moderate to major and adverse from the expansion of the trail system that will require volunteers and partnerships for their successful operation.

Impacts on Local Jurisdiction Operations. Impacts on local jurisdictions will be long-term, moderate and adverse from the multiple jurisdictions that will require coordination for bike lanes, multi-use connector trails, neighborhood connector trails and trails on NPS-lands.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives and described in Alternative 3A. Cumulative impacts for Alternative 4A will be long-term, minor and adverse.

Conclusion

The significant increase in trail miles, new locations and limited access in some new locations, requiring a 10% increase in Park staff and increase facility management, will likely have impacts that are long-term moderate to major adverse on Park operations. Impacts on local jurisdiction operations will be long-term, moderate and adverse from the multiple jurisdictions that will require coordination with NPS for bike lanes, multi-use connector trails, neighborhood connector trails and trails on NPS-lands. Impacts on partnership operations will be long-term, moderate to major and adverse from the expansion of the trail system that will require volunteers and partnerships for their successful operation. Overall impacts on park operations will be long-term, moderate to major and adverse.

4.9.4.9 Impacts of Alternative 4B

Direct and Indirect Impacts

Impacts on Park Operations. Alternative 4B will result in a net increase of 59% of trails from the existing trail system. Operations for the off-road bicycle trail will require Park patrol or volunteer patrol, design and construction through Park staff or contract services, maintenance by Park staff or volunteer partnerships, resource and visitor monitoring, and programming and visitor information on the new trail use in the Park. The East Rim trail utilizes existing trailheads for parking with some expansion, so no new trail facilities will be required for operations, except, a potential for increase of operations due to increased use in current low use areas of the Park. Two of the trailheads are part of the Bike and Hike trail system, which are managed by Metro Parks, Serving Summit County. The addition of off-road bicycle trails and the expanded trail system, Park staffing would need to increase by 10% or greater from current staffing levels to operate successfully. Impacts on Park operations for the new off-road bike trail and proposed actions of the expanded trail system described under Alternative 4A will likely be long-term, major and adverse.

Impacts on Partner Operations. Impacts on partner operations will be similar as described for Alternative 4A with the addition of new stewardship groups to assist with the off-road bike trails. If additional support from new user groups occurs, the increase of support for the significant trail expansion will result in similar impacts, overall, to partner operations as described under Alternative 4A as long-term moderate, and adverse.

Impacts on Local Jurisdiction Operations. Local jurisdiction operations will experience long-term, moderate to major, adverse impacts from a variety of new trails and new uses, including Metro Parks, Serving Summit County for the off-road bike trail, with the utilization of the Bike and Hike Trail as a connector to the off-road bike trail loops.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives and Alternative 3A for bike lanes and multi-use connector trails, except for those associated with the addition of amountain off-road, single-tract bike trail. Potential future increase of off-road bike trails within Cleveland Metropark's Brecksville and Bedford Reservations will be connected through the Bike and Hike and Towpath Trails. These potential trails will reduce unauthorized use and increase efficiencies in Park operations for off-road bike use among NPS and the regional Metroparks and their facilities, resulting in increased but managed operations that will have long-term, minor adverse impacts. Overall, cumulative impacts will be long-term, moderate and adverse.

Conclusion

Impacts on Park operations will be long-term, major and adverse by an increase of staffing levels by 10% or greater from the current operation level to manage new uses and the expanded trail system and its associated facilities. Impacts on partner operations will likely be long-term, moderate and adverse by the increased operational support required for the expanded trail system and new uses. Impacts on local jurisdiction operations will be long-term, moderate to major and adverse by the increased coordination for bike lanes, multi-use connector trails and new use trails.

4.9.4.10 Impacts of Alternative 5

Direct and Indirect Impacts

Impacts on Park Operations. Alternative 5 will increase the number of trails in all regions of the Park adding 38 miles to the trail system resulting in a net increase of 21% in trail miles from the existing trail system. The staff and facility operations described in the other alternatives will be similar for Alternative 5, including the operational needs for the new uses and trail and will likely require staffing to increase by 5-10%. In addition to the new trails, new trailheads and parking proposed at High Meadow and expanded Boston Mills Bike and Hike will require Park operations for visitor protection and maintenance. The South Carriage Trail will be accessible only from Holzhauer Road or the Red Lock trailhead. Impacts on Park operations from Alternative 5 will likely be long-term, moderate and adverse from increase of staffing by 5-10% required to successfully operate and manage the expanded trail system and its associated facilities.

Impacts on Partner Operations. The utilization of new user group volunteers and partnerships will assist in providing support to the off-road bike trails. However, the overall expansion of the trail system and its associated facilities will require additional partner operations for volunteer coordination, programming and stewardship activities. Overall, impacts on partnership operations will be long-term, moderate and adverse by the increased partner operations to assist in the operation and management of the expanded trail system and its associated facilities.

Impacts on Local Jurisdiction Operations. The impacts on local jurisdictions will be similar to those described for the common trail elements in the other alternatives, including bike lanes, multi-use connector trails, and the proximity of the off-road bike trail. With these associated areas, impacts on local jurisdictions will be long-term, moderate and adverse.

Cumulative Impacts

No cumulative impacts are expected under this alternative beyond those identified as common to all alternatives and as described for the other alternatives. Cumulative impacts will likely be long-term, moderate and adverse for Alternative 5.

Conclusion

Impacts on Park operations from Alternative 5 will likely be long-term, moderate and adverse from increase of staffing by 5-10% required to successfully operate and manage the expanded trail system and its associated facilities. Impacts on partnership operation will be long-term, moderate and adverse by the increased partner operations to assist in the operation and management of the expanded trail system and its associated facilities. Impacts on local jurisdictions will be long-term, moderate and adverse from increased coordination with associated trails including bike lanes, multi-use connector trails and off-road bike trails. Overall impacts on Park operations will be long-term moderate and adverse.

Chapter 5. Consultation and Coordination

A Notice of Intent was published in September, 2009 in the Federal Register to announce the preparation of the Trail Management Plan and EIS. Since this initial notice of the Plan public involvement and coordination has occurred throughout the planning process

5.1 Public Involvement

Public involvement has been an ongoing piece of the planning process. Activities have included public meetings, public comment periods, and distribution of newsletters to keep all stakeholders informed. In addition, the Park Planning website (PEPC), all materials for review were made available on the Trail Plan website for viewing. Appendix A outlines a full history of public scoping activities that occurred.

5.1.1 Stakeholder Groups

Over 60 stakeholder groups were identified with specific interest and/or expertise in trails in the Park. These stakeholders were invited to participate in a survey in Fall 2009 to identify initial strengths, challenges, and opportunities related to the trails in the park. The Stakeholder Groups continued to be invited and involved throughout the plan process through public meetings.

Primary Stakeholder Groups included:

- Local municipalities, and county governments
- Trail user groups
- Local outdoor recreation businesses
- Adjacent compatible institutional land owners.
- Conservation non-profit organizations.

A full list of stakeholder groups is provided in Appendix A.

5.1.2 Public Scoping

An extensive public scoping period occurred to involve the public in developing the components of the Plan. Three public workshops were held in February, 2010 to invite the public to share their ideas of what they would like to see for the trails in the Park and how to improve them. The Park received approximately 500 comments and had approximately 127 persons attend the workshops. A second set of public meetings were held in September, 2010 to invite the public to provide comment to conceptual alternative ideas. The Park received approximately 200 comments and had approximately 148 attend the three meetings.

5.1.3 Draft EIS

Pursuant to the National Environmental Policy Act (NEPA), it's implementing regulations, and National Park Service (NPS) guidance on meeting NEPA obligations, the NPS has reviewed and considered comments submitted on the Draft Trail Management Plan/Environmental Impact Statement. This appendix summarizes all substantive comments received and provides responses as required by Council of Environmental Quality regulations.

The appendix includes an overview of the public comment process, general analysis of all comments received, full text from agency letters, and responses to substantive comments.

In accordance with 40 Code of Federal Regulations (CFR) 1503.4[5][b], summaries of all substantive comments received on the Draft Plan/EIS appear in this appendix. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive. A substantive comment is one that does one or more of the following:

- Questions, with reasonable basis, the accuracy of information in the EIS.
- Questions, with reasonable basis, the adequacy of the environmental analysis.
- Presents reasonable alternatives other than those presented in the EIS.
- Causes changes or revisions in the proposal.

In preparing a Final EIS, an agency is required to assess and consider comments both individually and collectively. The agency is required to respond by one or more of the following means, while stating its response in the final statement (40 CFR 1503.4)

- Modify alternatives.
- Develop and evaluate alternatives not given serious consideration.
- Supplement, improve, or modify analyses.
- Make factual corrections.
- Explain why comments do no warrant further agency response.

Overview of Public Comment Process

On June 22, 2012, the NPS published a notice of availability of the Trail Plan/DEIS in the Federal Register. Public review of the Draft Trail Plan and EIS occurred from June 22, 2012 through August 20, 2012. Approximately 200 interested individuals, agencies, and organizations received through a newsletter announcing availability of the plan through the mailing of the newsletter by U.S. mail or receipt through email distribution by the Park. Approximately 15 of these stakeholders received either a CD or paper copy of the Plan upon their request. The NPS made the plan available for review as a paper copy at six local public libraries and two of the Park's visitor centers, Boston Store and Canal Visitor Center. The NPS Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov/cuyahogatrailplan) offered interested parties an opportunity to review and comment on the plan online. On July 24, 25, and 26, 2012, the NPS hosted public meetings in Cleveland, Peninsula and Akron, Ohio, respectively where the public had opportunities to hear a presentation on the Draft Trail Plan and EIS, ask questions and submit written comments. Press releases in local newspapers and the park's nps.gov homepage announced the availability of the plan, as well as the

public meeting dates and times. There were 85 people who attended the public meetings for the Draft Plan.

Comments Received

The NPS received 290 pieces of correspondence during the public comment period. Correspondence was received by one of the following methods: hard copy letter via mail or in-person delivery to the Park (10 received), written statement received at a public meeting (5 received), or entered directly into the NPS PEPC website for this project (274). Of the comments received through PEPC, 130 comments were unsolicited bulk messages and advertising (i.e. Spam) and not relevant to the subject of the Plan and therefore dismissed for further evaluation or analysis. The remaining 144 comments received through PEPC were reviewed and evaluated for substantive content and relevant responses.

Comments received consisted of discussions on a variety of issues. The majority of comments were related to eight subject areas;

- clarification of content or recommendations for additional content within Trail Plan,
- compatibility of preferred alternative with Trail Plan and Park mission, purpose and goals,
- trail uses/visitor experiences
- individual trail elements within alternatives
- visitor use conflict
- impacts to Park resources
- proximity of trail elements to private property
- trail facilities

The NPS has comprised substantive comments received and response to those comments and is provided in Appendix D, Responses to Comments Received.

5.2 Public Agencies Consulted During the Planning Process

In addition to the stakeholder groups and general public involvement, public agencies were consulted. A list of agencies is provided in Appendix A. Cultural resource compliance for this project as required under Section 106 of the National Historic Preservation Act, as amended, has been initiated and was part of the Draft Plan review process. Additionally, an initial consultation with the U.S. Fish and Wildlife Service was received in 2011 and continue with review of the Draft Plan/EIS in accordance with the Endangered Species Act. Documentation of compliance is included in the section Appendix D, Responses to Comments.

5.3 Preparers and Contributors

Advisory Team

Name	Title/Responsibility	Education/Experience
Paul Stoehr	Deputy Superintendent, CVNP, Advisor to Plan Coordinator	B.S. Landscape Architecture 32 years NPS
Lisa Petit	Chief, Division of Resource Management, CVNP, Advisor to Plan Coordinator	B.S. Zoology M.S. Biology, Ph.D Zoology 8 years federal research; 11 years NPS
Kevin Skerl	Ecologist/Compliance Coordinator, CVNP Primary Advisor to Plan Coordinator, Plan Assembly, Development and Review for all sections of planning document.	B.S. Wildlife Biology M.S. Conservation Biology & Sustainable Development 3 years non-profit conservation sector, 13 years NPS
Lynn Garrity	Outdoor Recreation Planner, CVNP Plan Project Coordinator, All activities of planning, document production and public involvement.	B.S. Landscape Architecture M.S Environmental Management 1 year non-profit 11 years county government 5 years NPS
Rory Robinson	Outdoor Recreation Planner Rivers, Trails and Conservation Assistance Program, NPS Advisor to Plan Coordinator	32 years NPS
Andrea Irland	Outdoor Recreation Planner Rivers, Trails and Conservation Assistance Program, Advisor to Plan Coordinator	22 years NPS

Interdisciplinary Team Members

Jennie Vasarhelyi, Division Chief, Interpretation, Education and Visitor ServicesChris Ryan, Division Chief Ranger, Visitor and Resource Protection
Eric Semple, Division Chief, Facility Management
Ivan Kassovic, Operations Supervisor, Visitor and Resource Protection
Steve Roberts, Operations Supervisor, Interpretation, Education & Visitor Services
Kim Norley, Landscape Architect
Bill Zimmer, Trails Supervisor
Anthony Gareau, GIS Specialist
Patricia Stevens, Chief of Planning, Cleveland Metroparks
John Mack, Chief of Natural Resources, Cleveland Metroparks
Terry Robison, Director of Research, Division of Natural Resources
Ed Kuilder, Park Resource Manager, Bedford and Brecksville Reservations
Dave Whited, Chief of Planning, Metro Parks, Serving Summit County
Mark Szeremet, Planner, Metro Parks, Serving Summit County
Mike Johnson, Chief of Natural Resources, Metro Parks, Serving Summit County
Deb Yandala, Executive Director, Conservancy for CVNP

Other Contributors
Stan Austin, Superintendent

CVNP Division of Resource Management
Meg Plona, Biologist
Chris Davis, Plant Ecologist
Andrew Bishop, Biological Science Technician
Sonia Bingham, Wetland Biologist
Rob Bobel, Engineer
Paulette, Cossel, Historical Architect
Janet Popielski, Engineer
Darlene Kelbach, Historical Landscape Architect
Dennis Hamm, Management Assistant

CVNP Division of Visitor and Resource Protection
Carl Dyer, Law Enforcement Specialist
Jared Brewer, Park Ranger
Jeff Stell, Park Ranger

CVNP Division of Interpretation, Education & Visitor Services
Mary Pat Doorley, Public Information Officer
Lynnette Sprague-Falk, Interpretive Assistant
Paul Motts, Interpretive Park Ranger
Rebecca Jones, Interpretive Park Ranger
Pam Barnes, Education Specialist
Arrye Rosser Interpretive Park Ranger

CVNP Division of Facility Management
Dee Strickland, Facility Operations Specialist

Cleveland Metroparks
Richard Kerber, Director, Planning, Design and Natural Resources
John Cardwell, Landscape Architect
Nidia Arguedas, Planner
Nancy Desmond, Planning Assistant

The Cleveland Metroparks assembled members of its management team for review and interim meetings regarding the Trail Plan.

Metroparks Serving Summit County
Summit Metro Parks, Serving Summit County assembled members of its management team for review and an interim meeting regarding the Trail Plan.
Rob Curtis, Park Biologist

National Park Service
Ann Bauermeister, Archeologist, Midwest Region
Kay Ellis, Accessibility Program Manager, NPS, Washington DC
Butch Street, Denver Service Center
Kurt Kestleroot, Midwest Region
Kerri Cahill, Denver Service Center
Steve Elkington, Recreational Trails, NPS, Washington DC

Volunteers/Interns
Holly Glock
Heather Furman
Matt DeGroot

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5.4.2 Commonly Used Acronyms

AOC – Area of Concern

CFR – Code of Federal Regulations

CMP – Cleveland Metroparks

CVNP – Cuyahoga Valley National Park

DOI – Department of Interior

EA – Environmental Assessment

EIS – Environmental Impact Statement (F) – Final (D)-Draft

ESA – Endangered Species Act

EO – Executive Order

GIS – Geographic Information Systems

GMP – General Management Plan

IJC – International Joint Commission

MOU – Memorandum of Understanding

MPSSC – Metroparks, Serving Summit County

NEPA – National Environmental Policy Act

NPS – National Park Service

NRCS – Natural Resource Conservation Service

NRI- Nationwide Rivers Inventory

ODNR – Ohio Department of Natural Resources

OEPA – Ohio Environmental Protection Agency

SUP – Special Use Permit

USFWS – United States Fish and Wildlife Service

USFS – Unites States Forest Service

5.4.3 Glossary

Action alternative: Any alternative that is not the "no action" alternative.

Affected environment: Existing conditions that are subject to direct and indirect changes as a result of actions described in the alternatives under consideration.

Alternative transportation: Transportation by bus, rail or any other publicly or privately owned conveyance that provides to the public a general or special service on a regular basis, including non-motorized transportation systems. http://publiclands.volpe.dot.gov/usfs-alternative-transportation/docs/TRIP_Overview.pdf

Bicycle. The Code of Federal Regulation defines "bicycle" as "every device propelled by human power of which a person or persons may ride on land, having one, two or more wheels, except a manual wheelchair" (36 CFR 1.4). The term "bicycle" and "bike" are used interchangeably throughout this document. (NPS, New River Gorge Bicycle Plan)

Bike lane: A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Canoe livery: a private or public operation of providing transportation service for canoe and kayak users to launching sites along a river system.

Carrying Capacity: The type and level of visitor use that can be accommodated while sustaining the desired resource and visitor experience conditions in the park.

Compliance : in accordance with established policies, laws and regulations.

Cultural Landscape : A geographic (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

Duplicate Trails: Trails that travel parallel to each other within a region of the Park with similar trail characteristics and development levels.

Easement: A right, as a right of way, afforded to a person or other entity to make limited use of another's real property.

Environmental Assessment: A planning tool administered by the Council of Environmental Quality to assist in planning and decision making. It also can provide analysis for determining whether prepare an EIS or FONSI (Findings of no significant impacts), aid an agency's compliance with NEPA when no EIS is necessary, and facilitate preparation of an EIS, if one is necessary,

Fee Simple/title: Absolute ownership of real property with unrestricted rights of disposition.

Human Environment: The natural and physical environment, and the relationship of people with the environment.

Interpretive hiking trail: short distance trails that are designed for visitors of all abilities with the focus on interpreting park resources and features.

Life Estate: The owners of improved property acquired in fee by the park are entitled to retain the use and occupancy of the improvement along with a designated portion of land necessary to enjoy the improvement of life. Upon death of all owners, the improved property will be turned over to the park.

List of Classified Structures (LCS): An inventory of all historic and prehistoric structures having historical, architectural, or engineering significance in which the NPS has or plans to acquire any legal interest. Structures may include buildings, monuments, dams, canals, bridges, fences, roads, mounds, structural ruins, or outdoor sculptures. Typical LCS structures are over 50 years in age and are listed or potentially eligible for listing on the National Register of Historic Places.

Loop trail: A trail that provides a continuous loop that returns back to the entry point of the trail.

Memorandum of Understanding: A type of short-term agreement documenting mutual assistance relationships where no funds are obligated.

Mitigation: An activity designed to avoid, minimize, rectify, eliminate or compensate for impacts of a proposed project. A mitigation measure should be a solution to an identified environmental problem.

Multi-use trails: Improved surface pathways located in developed areas that serve several types of users including bicyclists and hikers.

National Environmental Policy Act (NEPA): The law which requires detailed and documented environmental analysis of proposed federal actions that may affect the quality of the human environment.

National Heritage Corridor: A national designation intended to help local entities protect and use historic, cultural, and recreational resources for community benefits while raising regional and national awareness of their unique importance.

National Register of Historic Places :The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture kept by the NPS under the authority of the National

Off-road bike trail: A natural surface trail, located in undeveloped areas of the park, designed and designated for cross-country non-motorized bike use and can be utilized for hiking or running. (Off-road single-tract bicycle trail, mountain bike trail).

Open Space: An area that affords unobstructed passage or views. These areas are typically open fields, meadows, mowed lawns, or agricultural lands.

Other Power Driven Personal mobility devices: Any mobility device powered by batteries, fuel, or other engines, whether or not designed primarily for use by individuals with mobility disabilities, that is used by individuals with mobility disabilities for the purpose of locomotion, including golf cars, electronic personal assistance mobility devices (EPAMD's), such as Segway PT, or any mobility device designed to

operate in areas without defined pedestrian routes, but that is not a wheelchair defined as a manually operated or power-driven device.

Paddle launch sites : designated access areas along a river system where kayak and canoe users can access the river for recreational use.

Point to Point trail: A trail that starts in one location and ends in a different location. Users would utilize the same trail for their return to their original starting point of trail access.

Primitive : For the purpose of this plan, areas in the park that have limited access to trail facilities and contains less developed forested areas of the park.

Restoration (natural): Work conducted to remove impacts to natural resources and restore natural processes, and to return a site to natural conditions.

Revegetation : Replacement or augmentation of native plants in an area that had been previously disturbed or currently does not hold vegetation.

Retention : The owners of improved property acquired in fee by the park are entitle by the park to retain the use and occupancy of the improvement along with a designated portion of land necessary to enjoy the improvement. The period of a retained interest is typically for a fixed term up to 25 years. Upon expiration of this term, the improved property is turned over to the park.

Riverside campsite: a campsite that is accessible from the river for canoe and kayak users.

Scenic Byway: A national and/or state designation of a road or highway that offers an enjoyable and relaxing experience for travelers and possesses scenic, historic, cultural, natural, archeological, and recreational resources.

Single-track trail. Trails typically designed with a width where users must travel in single file.

Scoping: An information collection process by which all relevant issues and concerns, as well as alternatives to a proposed federal action are collected. This process includes the review of all relevant planning and management documents, consultation and discussion with interested agencies and organizations, and public input.

Social trails: An informal, non-designated trail, typically created by park users and not established by the Park.

Special Use Permit: A type of short-term agreement. CVNP uses these permits for trail or facility events in the Park.

Stewardship: The responsibility of caring for the park.

Trail acre: an area of land where a trail corridor would exist. Trail acre is the linear feet of trail multiplied by its width and divided by 43560 (square feet of one acre)

Trailside campsite: A campsite that is accessible only by trail users including hikers, runners , equestrians, and bike users.

Trail network: a variety of trails that connect to each other within the park boundary.

Water trail: recreational routes with a network of public access points connecting people, places, and communities to the waterways that provide high quality outdoor recreational opportunities.

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Appendix A: Summary of Scoping and Public Participation

A. **Formal Public Participation Activities**.

The following scoping activities related to the Trail Management Plan and EIS have occurred.

September, 2009	**Environmental Impact Statement process begins**. NPS initiates Environmental Impact Statement (EIS) through Notice of Intent in Federal Register.
September, 2009	**Stakeholder Letters**. Scoping letters with requesting input on issues and ideas for the EIS are mailed to approximately 60 agencies, governmental entities and organizations.
January, 2010	**Newsletter 1** is distributed to stakeholders, media and interested individuals. Provides information on public scoping process and scheduled workshops.
February, 2010	**Public Scoping Meetings**. Three meetings in an Open House format were held at the Happy Days Lodge, Peninsula, Ohio. The Open House format provided a brief presentation on the planning process and invited to the public to provide ideas at Topic Stations in the meeting facility. Press coverage included an article in the Akron Beacon Journal and Cleveland Plain Dealer. Approximately 150 people attended the meetings. Ideas were also accepted through Plan's PEPC website and in letter format.
April, 2010	**Newsletter 2** is distributed to stakeholders, media and interested individuals. An email list is assembled from public scoping participants and interested parties for distribution. The newsletter provides a summary of the issues and ideas generated during the public scoping meetings.
September, 2010	**Trail Management Plan Workbook**. An interim Workbook introducing initial conceptual Alternatives based upon public scoping input. Workbook is provided to general public through the PEPC project website and printed copies. Press release and distribution of notice of availability for public comment occurred.
September, 2010	**Conceptual Alternatives Public Meetings**. Three public meetings were conducted at Happy Days Lodge to invite the public to learn about the Conceptual Alternatives developed. Approximately 122 people attended the meetings. Comments were received by written correspondence or through the PEPC project website.
January, 2011	**Public Scoping Period Closed**. Public input was accepted until January, 2011.
May, 2011	**Newsletter 3** is distributed to stakeholders, media and interested individuals by mail, direct email distribution and available on the project's PEPC website. Information is provided on input received during public scoping and review of Conceptual Alternatives.
October, 2011	**Newsletter 4** is distributed to stakeholders, media and interested individuals by mail, direct email distribution and available on the project's PEPC website. The newsletter provided an update on the status of the Planning process and updated schedule for Draft Plan.

June, 2012	**DEIS Notice of Availability.** The U.S. EPA Notice of Availability of the Draft EIS is published for the 60-day public review and comment period.
July, 2012	**DEIS Public Meetings**. Three public meetings are conducted to present the Draft EIS to the public, answer questions to clarify content of the plan, and for the public to submit written comments.

B. Groups Contacted During Public Scoping Activities

Akron Metroparks Hiking Club
Akron Metropolitan Area Transportation Study
American Whitwater
Appalachian Outfitters
Army Corps of Engineers
Bath Township
Blossom Music Center
Boston Mills/Brandywine Ski Resorts
Boston Township
Botzum Farm
Blimp City Bikes
Buckeye Trail Association
Camp Manatoc, Boy Scouts of America
Carriage Trade Farm
Century Cycles
City of Akron
City of Bedford
City of Brecksville
City of Cleveland
City of Cuyahoga Falls
City of Fairlawn
City of Hudson
City of Independence
City of Valley View
Cleveland Area Mountain Bike Association
Cleveland Audubon
Cleveland Hiking Club
Cleveland Metroparks
Cleveland Museum of Natural History
Cleveland Sight Center
Conservancy for Cuyahoga Valley National Park
Cornell University
County of Cuyahoga
County of Summit
Crown Point Ecology Center
Cuyahoga River RAP (CRCPO)
Cuyahoga Soil & Water Conservation District
Cuyahoga Valley Communities Council
Cuyahoga Valley Countryside Conservancy
Cuyahoga Valley Trails Council
Cuyahoga Valley Adopt-A-Trail
Delaware Tribe of Western Oklahoma
Eastern Shawnee Tribe of Oklahoma
Echo Hills Neighborhood Association
Friends of Crooked River
Girl Scouts of Northeast Ohio (Camp Ledgewood)
Green City Blue Lake Institute
Greenwood Village Community Association
Greater Akron Audubon Society
Inn at Brandywine Falls
International Mountain Bike Association
Keelhaulers Canoe Club
Kent State University
Metro Parks, Serving Summit County
Miami Tribe of Oklahoma
National Parks Conservation Association
NPS- Water Resources Division
Northeast Ohio Areawide Coordinating Agency
Norheast Ohio Hiking Club
Northfield Center Township
Ohio and Erie Canal Corridor Coalition
Ohio and Erie Canalway Coalition
Ohio Canal Corridor
Ohio Department of Agriculture
Ohio Department of Natural Resources
Ohio EPA
Ohio Historical Society
Ohio Horseman's Council, Cuyahoga, Medina and Summit Chapters
Old Trail School
Ottawa Tribe of Oklahoma
Phyllis Wheatley Association
Public Employees for Environmental Responsibility
Rails to Trails Conservancy
Richfield Township
Sagamore Hills Township

Second Sole
Seneca Nation
Seneca –Cayuga Tribe of Oklahoma
Sierra Club – Portage Trail Group
Shawnee Tribe of Oklahoma
Spicy Lamb Farm
Summit Athletic Running Club
Summit Soil & Water Conservation Group
The Nature Conservancy
Tri-County Independent Living
U.S. EPA
U.S. Fish and Wildlife Service
United Disability Services
U.S. Senator Portman
U.S. Senator Brown
U.S. Representative Marcia Fudge
U.S. Representative Dennis Kucinich
U.S. Representative Steve LaTourette
U.S. Representative Jim Renacci
U.S. Representative Tim Ryan
U.S. Representative Betty Sutton
Vertical Runner
Village of Boston Heights
Village of Peninsula
Village of Richfield
Village of Walton Hills
West Creek Preservation Committee
Western Cuyahoga Audubon Society
Western Reserve Land Conservancy
Western Reserve Historical Society
Western Reserve Resource Conservation and Development

Appendix B. Resource Issues Identified During Public Scoping

Resource Issues
Erosion and drainage problems are recurring issues on some trails.
Current trails bisect seasonal or recurring sensitive habitat areas.
Consider trail design standards that minimize resource impacts.
Invasive plant proliferation on disturbed sites exist in the Park.
Existing trails are located in floodplains and wetland areas.

Visitor Use Uses
User conflicts between user types and level of experience are a recurring issue on particular trails.
New uses, including designated mountain bike trails and water trails are suggested.
Trail connections within and outside of park are limited both off road and on-road.
Accessibility and degrees of trail user experience level do not meet wide variety of current trail users.
Non-designated social trails are being use by visitors and unauthorized recreation users in the Park.
Develop policies and trail designs for multi-use on existing or new trails.
Trail user etiquette and multi-use education has diminished and needs to be enhanced.
Disperse trail use to less congested trails.
Existing trails loops are limited in distance.
Existing trails are limited in standards of difficulty.
Some trails in the 1985 Trail Plan have not been implemented.

Facilities Use Issues
Parking in high use areas is inadequate.
Larger horse trailer parking needs are unmet in high use areas.
Trail support uses including camping, picnic areas and horse posts, are desired.
Signage and visitor information could be enhanced to assist the trail user.
Support facilities for water trail are desired such as portage paths, boat launches or canoe livery for river access and operation.
Expanded trail head facilities for trail user needs.

Maintenance Issues
Current NPS staffing and operating budget cannot fulfill existing trail maintenance.
Trail and trail support facilities infrastructure continues to age.
Bridge infrastructure on some park trails is deteriorating.

Administrative Issues
Trail information to visitors is not adequate.
Utilize and expand existing trail stewardship partners.
Utilize new technology to inform trail users and provide interaction of trail conditions.
Expand the opportunities for trail network to enhance economic vitality of the region and local communities.
Current trail improvement projects are backlogged for funding.
Annual and recurring maintenance is inhibited due to workload of park maintenance and park budget limitations.

Appendix C. Sustainable Trail Guidelines.

(Detached: Sustainable Trail Guidelines)

Appendix D. Responses to Comments on the Draft Plan/EIS

The NPS has compiled substantive comments and responses to those comments received during the public comment period for the Draft Trail Management Plan and EIS as outlined in section 5.1.3 of the Final Trail Plan and Environmental Impact Statement. If multiple comments were received that were commenting on similar topic issues in the Plan, the NPS established a concern statement to respond to those issues collectively. The comment and response section begins with any correspondence received from local, state or federal government agencies or jurisdictions, and follows with comments received from organizations and the general public. The comments and responses are organized by subject areas in the order they occur within the Plan's format.

Correspondence from Agencies and Tribes

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 1 5 2012

REPLY TO THE ATTENTION OF:

E-19J

Lynn Garrity
Cuyahoga Valley National Park
15610 Vaughn Road
Brecksville, Ohio 44141

Re: Draft Environmental Impact Statement for the Trail Management Plan for Cuyhaoga Valley National Park, Brecksville, Ohio – CEQ # 20120196

Dear Ms. Garrity:

The United States Environmental Protection Agency has reviewed the above-referenced document provided by the National Park Service (NPS). Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

Cuyahoga Valley National Park (Park) is a 33,000-acre park between the metropolitan areas of Cleveland and Akron, Ohio. Over 3 million people reside within 25 miles of the park. As a designafed urban gateway park, the Park provides visitors the opportunity to experience the cultural, scenic, natural, historical, and recreational resources of the Cuyahoga River Valley and the Ohio and Erie Canal Corridor.

NPS is proposing to update their Trail Management Plan (Plan) to guide the expansion, restoration, management, operations, and use of the Park's trail system and its associated amenities over the next 15 years. The current Plan is outdated. Trails are no longer in desired configuration. Goals and objectives used to develop the updated Trail Management Plan are:

- Goal 1: A trail network that provides experiences for a variety of trail users.
- Goal 2: A trail network that shares the historic, scenic, natural, and recreational significance of the Park.
- Goal 3: A trail network that minimizes its footprint on the Park's historical, scenic, natural, and recreational resources.
- Goal 4: A trail network that can be sustained.
- Goal 5: Cooperative partnerships that contribute to the success of the Park trail network.

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The Draft EIS states that the preferred alternative is Alternative #5 (ReUse, Recreation, and Destination), which includes an increase of 37 miles of trails from existing conditions, including 10 miles designated for mountain bikes, new and expanded parking facilities, new launch sites for water trail access, and expansion of hike-in and paddle-in campsites.

Based on our review of this document, EPA has assigned the Draft EIS a rating of **"Lack of Objections" (LO)**. However, we note several measures we believe would further reduce impacts to human health and the environment over the term of the Plan and improve the quality of the document. These measures should be committed to in the Record of Decision (ROD). Please see the enclosed summary of the rating system used in the evaluation of the document.

Low-Impact Design

Alternative #5 includes approximately 7.45 acres of new or expanded parking lot area and new paddle launch sites and campsites. EPA recommends that all new or expanded facilities, including but not limited to parking lots, shelters, buildings, and roads, are constructed following low-impact design standards, including programs such as Leadership in Energy and Environmental Design (LEED), Energy Star appliances, EPA's WaterSense Program, or other similar programs. New parking lots and other paved surfaces should use permeable or porous pavement technology to ensure increased stormwater infiltration and reduced runoff to adjacent waterbodies. EPA also recommends vegetated buffers and inlets around and in paved areas to further increase infiltration. Any such efforts should be outlined in the Final EIS. For additional information on green infrastructure, please visit: http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm.

Aquatic Resources

Please be aware that the Cuyahoga River is an EPA-designated Great Lakes Area of Concern based on degraded fish populations, eutrophication, and heavily polluted sediments (restrictions on dredging). Therefore, any actions taken in the Cuyahoga River watershed should not exacerbate existing environmental issues, nor detract from remediation efforts as pursued by EPA or other governmental resource agencies. All mitigation measures detailed in this letter are intended to minimize potential impacts to the Cuyahoga River watershed.

The forthcoming wetland delineation (page 165 of the Draft EIS) should take place during the growing season, and not during drought conditions. Please include the delineation in the Final EIS and any jurisdictional determination correspondence from the U.S. Army Corps of Engineers.

Alternative #5 includes construction activity within the 100-year floodplain of the Cuyahoga River, within 25 to 125 feet of wetlands, and includes 84 new stream crossings. Some boardwalks are already included as part of this alternative. EPA strongly encourages boardwalk trail systems be pursued, as opposed to fill or culverting, at all stream crossings and in wetlands. Boardwalk crossings should span the channel of the stream and any boardwalk posts or fill should be kept above the ordinary high water mark of stream channels. Please note that trail design resulting in fill could be subject to Clean Water Action Section 404 permitting as well as the Clean Water Act

404(b)(1) Guidelines. Finally, EPA recommends a protected buffer of 50 feet around wetlands and streams; no new campsites, parking facilities, or other structures should be sited within 50 feet of wetlands or streams.

During construction of new trails or removal of existing trails, EPA encourages that work not be done in wetlands, including equipment staging. If any work needs to be done in or near wetlands or streams, EPA recommends the following measures to minimize impacts to aquatic resources:

- Construct during winter, if feasible.
- Minimize width of temporary access roads for construction access.
- Use easily-removed materials for construction of temporary access roads (e.g., swamp/timber mats) in lieu of materials that sink (e.g., stone, rip-rap, wood chips).
- Use swamp/timber mats or other alternative matting to distribute the weight of the construction equipment. This will minimize soil rutting and compaction.
- Use vehicles and construction equipment with wider-tired or rubberized tracks or use of low ground pressure equipment to further minimize impacts during construction access and staging.
- Use long-reach excavators, where appropriate, to avoid driving, traversing, or staging in wetlands.
- Place mats under construction equipment to contain any spills or leaks.

Diesel Emissions

Per the National Ambient Air Quality Standards for criteria pollutants, the Park is within counties or areas that are in non-attainment (8-hour ozone, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$) and in maintenance (1-hour ozone, PM_{10}, and SO_2). Further, the National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential occupational carcinogen, based on a combination of chemical, genotoxicity, and carcinogenicity data. Acute exposures to diesel exhaust have been linked to health problems such as eye and nose irritation, headaches, nausea, asthma, and other respiratory system issues. Based on this information, EPA recommends the following measures are implemented by NPS and its contractors to further reduced impacts to human health from diesel emissions during construction or removal of trails and other facilities.

- Use ultra low-sulfur diesel fuel.
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Position the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the exposure of personnel to concentrated fumes.
- Use catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Attach a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot reenter the workplace. Inspect hoses regularly for defects and damage.

- Use enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintain diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reduce exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchase new vehicles that are equipped with the most advanced emission control systems available.
- With older vehicles, use electric starting aids such as block heaters to warm the engine reduce diesel emissions.
- Use respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number.

In the Final EIS, please indicate whether recommended mitigation measures were included in the analysis. Again, any mitigation measures should be committed to in the ROD.

Thank you in advance for your consideration of our comments. If you have any questions, please contact Elizabeth Poole of my staff at (312) 353-2087 or poole.elizabeth@epa.gov.

Sincerely,

Kathleen Kowal

for Kenneth A. Westlake
Chief, NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Enclosure: Summary of Ratings Definitions

cc: Melissa Tarasiewicz, U.S. Army Corps of Engineers
Bill Zawiski, Ohio Environmental Protection Agency
Ed Wilk, Ohio Environmental Protection Agency

4

U.S. Environmental Protection Agency

Low Impact Design

Concern Statement: Best management practices are recommended to minimize the impacts of parking lot development and expansions.

Response: These recommendations have been included in the FEIS Sustainable Trail Guidelines (Appendix C, p.32) as they relate to best management practices for design and construction of newly developed or expanded parking areas within the Park.

Aquatic Resources

Concern Statement: Any actions taken in the Cuyahoga River watershed should not exacerbate existing environmental issues nor detract from remediation efforts. The forthcoming wetland delineation should take place during the growing season and not during drought conditions. Please include the delineation in the FEIS and any jurisdictional determination correspondence from the U.S. Army Corps of Engineers.

Response: The FEIS includes recommendations for wetland delineation on p. 28 of the Sustainable Trail Guidelines. Because of the conceptual and park-wide scale of the Plan, no specific delineations were conducted. Each trail project will undergo the delineation process if wetlands are within the proximity of the proposed trail. Therefore, no jurisdictional determination correspondence from U.S. Army Corps of Engineers was received as part of the FEIS.

Concern Statement: Best management practices are recommended for trails within proximity of water resources.

Response: We have included additional recommendations for trails within proximity of water resources in the FEIS Sustainable Trail Guidelines on p. 31. The Sustainable Trail Guidelines will set forth best practices throughout the trail development process.

Diesel Emissions

Concern Statement: The Park is within counties or areas that are in non-attainment for Ambient Air Quality. Recommendations are set forth to further reduce diesel emissions during construction or removal of trails and other trail facilities.

Response: We have included these recommendations in the FEIS on p. 39 of the Sustainable Trail Guidelines.

Concern Statement: Indicate whether recommended mitigation measures were included in the analysis. Any migitation measures should be committed to in the ROD.

Response: Mitigation measures are set forth within the Sustainable Trail Guidelines, Appendix C of the Plan and within Chapter 4, for each resource issue. The Record of Decision will include any mitigation measures set forth in the Final EIS.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

July 17, 2012

Lynn Garrity
Cuyahoga Valley National Park
15610 Vaughn Road
Brecksville, OH 44141

TAILS: 03E15000-2012-TA-1009
03E15000-2012-CPA-0631

Dear Ms. Garrity:

This letter is in response to the Cuyahoga Valley National Park Draft Comprehensive Trail Management Plan and Environmental Impact Statement (Plan). The purpose of the Plan is to guide the expansion, restoration, management, operations, and use of the trail system for the next 15 years. Cuyahoga Valley National Park (Park) is located between Cleveland and Akron in Cuyahoga and Summit Counties, Ohio and consists of over 33,000 acres of bottomland forests, upland forests, open areas, wetlands, and riparian habitat along the Cuyahoga River. Implementation of the Plan will include restoration of the existing trail network such as rehabilitation of trails, relocating or realigning trails, or removal and closure of trails. It will also include construction of new trails and trail facilities such as parking lots, benches, and campsites.

The goals of the Plan include a trail network that minimizes impacts to park resources and can be sustained for future generations. Sustainable trail guidelines will be established by the National Park Service and will be adopted under all proposed alternatives. Site planning and design of the trail are important to avoiding impacts to natural resources and the Service supports appropriate siting to reduce impacts to wildlife and the habitats they depend on.

The Plan includes five different alternatives. Alternative 1 is the no action alternative. Alternatives 2, 3 and 4 each include an option A and an option B. All alternatives with option A do not include mountain bike use. All alternatives with option B do include mountain bike use. Alternative 5 includes components of all the alternatives and mountain bike use and has been identified as the preferred alternative.

There are no Federal wildlife refuges, wilderness areas, or Critical Habitat within the vicinity of this site.

Sustainable trail guidelines will be established by the National Park Service. Site planning and design of the trail are important to avoiding impacts to natural resources. The Service supports the use of neighborhood connectors to encourage local residents to access the Park without the use of an automobile.

The Plan considers impacts to water resources including water quality wetlands, floodplains and riparian areas. The plan will include stream crossings as well as canoe launch areas along the Cuyahoga River. The Service recommends that impacts to streams and wetlands be avoided, and buffers surrounding these systems be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources, and the filtering capacity of wetlands helps to improve water quality. Buffers of native vegetation surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. The Park has established a minimum buffer around wetlands of at least 25 feet with greater buffers for higher quality wetlands.

Stream crossings will be located at riffle areas as these areas are relatively stable. The Plan indicates that trails sited near wetlands or within floodplains may utilize a boardwalk system. The Service supports the use of boardwalks to avoid impacts to aquatic resources. We recommend that cadmium chromium arsenate and creosote treated lumber not be used for segments of boardwalk structures that are in contact with water. The Sustainable Trail Guidelines indicate that elevated crossings are preferred over culverts. The Service recommends that if culverts are used they are designed and placed to adequately simulate the natural stream morphology and substrate. This will help to maintain connectivity for organisms that use the streams to move between vital habitat types.

The Plan includes the expansion of parking lots to accommodate areas of high visitor use. Additional trails and parking lots often involve the addition of a significant amount of impervious surfaces which can lead to increased runoff. Increased runoff levels create higher temperatures in receiving streams, greater downstream flooding and erosion, and reduce the recharge of aquifers. The plan addressed concerns about the potential increase in impervious surfaces. The Service recommends that the use of asphalt be minimized as much as possible for both trails and parking lots. The Service supports the use of limestone gravel material as a trail surface instead of other impervious surfaces such as asphalt.

Runoff can be reduced through the use of permeable pavement or by reducing the amount of impervious surface by clustering development and decreasing the area of parking lots, roads, and sidewalks. Increased infiltration through the reduction of ground disturbance, especially in forested areas, will also reduce levels of runoff. Increased detention time through the increased length of conveyance will also reduce runoff flows. While the main objective should be to reduce runoff as much as possible, protection and enhancement of riparian buffers can mitigate some impacts from the runoff that does occur. The Service recommends that the project should fully address impacts to stormwater quantity and quality. The Plan indicates that the total amount of impervious structures does not significantly affect the overall percentage of impervious surfaces of the Park's tributary watersheds. In addition, the Sustainable Use Guidelines will minimize the disturbance of natural areas.

The Plan identifies concerns about soil suitability and slope gradient. The Plan indicates that the visitor use carrying capacity will be established for each designated trail. Seasonal closures can be implemented to reduce impacts to park resources and minimize the risk of tread widening. We recommend that any proposed projects use best construction techniques to minimize erosion. The Plan addresses impacts to vegetation such as trampling, fragmentation, and proliferation of exotic species. Prevention of non-native, invasive plant establishment is critical in maintaining

quality habitats. The Plan addresses the increased threat of invasive species due to the development of trails in primitive areas. It indicates that exotic plant management activities and habitat restoration actions that are focused on disturbed areas will have long-term beneficial impacts. The restoration of trails through the consolidation of duplicate trail segments and the elimination of non-designated or 'social' trails will result in improved impacts to native vegetation. The potential threat of exotic aquatic species should also be considered. The Plan includes ten sites which are being considered as paddle access sites. Paddle launch sites and riverside campsites have the potential to become introduction sites for aquatic invasive species as equipment that may have been used in other impacted streams could carry seeds or larvae of exotic species. These areas of access should be considered high priority areas for monitoring so that invasive species can be addressed before they become well established.

The Plan considers impacts to wildlife through habitat fragmentation and disturbance by human noise. The Horseshoe Pond perimeter loop trail at Tree Farm Unit will be located around Horseshoe Pond. A trail directly along the entire perimeter of the pond would make wildlife using this resource highly susceptible to human disturbance. The pond should not be completed enclosed by trails or the trails should be located some distance from the pond so that aquatic wildlife is not continuously disturbed by visitors on the trail. The Sustainable Trail Guidelines indicate that tree clearing will be minimized as much as possible and that native vegetation will be retained as much as possible, thus limiting impacts to wildlife habitat.

MIGRATORY BIRD COMMENTS:
The Park has been designated at an Important Bird Area and contains significant habitat for a diversity of bird species. The Park contains many large blocks of contiguous forest habitat. These areas provide suitable habitat for a variety of forest interior nesting birds. Three trails are near known bird nesting areas. In addition, there are several great blue heron rookeries located within the area. Previously the Service recommended establishing a buffer of 200 meters from Great Blue Heron rookeries. This recommendation remains valid. The Coliseum Trail is sited along the perimeter of the grassland to minimize impacts to grassland birds nesting at the site.

The project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*). Bald eagles are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA), and are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, BGEPA). BGEPA is the primary federal law protecting bald eagles and prohibits, among other things, the killing and disturbance of eagles. "Disturb" is defined by regulation (50 CFR 22.3) as, "to agitate or bother a bald or golden eagle to a degree that causes...injury to an eagle, a decrease in productivity, or nest abandonment." The Service recently issued a final rule that authorizes issuance of eagle take permits, where the take to be authorized is associated with otherwise lawful activities. Further information on eagle take permits and assessing your project's potential effect on bald eagles can be found at: http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html.

A bald eagle nest is located in the Pinery Narrows area of the Park. The plan indicates that portions of the Towpath Trail are closed seasonally to avoid impacts to this species. In order to avoid take of bald eagles, we recommend that no tree clearing occur within 660 feet of the nest or within the woodlot supporting the nest tree. Further we request that work within 660 feet of the nest or within the direct line-of-site of the nest be restricted from mid-January through July. This will prevent

disturbance of the eagles from the egg-laying period until the young fledge, which encompasses their most vulnerable times. We ask that you consult with this office if any tree removal is required within the buffer area to confirm that the eagles have left the nest.

If these recommendations cannot be implemented and take of bald eagles is likely, based on the best information available, a bald eagle take permit for this project will be necessary. As noted earlier, under 50 CFR § 22.26, bald eagle take permits can be issued where the taking is associated with but not the purpose of an otherwise lawful activity and cannot practicably be avoided. Eagle take permits may require monitoring (pre, during, and post construction), avoidance and minimization to the fullest extent practicable, as well as mitigation. If you would like to pursue this option or discuss it in more detail, please contact Matt Stuber, in the Service's East Lansing Field Office, at 517-351-8469, or at Matthew_Stuber@fws.gov. Additional information on eagle take permits is also available at: http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html.

ENDANGERED SPECIES COMMENTS:
The proposed project lies within the range of the **Indiana bat** (*Myotis sodalis*), a Federally-listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Summer habitat requirements for the species are not well defined but the following are considered important:

(1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
(2) live trees (such as shagbark hickory and oaks) which have exfoliating bark;
(3) stream corridors, riparian areas, and upland woodlots which provide forage sites.

With the significant amount of forested habitat and the multitude of streams and wetlands the Park appears to provide a significant amount of potential habitat for this species. The Indiana bat, along with six other bat species, has been detected within the Park. At this time no hibernacula or maternity roosts for the Indiana bat have been identified. The Sustainable Trail Guidelines indicate that all healthy trees with a DBH of 12 inches should remain. The Plan indicates that site-specific evaluation will occur for campsites, trails, water trail facilities, parking areas, and trail shelters. Due to the length of the proposed Plan and the lack of site specific information on tree clearing available at this time, the Service recommends that coordination occur between the National Park Service and the U.S. Fish and Wildlife Service on any projects that require tree clearing when site specific plans are finalized. No tree removal should be scheduled during the summer roost season of April 1 to September 30.

Please be aware that the northern long-eared bat *(Myotis septentrionalis)* and the eastern small-footed bat (*Myotis leibii*) have been petitioned for listing under the Endangered Species Act. These species may be proposed for listing within the next few years. Once such a proposal has been published in the Federal Register, conferencing with the Service may be required under section 7 of the ESA for projects that may affect these species. The status of the little brown bat (*Myotis*

lucifugus) is currently being reviewed by the Service. Both the northern long-eared bat and the little brown bat have been documented within the Park.
The proposed project lies within the range of the **Kirtland's warbler** (*Setophaga kirtlandii*), a federally listed endangered species. The Kirtland's warbler is a small blue-gray songbird with a bright yellow breast. This species migrates through Ohio in the spring and fall, traveling between its breeding grounds in Michigan, Wisconsin, and Ontario and its wintering grounds in the Bahamas. While migration occurs in a broad front across the entire state, approximately half of all observations in Ohio have occurred within 3 miles of the shore of Lake Erie. During migration, individual birds usually forage in shrub/scrub or forested habitat and may stay in one area for a few days. Due to the project type, location, and onsite habitat, this project is not expected to result in impacts to Kirtland's warbler. Relative to this species, this precludes the need for additional consultation at this time.

The project lies within the range of the **piping plover** (*Charadrius melodus*), a federally listed endangered species. Due to the project type, location, and onsite habitat, this species would not be expected within the project area, and no impacts to this species are expected. Relative to this species, this precludes the need for further action on this project as required by the 1973 Endangered Species Act.

The proposed project lies within the range of **northern monkshood** (*Aconitum noveboracense*), a federally listed threatened species. The plant is found on cool, moist, talus slopes or shaded cliff faces in wooded ravines. The Sustainable Trail Guidelines require the avoidance and setbacks form endangered, rare, and special status plant species. The Plan indicates that no appropriate habitat for this species has been found.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C.661 et seq), the Endangered Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy.

If you have any questions regarding our response or if you need additional information, please contact Jennifer Finfera at extension 13.

Sincerely,

Mary Knapp

Mary Knapp, Ph.D.
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

U.S. Fish and Wildlife Service

Concern Statement: The Service recommends that impacts to streams and wetlands be avoided and buffers surrounding these systems be preserved. The Service recommends additional practices be included within the Sustainable Trail Guidelines of the Trail Plan related to boardwalk systems and culverts. (pg2, paragraphs 1 and 2)

Response: We have established guidance to protect and minimize impacts to wetlands and streams through the lifecycle of a trail. NPS has incorporated the USFWS recommendations for boardwalks and culverts into the Sustainable Trail Guidelines (Appendix C; p 31).

Concern Statement: The Service recommends additional best management practices for parking lot design and construction, and stormwater quantity and quality. (pg 2, paragraphs 3 and 4)

Response: The Sustainable Trail Guidelines set forth parking lot design best management practices and will continue to identify design solutions to minimize any impervious surface expansion for parking facilities within the Park. Additionally, NPS will identify and prioritize parking lot expansion based upon park user patterns to limit overdevelopment of facilities where visitor use demands are not present, as described on p.32 of the Sustainable Trail Guidelines.

Concern Statement: The Service recommends best construction techniques to minimize erosion. (pg 2, paragraph 5)

Response: We identify minimizing erosion as a primary design goal of future trails and provide best practices within the Sustainable Trail Guidelines.

Concern Statement: The potential threat of exotic aquatic species should be considered in relation to the expansion of facilities for canoes and kayaks on the Cuyahoga River. (pg 3, paragraph 1)

Response: We have included development of best management practices and monitoring of exotic aquatic species in the FEIS on p. 56 as part of the Park's operating procedures for future river use.

Concern Statement: The Horseshoe Pond perimeter loop trail at the Tree Farm unit should consider the disturbance of aquatic wildlife by visitors on the proposed trail. (pg 3, paragraph 2)

Response: We will consider existing and potential future aquatic wildlife in the final layout and design of the Horseshoe Pond perimeter trail to minimize its impacts. The Trail is considered a low use trail during the summer months and high use for cross-country skiing during the winter months. Visitor use will continue to be monitored to address disturbance potential. NPS will utilize its Sustainable Trail Guidelines to minimize clearing of native vegetation for the trail design.

Concern Statement: The Service recommends buffer distances for tree clearing for bald eagle habitat. (Migratory Bird Comments)

Response: We currently have a policy for bald eagle protection during nesting based upon recommendations set forth by U.S. Fish and Wildlife Service for non-motorized recreation and human entry. Since the first bald eagle nest attempt within the Park in 2008, NPS has instituted an area closure at a radius of 330 feet from the nest between approximately February 1 (at observation of mating/ egg-

laying) and July 15 (post-fledging) annually. The Park will adhere to the Service's recommended buffer distances to the extent that land ownership permits. Tree clearing during nesting and fledgling periods within the 330' buffer area only occur under hazardous or emergency conditions pertaining to the active railroad and Towpath Trail. These recommendations have been updated in the Sustainable Trail Guidelines on p. 27.

Concern Statement: Consultation with USFWS for Indiana bat impacts for each trail project site during implementation is recommended. (Endangered Species Comments)

Response: We have revised the Sustainable Trail Guidelines (Appendix C p. 28) to include this recommendation as part of the trail development process.

Ohio State Historic Preservation Office

The Draft Trail Plan and EIS were submitted to the Ohio State Historic Preservation Office (SHPO) on August 6, 2012. NPS received SHPO comments on November 21, 2012. A letter of concurrence of no adverse effect pertaining to the guidance measures set forth within the Trail Management Plan and guidance for future consultation between NPS and SHPO on all individual projects of this Plan during implementation was received from SHPO on January 22, 2013. The SHPO's comments and NPS responses are included.

November 8, 2012

Superintendent
Cuyahoga Valley National Park
National Park Service
ATTN: Paulette Cossel, Lynn Garrity
15610 Vaughn Road
Brecksville, OH 44141

Re: Trail Management Plan: Draft EIS (PEPC 27315
Cuyahoga and Summit Counties, Ohio

Dear Paulette Cossel, Lynn Garrity,

This is in response to correspondence from your office received June 22, 2012 (documentation made available on web site), and August 8, 2012 (bound, hard copy, of Plan with Assessment of Actions Having An Effect On Cultural Resources form), regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]).

Our comments present a critique of the EIS document as part of a formal review process. We recommend reinforcing the document to give more emphasis to planning principles. We recommend a more direct presentation of real world alternatives with less emphasis on the somewhat academic distinctions between the somewhat abstract and theoretical alternatives. For instance, in our opinion there is too much emphasis on the number of miles of trails. It is almost as though the alternatives are quota based. It is difficult for most readers to readily grasp the differences between the total miles. We recommend incorporation of specific applications in describing the planning process. And, we recommend basing analysis on empirical data.

I have hiked and biked on CUVA trails. I have greatly enjoyed my experiences. There have been a couple of days when it was cold, windy, and rainy, but I guess any such complaints should be directed to a different federal agency. The trails offer a range of experiences, destinations, and opportunities. Adding to my favorable experiences, I found signage with interesting information.

The EIS documents present a trail management plan. We are not sure how conclusions were reached. For instance, we are told that the implementation of the trail management plan will result in negligible impacts, or no more than minor impacts, to cultural resources. How much damage has occurred in the past 10 years? How much damage is expected during the next 10 years under the trail management plan? In sum, we are left with the impression that the conclusions are already set and we don't have a sense that information is logically analyzed to reach and support conclusions. Clearly we see that there are sections within the documents where the analysis of information is presented. We recommend that much more emphasis needs to be placed on generating information specific to meaningful analysis.

The EIS includes the CUVA Sustainable Trail Management Guide. This guide contains valuable information. The guide includes forms to record situations and conditions along trails. Although we see the guide as a valuable and useful document, we are not sure that we understand how the use of the guide will be integrated into planning and consultation.

We will try not to overwork the analogies for management plans. In one sense management plans are like roadmaps in that they guide us from where we are to where we are going along established routes. The trail management plan seems to take pieces and parts from many different maps. Our overall impression is that we aren't sure of the route. That is, as decision points are reached it isn't clear to us how the National Park Service will determine which route it is following. It isn't clear to us how decisions will be made to prioritize trail expansion projects. For instance, how will the National Park Service balance increasing need for maintenance of a surface good for biking along the tow path trail with the need for extending miles of upland hiking trails?

We do not understand how the National Park Service reached the conclusion that Alternative 5 is the preferred alternative. In part this is because we are not sure we understand what Alternative 5 is. We do not understand how Alternative 5 is integrated into a single trail management plan.

In the analysis of the use of a place by people it can be useful to distinguish nodes from connections. One of the consequences of adding more trails will be the construction of more trailheads with parking lots and facilities. However, when compared to Alternatives 3 and 3A, it seems to us that although Alternatives 4 and 4A result in more access points that each of these nodes will be smaller than the development and expansion of mostly existing nodes under Alternatives 3 and 3A. It isn't clear to us if the cumulative impacts from more trail expansion and more, but smaller, trailhead additions would be greater than the cumulative impacts from the larger scale developments at existing nodes with less added trails and increased emphasis on maintaining existing trails. We believe that it is vitally important for the management plan to provide clear direction in obtaining meaningful data and analysis to allow informed decision making.

We believe that there are real world benefits in making distinctions among different kinds of trails within an integrated planning process. In planning the appearance and design of trails and parking lots, it's clear that they will be read by visitors as being "Park" if they follow a standard design aesthetic. Is it possible to clarify whether another acceptable design scheme can be established and followed in the less natural settings of the park, in proximity to above ground resources? The need for consistent visual cues is understood, but the more natural areas of the park will not require the same level of intensive hardscape as might ultimately be selected to reduce impacts that might occur from more rustic amenities placed in proximity to historic resources. In summary, we recommend less emphasis on creating numbered alternatives and more emphasis on establishing the utilitarian basis for the preferred management plan.

Turning to considerations of cultural resources, we have questions about the goals of the trail management plan and about how the conclusions of negligible impacts were reached. There are several distinctly different kinds of cultural resources and distinctly different kinds of archaeological sites within the Park. There are some cultural resources that are already considered destinations

and there are other kinds of cultural resources that we seek to protect. However, the sole criterion for analysis seems to be whether the property is already listed in the National Register of Historic Places. The trail management plan provides for a comprehensive review of new trails but it doesn't tell us how decisions about the starting and ending points and the route will be decided. The plan seems to presume that all trails will always avoid important archaeological sites. We agree that a good deal of weight should be given to avoiding effects at important archaeological sites. But there are important archaeological sites that should be shown to the public. How will the National Park Service make decisions about which cultural resources are destinations, which cultural resources should be accessible along paths, and which cultural resources should be avoided?

As one example, we are concerned that some of the known projects (like the trail at Virginia Kendall SP Historic District) rely heavily on National Register data regarding the status of individual landscape elements (like the "social trail"). Transportation networks are typically incrementally designed and constructed as specific local resources are accessed or as human activities occur that are related to certain features of a site. Is it the expectation that trails currently used, but deemed unnecessary to the park's visitors, will all be of modern origin and not be related to previous occupational patterns of use? Many NR nominations do not provide a sufficient level of analysis to support that assumption. In our opinion the process of selecting individual future trail segments needs to have a deliberative step that assesses the likely age and significance of existing pathways, before they are selected for elimination or replacement.

Planning should be based on real time data. What is the current status? How many different kinds of situations requiring trail maintenance have been reported in the past 10 years? Does the Park systematically and systemically record these kinds of situations? What difference does the Park expect over the next 10 years with the implementation of the trail management plan? Will there be fewer situations? Will situations be more rapidly recognized and thus more quickly contained?

It isn't clear to us how the trail management plan will assess effectiveness, use, and condition. The Sustainability guide includes a form for reporting trail conditons. This is a good first step but doesn't provide clear responsibility for analyzing this information. It would be helpful to establish standardized measurements so that the assessment of effectiveness is more transparent. It would be helpful to separate analysis of effects by different kinds of trails and different kinds of effects. For instance, erosion along the tow path trail should be evaluated differently from erosion along an upland hiking trail or along an upland mountain bike trail. Erosion along the tow path trail affects a cultural resource, but it would seem to us that it would take a great deal more erosion along the tow path trail to result in an adverse effect to a cultural resource than erosion in an upland setting near an important archaeological site.

It isn't clear to us how the plan will connect with the requirements for conducting and completing consultation for undertakings. The Advisory Council emphasizes the need for early consultation, but consultation early in project development needs to involve discussions that broadly consider preservation concerns and are not narrowly restricted to the presentation of findings of eligibility and effect. These findings will come near the end of the consultation process.

Too often, National Park Service consultation is too narrowly restricted to a blanket finding of "no adverse effect." Making a "no adverse effect" finding with no clear conditions listed for coordination with OHPO and other consulting parties, even in the event that historic properties are known to be present and will be affected by trail development, is too often out of step with Advisory Council guidance and too often not helpful. From the standpoint of following the standard 106 consultation process, which is described in the Plan, concurrence is facilitated when a NAE finding is conditioned with a clear statement specifying exactly how coordination necessary to fulfilling the condition would occur.

Also we too often find that the timing of coordination during consultation is at odds with the overall objectives of the planning process we see as necessary for trail development and management. For instance, while MAC is available to assist with any necessary surveys, that practice of calling on MAC has already been problematic in regards to the timing of the submission of their research data with the concomitant submission of individual projects to OHPO for review. Reports come after consultation is already assumed to have concluded. From our perspective, it would seem practical that a set planning process be followed allowing possible trail segments for a particular area to be systematically studied by MAC, then that data be made available to CUVA and OHPO early enough that it is clearly supportive of their apparent intent to practice avoidance. If the intent is to reach concurrence on avoidance prior to creating a commitment to a specific trail segment, then CUVA needs to better link the Plan with the consultation process. At this time we can't tell what they're going to do.

Finally, regarding the Assessment Of Actions Having An Effect On Cultural Resources form attached to the August 6, 2012, correspondence, especially under Part 5, we do not understand the basis for checking yes or no for several of the fields. For instance, in the ninth field "Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archaeological or ethnographic resources, in our view this should be checked as "yes" rather than "no" and needs to be consistent with other fields. Moreover, It is simply not possible to determine that no deterioration of historic features will begin or be exacerbated from the trail planning activities. That's just not a supported conclusion, given the types of resources that are already present within the environment that are proximal to existing trails, as well as the fact that new trails will be located in proximity to known historic properties and districts.

Perhaps we are reading too much into this. But, from our perspective it well illustrates a fundamental discord. Section 106 consultation procedures are founded on an assessment of effect. When planning for changes in proximity to cultural resources we recommend that early coordination and planning documents should at least convey a noted concern for the protection of significant cultural resources and leaving open the possibility of adverse effects. Throughout the Plan we find explicit assertions that trail planning and trail management cannot consider adverse effects. Thus it becomes impossible for the National Park Service to complete an analysis that it is required by its own policies to complete. We recommend revising the Plan to establish standards for planning, acquisition of data, analysis, and consultation, and to logically keep open the possibility that trail management can result in adverse effects.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Ph.D., RPA, Archaeology Reviews Manager
Resource Protection and Review

DMS/ds (OHPO Serial Number 1044818, 1045478)

United States Department of the Interior
NATIONAL PARK SERVICE
Cuyahoga Valley National Park
15610 Vaughn Road
Brecksville, Ohio 44141-3097

IN REPLY REFER TO:

H4217
January 16, 2013

Mark J. Epstein
Resource Protection and Review
Ohio Historic Preservation Office
800 East 17th Avenue
Columbus, Ohio 43211-2474

Project Name: Trail Management Plan [PEPC 27315]
OHPO Serial Number 1044818, 1045478

Dear Mr. Epstein:

This is in response to correspondence from your office dated November 8, 2012 regarding Cuyahoga Valley National Park's draft Trail Management Plan and Environmental Impact Statement (Draft EIS) received by your office on August 8, 2012. The intent of this plan is to guide the expansion, restoration, management, operations, and use of the trail system and the associated amenities over the next 15 years. The Draft EIS is a lengthy and complex planning document and we truly appreciate the time and effort of your staff to review this submittal. We have synthesized the comments received and have provided a response to each concern.

As this document is a conceptual plan, it is understood that as individual elements are designed NHPA Section 106 will be completed for each undertaking which has the potential to impact resources listed in or eligible for listing in the National Register of Historic Places. This includes formal consultation with OHPO – Standard 36 CFR PART 800 – when appropriate. The goal of the National Park Service is to implement this plan in a manner which will have no adverse effects on cultural resources. While we acknowledge, as with every project, that there may be unforeseen developments which could result in an adverse action, this definitely is not the intent. If this were to happen the appropriate official process would be followed. If implemented as planned, however, we find that the proposal will have no adverse effect on cultural resources. If you concur with this determination please sign below and return a copy of this document to my office.

Thank you for your office's comprehensive review of our planning document. As always your knowledge and insight is appreciated.

Sincerely,

Paulette Cossel
Historical Architect

If implemented as planned, I concur with the finding of no adverse effect.

Mark Epstein, Resource Protection and Review Department Head — 1.22.13 Date

Ohio State Historic Preservation Office

SHPO Comment: In our opinion, there is too much emphasis on the number of trails. It is almost as though the alternatives are quota based. We recommend incorporation of specific applications in describing the planning process.

Response*:* The alternatives are not quota based. The alternatives were developed to explore the impacts at varying levels of trail development and location of trails. We found that the through the impact analysis process that when trail miles of any alternative exceeded 135 miles within the Park, there were unacceptally higher adverse impacts. The methodology for the planning process and determination of trails included in the Alternatives is described in Chapter 2, 2.1, Development of Alternatives (Methodology).

SHPO Comment: We are told that the implementation of the trail management plan will result in negligible impacts, or no more than minor impacts to cultural resources. How much damage has occurred in the past 10 years? How much damage is expected during the next 10 years under the trail management plan? How is information logically analyzed to reach and support conclusions.

Response: NPS evaluated existing trails and their use through past condition assessments, information from park staff and level of use collected through trail and parking use count data. NPS conducted research on best practices for sustainable trails to minimize impacts in the future. As part of the Trail Management Plan Sustainable Trail Guidelines, NPS recommends the use of future condition assessments and carrying capacity evaluations in establishing evaluation and monitoring methods to identify thresholds for changes, adverse or beneficial, that may occur.

SHPO Comment: How will the use of the Sustainable Trails Guidelines be integrated into planning and consultation?

Response: The utilization of the Sustainable Trail Guidelines for planning and consultation are described in the Plan, 2.4.1, Sustainable Trail Guidelines and within Appendix C. The Guidelines are intended to be incorporated as the Park's Standard Operating Procedures for trail management.

SHPO Comment: How will the National Park Service decisions be made to prioritize trail expansion projects and also balance the increasing need for maintenance of the various types of trails?

Response: The Plan outlines the development of tasks for implementation in section 2.2.9, Implementation. A Trail Implementation Committee that include all divisions of the Park will work together to identify and prioritize projects and their balance with ongoing maintenance.

SHPO Comment: How was the conclusion that Alternative 5 is the preferred alternative? How is Alternative 5 integrated into a single trail management plan?

Response: The methodology for the development of Alternative 5 is included in section 2.5.8, Alternative 5 within the FEIS. Alternative 5 is integrated with Actions Common to All Alternatives and Actions Common to All Action Alternatives described in Chapter 2 to establish a Trail Management Plan for the Park to implement.

SHPO Comment: It is not clear if the cumulative impacts are greater from more trail expansion and more, but smaller, trailhead additions or from the larger scale developments at existing nodes with less added trails and increased emphasis on maintaining existing trails.

***Response*:** The cumulative impacts are dependent on a variety of variables including location, proximity to sensitive resources, level of use and trail development levels including both trail miles and trail facilities.

SHPO Comment: It is recommended that less emphasis on creating numbered alternatives and more emphasis on establishing a utilitarian basis for the preferred management plan occurs, regarding the appearance and design of trails and parking areas depending on their setting within the park. The need for more visual cues is understood, but the more natural areas of the park will not require the same level of intensive hardscape as might ultimately be selected to reduce impact that might occur from more rustic amenities placed in proximity to historic resources.

***Response*:** As a result of the findings of public scoping and goals established for the Plan, the Alternatives were developed. Specific placement and any particular trail features or trail facility will be determined during project specific planning and design, of which its physical setting will be considered in its placement and design.

SHPO Comment: How will the National Park Service make decisions about which cultural resources are destinations, which cultural resources should be accessible along paths, and which cultural resources should be avoided?

***Response*:** The Sustainable Trail Guidelines include procedures for cultural resource assessment in section 3.1.3 of Appendix C, Sustainable Trail Guidelines, during all phases of the trail planning and design process to determine a trail's relationship to a cultural resource and the associated local conditions.

SHPO Comment: The process of selecting individual future trail segments needs to have a deliberate step that assesses the likely age and significance of existing pathways before they are selected for elimination or replacement.

Response*:* Section 3.1.3 Cultural Resources of the Sustainable Trail Guidelines, Appendix C will adhere to the evaluation of the trails identified for restoration within the Preferred Alternative and their associated cultural resources significance.

SHPO Comment: It would be helpful to establish standardized measurements so that the assessment of effectiveness is more transparent. It would be helpful to separate analysis of effects by different kinds of trails and different kinds of effects.

Response: The recommendations set forth within the Sustainable Trail Guidelines, Appendix C include the development and application of standardized measurements including condition assessments (Appendices J & K) and carrying capacity guidance measures (Appendix H). Additionally, Appendix G of the Sustainable Trail Guidelines outline a Trail Condition Management System to set forth guidance on park decision-making regarding trail management within the Park based upon the effects of each individual trail's setting and level of use.

SHPO Comment: Concurrence is facilitated when a No Adverse Effect finding is conditioned with a clear statement specifying exactly how coordination necessary to fulfilling the condition would occur.

***Response*:** The Trail Management Plan outlines the actions common to all proposed actions for coordination to achieve no adverse effects in section 4.6.4.1, Impacts Common to All Alternatives. In addition, the Sustainable Trail Guidelines, Appendix C, provide procedures to meet these conditions for each trail project (3.1.3, Cultural Resources). The NPS has completed further consultation and concurrencewith SHPO on how coordination and consultation will occur. The correspondence is provided within this section on page 307.

SHPO Comment: It would seem practical that a set planning process be followed allowing possible trail segments for a particular area to be systemically studied by the Midwest Archeological Center. The Park needs to better link the Plan with the consultation process. It is unclear to SHPO on the consultation process.

Response: The consultation for cultural resources is outlined in section 3.1.3, Cultural Resources within the Sustainable Trail Guidelines, Appendix C. Furthermore, compliance consultation is described in Section 4.6.4.1, Impacts Common to All Alternatives for cultural resources.

SHPO Comment: The Form attached to the August 6, 2012 correspondence "Assessment of Actions Having an Effect on Cultural Resources" is recommended to check "no" for the ninth field "begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources. It is simply not possible to determine that no deterioration of historic features will be or be exacerbated from the trail planning activities, given the types of resources present within the environment that are proximal to existing trails, as well as the fact that new trails will be located in proximity to known historic properties and districts.

Response: The analysis conducted for the Trail Management Plan and described in Section 4.6, Cultural Resources identifies the proximity of cultural resources to existing and proposed trails in the Preferred Alternative. With this general information and through trail specific planning, cultural resource evaluation and design, and the steps set forth within the Sustainable Trail Guidelines, Appendix C, the proposed actions will not contribute to the deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources.

SHPO Comment: When planning for changes in proximity to cultural resources we recommend that early coordination and planning documents should at least convey a noted concern for the protection of significant cultural resources and leave open the possibility of adverse effects.

Response: Chapter 4, section 4.6 outlines the conditions and compliance actions that will be implemented under the actions of the Trail Management Plan. A review of cultural resources and their proximity and potential effects from proposed actions under the preferred alternative were analyzed and described in this section of the Plan to provide a basis for further review and study for each trail project. As noted in Chapter 4, Section 4.6 and under the overall goals (1.1.3 Goals and Objectives) of the Plan, to minimize impacts on the Park's cultural resources will occur in all actions set forth in the Preferred Alternative of the Trail Management Plan/FEIS.

Ohio Department of Transportation
Email correspondence received 7/26/2012
Heather Bowden, Bike and Pedestrian Planner

Concern Statement: The Trail Plan should consider the current legislation for transportation enhancements funding, MAP 21, regarding bike lane improvements and federal land ownership. MAP 21 may set restrictions and use of funds if roadways are under federal jurisdiction.

Response: None of the roads recommended for bike lane improvements are under federal jurisdiction. Each bike lane project will be evaluated, in full cooperation with local jurisdictions, in regard to any new federal legislation, policy or law prior to implementation. NPS has included a statement on p.69 identifying evaluation of federal transportation legislation.

Concern Statement: The new 2012 AASHTO (American Association of State Highway and Transportation Officials) Guidance for Development of Bike Facilities may assist to determine the bike facility that is appropriate for road conditions.

Response: The Plan, on page 69 identifies the utilization of AASHTO guidance, when working with local jurisdictions and the proposed multi-use connectors recommended in the preferred alternative of the Trail Plan. The Plan has included the reference of the 2012 Edition of the AASHTO guidance on p. 69.

ALAN BRUBAKER, P.E., P.S.

SUMMIT COUNTY ENGINEER

August 10, 2012

Superintendent
Cuyahoga Valley National Park
15610 Vaughn Road
Brecksville, Ohio 44141

Attn: Lynn Garrity

Re: Cuyahoga Valley National Park DRAFT Trail Management Plan and Environmental Impact Statement 2012.

Dear Ms. Garrity:

The Summit County Engineer's office appreciates the opportunity to review the Cuyahoga Valley National Park DRAFT Trail Management Plan and Environmental Impact Statement 2012. We do not feel that it is proper for our office to recommend which of the eight alternatives should be implemented.

We do want to note that our office is pursuing a long-term goal of providing a more user-friendly environment for pedestrians and cyclists along the Summit County maintained roadway facilities. To that end in recent years, we have added paved shoulders to Kendal Park Road, and portions of Everett Road and Akron Peninsula Road. We will continue to provide paved shoulders with construction to start soon on a second section of Akron Peninsula Road and a portion of Riverview Road south of the Village of Peninsula. Additional sections of Riverview Road are on the five-year plan to receive paved shoulders.

Our office continues in our desire to cooperate with the CVNP to further define future trail access points and to provide a proper degree of highway user access to reach these destinations. If there are any questions regarding this matter, please contact our office.

Sincerely,

Alan Brubaker, P.E., P.S.
Summit County Engineer

cc: file

538 E. South Street ◆ Akron, Ohio 44311-1843 ◆ Tel: 330-643-2850 ◆ Fax: 330-762-7829

Website: www.summitengineer.net

NPS RESPONSE TO SUBSTANTIVE COMMENTS

General: The term mountain bike in the Draft EIS was changed to off-road single-track bicycle use to be consistent with the Code of Federal regulations (36 CFR Part 4) on bicycle use within the National Park Service.

Purpose and Need: Park Purpose and Significance

***Concern Statement*:** Public Law 93-555 cited in the Plan as the "legislative mandate" governing recreational use in Cuyahoga Valley National Park, is an unwise basis for the Plan. Part of the update to trail use in 2012 should be the recognition that Cuyahoga Valley is now a national park. Natural and scenic values should now be given the highest priority, with "maintenance of recreational open space" relegated to a much lower management activity.

Response: The changing of the park designation to a "National Park" did not change the underlying mission of this park unit, which is built on the 1974 law creating the unit. The Trail Plan's preferred alternative meets the purpose of the Park as established by its founding legislation as discussed on p. 31 of the FEIS. Impacts to park resources and their values were taken into account for all proposed actions and included in Chapter 4, Environmental Consequences, of the FEIS, as required under NEPA.
***Concern Statement*:** Land should be saved for its original purpose.

Response: We believe the Trail Plan's Preferred Alternative meets the purpose of the Park as established by its founding legislation as discussed on p. 30 of the FEIS.

Concern Statement: The sharing of trails between equestrian users and hikers as a result of the removal of duplicate trails is in conflict with Goal 4 of the Trail Plan.

Response: The trails that are proposed for consolidation are low use, primitive trails with minimal user conflict risks that, when combined would provide a more effective and sustainable trail system by reducing the miles of primitive trail for management and maintenance, therefore meeting Goal 4. The Plan has been updated on p.52 to reflect that proposed duplicate trail removals are priority target areas for field evaluation to determine whether maintaining the specified trails will have no adverse impact to Park resources.

Concern Statement*:* The utilization of trails for mountain bike use on hiking trails appears to be in conflict of the objectives of Goals 1, 2 and 3 of the Trail Plan.

Response: After our environmental impact analysis, we believe that off-road bike trails do not provide any more impact on park resources than existing trail uses and in some cases fewer impacts. The park considered visitor use conflict, congestion and current and future visitor use patterns to determine a trail system for off-road bicycle use to meet the Trail Plan Goal 1 of providing experience for a variety of trail users. The proposed location also meets Goals 2 and 3 of the Trail Plan by providing the entire proposed trail system in the appropriate locations, without diminishing the park significance and utilizing the Sustainable Design Guidelines to minimize the trail network's footprint of all trail uses, which includes the proposed off-road bike trails.

Concern Statement: Park operations needed to provide law enforcement and safe environments for trail use with the addition of mountain bike use is in conflict with Goals, 3 and 4 of the Trail Plan.

Response: The proposed location of the off-road bike trail in the preferred alternative is located in a new area with the utilization of the Bike & Hike trail as its primary access point. The proposed location and its nearby trail uses currently have low visitor use and will have vehicular access to the area for park operations. The proposed location and the utilization and expansion of volunteer trail patrol user groups will limit its contribution to Park operations needs and therefore not in conflict with Goals 3 and 4 of the Trail Plan.

Concern Statement: It is unclear how the park determined that it did not need to increase equestrian trail miles within the Park.

Response: This determination is outlined on p. 80 of the FEIS, Section 2.5.9. Given current use, limitations of land ownership and resource conditions, and current, planned or projected regional trail systems available to these user groups, significant expansions were not included in the final alternatives. This conclusion was developed as a result of the public scoping process and through the consensus of the Interdisciplinary Team for the Plan, including the Park's regional partners, Cleveland Metroparks and Metro Parks, Serving Summit County.

Affected Environment

Visitor Experience

***Concern Statement*:** In the Plan, Table 23. Special Use Permits, does not reflect the equestrian events that hold a Special Use Permit.

Response: The Plan identifies the seven Equestrian events held in 2010 on p. 136. We have revised the FEIS to also include this information on p.128 associated with Trail Special Use Permits of the FEIS.

Concern Statement: The trail counts for equestrian trail use do not reflect actual use due to the counting locations, seasons and times of day.

Response: The purpose of our trail counts was to provide a snapshot of trail use during peak visitor use of the Park based upon 2010 monthly visitor data collected by NPS. We recognize seasonal use may differ, especially with no data collected for cross-country ski users. The Valley Bridle Trail counters were electronic infra-red counters that collected data 24-hrs for the counting period, hence the data collection period is much larger than the manual counts conducted which were limited to 2-hour periods on designated days of the week. The electronic counters were an additional data set that was not utilized for other trail uses, hence more data was collected for equestrian trails than for other uses during the counting periods. The Park will continue to monitor use on a wide variety of trails through a variety of counting methodologies and seasons to gauge trail use within the Park.

Concern Statement: The inclusion or exclusion of equestrians in the 2005 Visitor Use Study on p. 136 should be identified in the Plan.

Response: The 2005 Visitor Use Study was a survey at particular trail locations within the Park that had some locations where equestrian access occurs (Station Road, Boston Mills Parking Lot, Hunt Farm) but limited. NPS has included a statement to clarify equestrian inclusion in the Visitor Use Study on p.134 of the FEIS.

Concern Statement: Description of available equestrian trails within State Parks without similar information for all trail use types (hiking, cross-country skiing, mountain biking, multi-use) is discriminatory.

Response: We do not believe that collecting more information on specific topics is discriminatory. Since equestrians requested additional miles of trail for their use during public scoping but equestrian use is observably lower than hiking/walking, bicycling and running uses (Table 37, p.138), additional information was collected on available trails in Ohio's State Parks and the regional park systems within 20 miles of the Park to provide a regional context to these requests. We also provide the same analysis of trail miles within State Parks for mountain bike use on p. 139 of the Plan to evaluate similar requests for new trail mileage and to characterize the regional context.

Common to All Alternatives

Concern Statement: The bridges on the Old Carriage Trail should be replaced and should be a high priority for the Park.

Response: The Park identifies the restoration of the Old Carriage Trail for visitor use within the Trail Plan and a park priority for FY2013. The Park continues to seek funding for the design, engineering and construction work required for this restoration.

Concern Statement: Updates to the public should be more often than five years as stated in the Draft Plan.

Response: We have included a statement on p.51 to include park review to consider additional interim updates to the Public on the progress of the Trail Plan implementation. The format and frequency of those interim updates will be determined as part of the implementation strategy of the Trail Plan.

Concern Statement: The layout of individual trails is unclear and may have issues pertaining to local conditions.

Response: The alignment of trails proposed in the Trail Plan are conceptual and provides only a general location for them as described on p. 64 of the Plan. The Plan identifies general park resources within 50' of the proposed trail. The Sustainable Trail Guidelines set forth procedures we will follow to ensure the best design is brought forward, adverse impacts to park resources are minimized, and trail user group expertise is involved where necessary.

Concern Statement: What will happen if funding to implement the Trail Plan is not available?

Response: The Trail Plan is intended to set a vision for implementation for the next 15 years. Implementation will be conducted as funding becomes available and projects are prioritized. This Plan will require us to seek a new approach for funding than traditional NPS base and capital budgets. The creation of a portfolio of funding sources is necessary to accomplish the recommendations set forth in the Trail Plan and will be part of the Implementation Strategy identified on p. 50 of the Plan.

Common to All Action Alternatives

Concern Statement: Do not allow street motor bikes into the park system.

Response: Street motor bikes are not permitted on current or proposed park trails. We indicate this on p.80 of the FEIS. Off-road bike trails are proposed for non-motorized bicycles.

Sustainable Trail Guidelines

Concern Statement*:* The public and trail user groups should be included in the trail development process as many have trail use expertise that would be valuable to trail implementation.

Response: We have included a statement regarding public and trail user groups in the FEIS on p. 7 of the Sustainable Trail Guidelines and on p. 50 of the FEIS under Implementation.

Concern Statement: Definitions and concepts used in the Sustainable Trail Guidelines should be included.

Response: We have included definitions as part of the Sustainable Trail Guidelines within the FEIS.

Concern Statement: Mountain bike trails in current trail-less areas should adhere to the Sustainable Trail Guidelines, given the unknown severity of their impacts.

Response: The Sustainable Trail Guidelines will apply to all trails and trail uses with the understanding that best management practices may differ for each trail use, level of trail use activity and specific location attributes. Impacts of off-road, single-tract bike use on park resources were evaluated in Chapter 4 of the FEIS.

Concern Statement: The Sustainable Trail Guidelines should include an established schedule for Guideline updates, a review of additional compliance prior to construction, visitor use evaluations, and an outlined protocol for taking action on user issues and conflicts.

Response: We have included additional statements in the Sustainable Trail Guidelines, under General Site Assessment (p. 7), regarding additional compliance needs. Monitoring visitor use will be part of the development of User Carrying Capacity guidance set forth in Appendix H of the Guidelines. We have also included a statement in the Trail Guidelines on p. 5 providing for a review of the utilization of the Trail Guidelines within five years and to determine the need for updates and future schedule for updates as deemed necessary.

Concern Statement: Water Trails are not represented in the Sustainable Trail Guidelines to the degree necessary to guide water trail design and use within the Park.

Response: We have included a statement on p. 12 of the FEIS Sustainable Trail Guidelines to identify the need for further expansion of sustainable design practices for water trails and have provided references to current available resources. We have updated Appendix B of the Guidelines to include Water Trails as a designated trail type.

Concern Statement: Avoiding bank hardening of river and riparian areas during Trail Plan implementation is not specifically addressed within the Sustainable Trail Guidelines.

Response: The Programmatic Riverbank Management Environmental Assessment addresses riverbank erosion which threatens historic and cultural resources including the Valley Railway, Towpath Trail and archeology sites. It defines techniques which limit hydromodification to the greatest extent possible through the use of natural materials, vegetation and the minimization of hardening. It also provides for the relocation of sections of the Towpath Trail if feasible. While some downstream erosion can be expected from hardening, the park's projects focus on incorporating bank "roughness" into the design with the inclusion vegetation and in-stream features which slow the flows and captures debris and sediments. The Park does not undertake bank hardening projects to protect infrastructure which are not historically or culturally significant resources such as trails or roads. Other entities such as utilities or road authorities do construct such projects and we actively work with them to encourage design similar to those used by the National Park Service. We have included a statement in the FEIS Sustainable Trail Guidelines in section 3.1.2 Natural Resources, p. 27 that trail planning will include utilization of the Park's Streambank Stabilization Plan guidance as part of the design and construction process.

Concern Statement: Clarification is requested regarding reference to Carrying Capacity Guidance, regarding its application for implementation.

Response: NPS has included additional statements on p. 49 of the FEIS regarding reference to carrying capacity guidance and its application during implementation of the Trail Plan.

Concern Statement: Past policies regarding trail sustainability have been that if a trail is in existence and crosses a stream, it stays. Trails identified for removal or restoration in these cases should remain and not subject to the CVNP Sustainable Trail Guidelines or riparian rules. It has been utilized for almost 20 years without damage to the landscape from the usage.

Response: The goal of the Sustainable Trail Guidelines and the Trail Plan is to provide an update to how to best sustain the trails within the Park. Trail design, construction techniques and trail use has evolved since the last Trail Plan. NPS will utilize the Sustainable Trail Guidelines on all trails within NPS lands and will work with both Metroparks on partner lands within the CVNP boundary to determine best design practices for individual trail conditions. NPS will utilize field evaluations to determine the best management approach to ensure adverse impacts are minimized or do not occur.

Concern Statement: Equestrian facility design measures such as mounting blocks and water access need to be considered in the design of equestrian trails within the Park.

Response: We have added a statement in the Sustainable Trail Guidelines, p. 16 of the FEIS regarding additional facility design measures for equestrian trails.

Restoration

Concern Statement: Clarification of definitions for social trails and duplicate trails is requested

Response: We have clarified and added definitions for these terms within the Glossary 5.5.3 of the FEIS.

Concern Statement: The removal of duplicate parallel and/or social trails should be reconsidered. The proposed trail removals will affect visitor experience of hikers and equestrian users causing potential for increased conflict between trail user groups. Trails are in good condition or best management practices can be applied to improve them.

Response: The Trail Plan process included general evaluation of existing trails and their conditions related to sensitive park resources and the best management practices proposed in the Trail Plan's Sustainable Trail Guidelines. These conditions included proximity to known rare plant species, wetlands, and slopes greater than 15%. Additionally, trails that currently possess low trail use that when combined would assist in meeting the Trail Plan goal of the trail network minimizing impacts on park resources were considered.

We have added a statement on p. 52 of the FEIS that the areas identified for restoration, including the proposed trail removals, are priority areas for field evaluation. The field evaluation will follow the Sustainable Trail Guideline procedures to assess the condition of the trail and its future use. If the field evaluations identify that these trails (if allowed to remain), will contribute no new impacts to the trail system, then the NPS can consider foregoing closures or reroutes.

Concern Statement*:* The removal of trails, particularly on the Buckeye Trail and Perkins/Riding Run Trail system, will diminish visitor experiences and some areas identified may have alternative design approaches to examine prior to removal.

Response: A goal for the Trail Plan is to create a trail system that can be sustainable for future generations. As part of the Trail Planning evaluation process, trails were identified where landscape scale conditions exist that do not meet this goal of the Trail Plan. Conditions include slopes greater than 15%, wetlands, floodplains, and sensitive and rare plant species. Additionally, areas where parallel trails exist and low visitor use were identified for restoration or evaluation for removal to meet the goals of the Trail Plan. The Plan has been updated on p.52 that identified restoration areas as priority target areas for field evaluation to determine whether maintaining or realignment of the specified trails will have no new adverse impact to Park resources. The park will utilize the Sustainable Trail Guidelines to fully evaluate conditions and determination of trail restoration management actions.

Trail Facilities – Camping

Concern Statement*:* Some proposed camp sites and parking lots could impose "unacceptable impacts" on park resources, as defined by NPS Management Policies (2006).

Response: Our impact analysis does not find campsites to have unacceptable impacts to park resources. Generally, the analysis finds some minimal impact possible on vegetation and soils due to increased trampling in remote areas of the Park. The campsites will be implemented incrementally, utilizing sustainable best design practices, to further determine visitor use patterns and any management actions necessary to avoid or mitigate unacceptable impacts on park resources from proposed campsites.

Concern Statement: More equestrian campsites should be evaluated and include consideration of the proposed Old Orchard site.

***Response*:** The Trail Plan focuses on hike-in, paddle-in, bike-in or ride-in campsites, where motorized vehicles are not permitted. Equestrian camping requiring additional facilities that may include parking and use of motor vehicles for overnight use (e.g., full service campgrounds) is beyond the scope of this document. We may further evaluate other camping needs in a separate comprehensive planning document.

Concern Statement: Multiple comments were received regarding the level of development of campsites. Some comments discussed more developed campsites with less primitive conditions including water and sewer and others discussed campsites with limited development to retain the "serene" setting of the Park.

Response: The campsites proposed are primitive with no facilities associated with them. Our intention was to retain a more "remote" visitor experience and limit development. Other primitive campsites with some added facilities (toilets and water) are available at Stanford House and are proposed for expansion in the Boston Mills Area Conceptual Development Plan and Environmental Assessment.

Concern Statement: Operations procedures and conditions for campsites including fires, registration and fees, and human waste management are not characterized in the EIS.

Response: Prescriptive guidance for campsite operations will be developed as described under Guidelines for Campsites, General Campsite Regulations, on pp. 58-59 of the FEIS as part of the implementation of the Trail Plan. Guidance for use of fire pits, fees and human waste management are identified within the Plan to be included in those operating procedures

Concern Statement: Location of campsites should accommodate access for new trail use of mountain bike.

Response: Three of the proposed campsites (Buckeye-Dugway, Towpath-Red Lock, Towpath-Frazee) will be accessible by bicycle via the new proposed off-road bike trail and the Towpath Trail.

Trail Facilities - Paddle Launch Sites

***Concern Statement**:* Siting of the Ira Paddle Launch Site did not consider the physical and socioeconomic impacts to the fullest extent, including increased noise by river use to adjacent neighborhoods, proximity to potential prime agricultural lands and access to existing park facilities.

Response: The Ira paddle site was selected due to its location and access to the river and evaluated conceptually. It does not include agricultural lands for its use or facilities and is greater than 1,800 feet from residential areas of concern. Additionally the use of the river is limited to non-motorized vessels, which cause negligible noise pollution. NPS will identify the general area between Ira Road and Bath Road for a paddle launch site and determine the best site during detailed site design work for the site and have revised the FEIS to reflect this broader general area for the paddle launch site. Additionally, NPS will establish carrying capacity use limits and management actions for river use as part of its management program, including collecting river use data as paddle launch sites are implemented as outlined on p. 64 of the Sustainable Trail Guidelines to minimize adverse impacts of this facility.

***Concern Statement*:** Does the Park intend to specifically address low head dams in this plan?

Response: The Park identifies the impacts of low head dams in Chapter 4, Visitor Use and Experience, p. 225. The FEIS has included additional statements on low head dams and how the NPS will address the issues associated with them on p. 56, under Guidelines for Water Trails.

***Concern Statement*:** Skill classification for the Cuyahoga River has been identified as Class I with additional measures such as moving water for its use. Management of hazards, facilities and signage are significant safety issues which the Plan does not identify.

***Response*:** We have included additional statements on p. 56 in the FEIS to identify an updated River Hazard Evaluation as part of the implementation strategy for river use.

***Concern Statement*:** Does the Park intend to consult with paddling experts when implementing site plans?

Response: We have included an additional statement in 2.2.9 Implementation of the FEIS to include user groups in the site planning where applicable.

***Concern Statement*:** Does the Park intend to develop a River Use Management Plan as a prerequisite to water trail implementation? Prior correspondence with the Park indicated that a water trail could be implemented through the Trail Plan and not require a River Use Management Plan.

Response: A River Use Management Plan will be necessary to identify the needs and opportunities required to institute park operations and management with regards to managed river use within the Park. The River Use Management Plan will establish the Standard Operating Procedures for water trail use within CVNP which are identified on FEIS pp. 55-56, (Guidance for Water Trails). The paddle launch sites under the Trail Plan establish general planning locations which can be prioritized as part of the Implementation Strategy of the Trail Plan. NPS has identified the initiation of a River Use Management Plan as a FY 2013 priority.

***Concern Statement*:** The Plan does not identify specific statements regarding portages around dams in the Park.

***Response*:** We have revised the FEIS to include recommendations on p. 56 and 57 for portages where are necessary due to existing dams.

***Concern Statement*:** Distances between primary access sites for paddling access (pages 57-58) are greater than 10 miles in some locations which does not follow ODNR guidelines and the practices of current liveries on the Cuyahoga River. We recommend Boston Mills be added as a Primary Access Site.

Response: Implementation of all access sites will include consideration of distance between launch sites in conjunction with visitor safety and experience**.** We have included statements on p. 56 of the FEIS that identify that distance between access points and current conditions in other locations on the Cuyahoga River outside of park boundaries will be a consideration in the implementation phasing of the access sites. The Boston Mills access site will remain as a Secondary Site, subject to it becoming a Primary Access Site, if evaluation of detailed site conditions and the goals of the water trail system within the Park and beyond park boundaries will be accomplished. ODNR Water Trail Guidelines are identified within the Sustainable Trail Guidelines on p. 27.

Parking

Concern Statement: Equestrian trailer size should be considered for new equestrian parking facilities.

Response: NPS has included a statement on p. 33 of the FEIS Sustainable Trail Guidelines that relates to equestrian parking design which includes trailer size considerations.

Concern Statement: The expanded parking lot development will contribute to congestion and pollution and may cause unacceptable impacts.

Response: The Trail Plan provides a framework for the next 15 years of the Park. The Sustainable Trail Guidelines (Appendix C; p. 32) outlines the NPS policy on parking area development and recommends that monitoring of user demand and the utilization of best management practices be part of any parking area improvements to minimize adverse impacts. The development footprint of the parking areas and associated impacts are described in Chapter 4, Environmental Consequences. The Trail Plan further introduces non-motorized access through connector trails and access to Scenic Railroad stations to provide alternative transportation options for park visitors.

Concern Statement*:* Clarification is needed for Table 4, p. 71 Additional Parking Areas 3A regarding inclusion or exclusion of equestrian parking areas for Alternatives.

Response: We have revised information for Table 4 on p. 70 of the FEIS.

Concern Statement: Clarification and additional statement is needed regarding Old Orchard Parking area replacing the Everett Covered Bridge Equestrian parking to emphasize that Old Orchard will replace Everett as the Equestrian parking area for this Trail Unit Area.

Response: A statement regarding this replacement is on p. 61 of the FEIS.

Concern Statement: The expanded parking area at Cancasi for the Mudcatcher Trail should not be considered since the intersection is dangerous with accidents frequently occurring there.

Response: Vehicle accidents at the intersection of Chaffee and Route 82 occurred with a frequency of3 in 2010, 6 in 2011 and 2 in 2012 (Sagamore Hills Township Police Department, 2012). This parking area and associated trail has been revised as a conditional trail upon additional public involvement and community planning. A statement has been included noting this conditional status on p. 76 of the FEIS.

Alternatives

Individual Trails

***Concern Statement*:** Some individual trails that were included in one or more Alternatives, but were not included in the Preferred Alternative should be added to the final Selected Alternative. (Suggestions included: West Rim, Tree Farm Extension, Boston Run Reroute, Riding Run Extension, Northern Trails, and Sagamore Hike Trail).

Response: As required under NEPA and NPS policies for implementing NEPA, we evaluated a wide range of different alternatives to consider and evaluate, and acknowledge that there are innumerable numbers of alternatives that could be considered in this type of plan. Trails included in the final selected alternative are a result of evaluating how trails helped meet the Plan's goals and objectives, the result of environmental impact analysis in Chapter 4 (Environmental Consequences), and input from the public during the preparation and review of this document. We believe the Selected Alternative focuses on the trail system best suited for the Park and its resources. Some proposed trails are located on lands under regional park jurisdiction and would require approval and their agency design process for implementation.

***Concern Statement*:** The Plan is unclear on why a few specific trails are included in the Preferred Alternative and their overall benefits (i.e., Columbia Hiking Trail, Mudcatcher, Howe-Everett Connector).

***Response*:** The NPS evaluated over 100 trail elements within the Environmental Impact Statement. Based upon the Environmental Impact Statement, the Preferred Alternative and the trail elements included within it best fits the Park's mission and resources and the specific goals and objectives of the Trail Plan.

Alternatives Eliminated

***Concern Statement*:** The NPS should reconsider the expansion of equestrian trails, including the proposed routes identified during public scoping that included from Pine Lane along Route 303 to Hike and Bike trailhead, heading south east of the Virginia Kendall trail system and linking back into the Wetmore equestrian trail system.

***Response*:** The expansion of equestrian trails was dismissed for further analysis and consideration as described on p. 80 of the FEIS.

***Concern Statement*:** The NPS should consider land acquisition for future trail development of individual trails that were not included in the Preferred Alternative.

***Response*:** We discuss land acquisition for trails on p.80 of the FEIS under 2.5.9 Alternatives Considered but Dismissed, Property Ownership. We considered trails that required significant acquisitions to be non-viable, but that we did consider some trails with limited private land acquisition needs in the Plan. Specifically in the Preferred Alternative, the East Rim trail has potential private land acquisition requirements.

Alternatives New Individual Elements

***Concern Statement*:** Introduction of mountain bike use on additional existing trails is recommended to expand trail miles available for this recreational use and enhance visitor experience for this user group.

Response: Expansion of off-road bike use on existing park trails in various trail systems of the park was examined. The utilization of additional existing trails from the Preferred Alternative will not be a viable option within the Park, due to high visitor use, the types of users and the current trail use patterns. As trail use continues to be evaluated and monitored, the Park will continue to evaluate feasibility and perform any additional compliance requirements for shared use trails regarding off-road bicycle use on existing trails.

Alternatives: New Hybrid Alternative

***Concern Statement*:** The Preferred Alternative proposes mountain bike trails but does not exhibit the fullest potential in design and visitor experience for this use. The NPS should create a new hybrid alternative that would include establishing the 2B mountain bike trail on the Buckeye Trail as unconditional, include the South Carriage, Five Falls and the Highland Connector, maintaining the proposed loops in Alternative 5, and include the southern route to Little Meadow trailhead identified in Alternative 4B. Additionally, the South Carriage Trail should be included specifically because it is currently has “unofficial” mountain bike use.

***Response*:** Each of these possible additions to the Preferred Alternative was evaluated during the impact analysis process. We concluded that 10-miles for off-road, single-tract bike trails was an acceptable mileage based on scoping and examples in the regional trail network.

South Carriage Trail and Five Falls Trail will not be included as off-road bike trails in the Preferred Alternative due to unacceptable impacts on adjacent private property owners, minimal access for facilities such as parking, and trail design sightlines crossing at Highland Road.

While these social trails may already be present and utilized illegally today, our analysis on a variety of topics indicate that these locations do not provide the best off-road bike trail experience for the off-road bike user and create environmental impacts.

The extension of the off-road bike trail identified in Alternative 4B will not be considered as this proposed trail would have adverse impacts to park resources and increased potential for trail user conflicts as outlined in Chapter 4.

Trail Development

Concern Statement: No new trails should be developed and future development should be limited. Such development has potential adverse effects.

Response: As stated in Section 1.1.2 Need for Action, the Park has experienced significant changes in visitation, programs and operations since the establishment of a trail system and initial Trail Plan in 1985. Additionally, outdoor recreation trends have continued to evolve the past 25 years on how visitors use or would like to use the Park. The additional development of trails and trail facilities will assist in meeting the needs of current and future visitation to the Park's trails. The majority (57%) of trail expansion exists in already developed areas of the park or adjacent to existing facilities. Three newly developed areas, High Meadow, East Rim and Mudcatcher, where no trails currently exist , are identified and an analysis of wildlife and habitat disturbance was conducted. Due to the proposed locations and siting of the trails, and the ecological conditions within these locations, any adverse impacts are expected to be minimal. The analysis of potential adverse effects of trail elements is provided in Chapter 4 of the document. Additionally, the use of the Plan's Sustainable Trail Guidelines will utilize best practices to minimize the adverse impacts of new trail development.

Impacts to Park Resources

Concerns about Water Resources

Concern Statement: The paddle site near Ira Road is located within 100-yr floodplain.

Response: All proposed paddle launch sites are proposed within the Cuyahoga River 100-yr floodplain as described on p. 166 of the Plan since such facilities are functionally dependent upon access to the water. The Plan and Sustainable Trail Guidelines (Appendix C) outline best management practices to minimize impacts to floodplain functions. As indicated in section 4.2.3, full compliance with DO 77-2: Floodplain Management will be completed prior to implementing any development in floodplain areas. This may include the preparation and public review of a Statement of Findings to evaluate floodplain impacts.

Concern Statement: Water quality will continue to pose a threat to river use within the Park, due to upstream pollution sources.

Response: We agree that water quality improvements need to continue to be pursued outside of park boundaries. Currently water quality monitoring is described in Section 3.6.7.3 of the Plan. We recommend within the Trail Plan on p. 55 expanding monitoring of river conditions within the Park to provide additional information to inform decisions on river uses.

Vegetation

***Concern Statement*:** All trails and specifically mountain bike trails will contribute to habitat fragmentation, wildlife disturbance, negative impacts to rural landscapes, degradation of landscape values and interruption of scenic views.

Response: The impact analysis results for these subject areas regarding off-road bike trail use is provided in Chapter 4 of the FEIS. The preferred alternative will best meet the purpose, need, and goals of the plan while minimizing resource impacts.

***Concern Statement*:** The Buckeye Trail section proposed for mountain bike use is a high quality forest with a high population of bird species.

***Response*:** NPS agrees and identified the high quality habitat conditions in Chapter 3, Wildlife section of the FEIS.

Wildlife and Wildlife Habitat Impacts

***Concern Statement*:** Habitat fragmentation and its relationship to trails are unclear.

Response: Habitat fragmentation is a consequence of adding trails to forested areas and is discussed in the Trail Plan in Chapter 4 on pp. 177 and 189. The specific methodology and impacts for all trail uses is described in these sections of the Plan. Each Alternative causes some habitat fragmentation, but the Preferred Alternative was found to best meet goals of the plan while not posing unacceptable levels of impact.

Concern Statement: New and expanded trails will increase disturbance to wildlife and diminish the available areas for habitat within the Park.

Response: We evaluated the impacts on wildlife and habitat, in relation to disturbance and habitat conditions within Chapter 4, Environmental Consequences. While some impacts may occur, the locations of the proposed trails, current habitat conditions and level of use on primitive trails are not likely to have major adverse impacts on park resources.

Threatened and Endangered Species: Impact of Proposal and Alternatives

Also see comments received and response from U.S. Fish and Wildlife on this topic.

***Concern Statement*:** Endangered pileated woodpeckers are present in areas proposed for new trails.

Response: The pileated woodpecker (*Dryocopus pileatus*) is not a species of concern listed under the Federal or State lists of threatened or endangered animal species. We evaluated wildlife impacts in Chapter 4. The Sustainable Trail Guidelines also consider wildlife impacts in the final layout and design of proposed trails.

Concerns about Soils

Concern Statement: The introduction of mountain bike use on CVNP trails may impact soils and slopes and cause degradation of the resource.

Response: The Plan identified soils as an issue for all trail uses proposed in the Trail Plan. The impact analysis conducted included data and research on the impacts of all trail uses and any comparative differences. The analysis is presented on p. 199 of the Plan. The Sustainable Trail Guidelines have set

forth additional planning, design and construction measures to minimize adverse impacts to soil resources in the Park.

Concern Statement: Without provisions in place for best management practices for dispersed trailside campsites, these additions will increase soil erosion, unnecessarily disturb park flora and fauna and diminish the "remoteness" values of the Buckeye Trail. Additionally, utilization of "green pavement" to minimize soil compaction and erosion for parking areas is recommended.

Response: Our preferred alternative identifies designated trailside campsites (p. 78) and not dispersed campsites, due to the potentially greater impact of dispersed campsites on park resources. The Sustainable Trail Guidelines identify best management practices for parking areas and the continuation of incorporating emerging sustainable practices to minimize impacts to soil resources for these facilities.

Visitor Experience

Trail Uses - Bike Lanes

Concern Statement: Bike lane improvements on Riverview and Akron-Peninsula Road should be a priority.

Response: The NPS does not own the roadways identified in the Trail Plan for bicycle use improvements and only provides recommendations within its plan for bike improvements on local roads within the Park boundary. We will work with local and state government agencies to build cooperative efforts in prioritizing and implementing road improvements for bicycle use.

Trail Uses - Connections

***Concern Statement*:** Connectors between Towpath Trail and Hike and Bike Trail are not clear in the Plan and loops between the two trails should be included.

***Response*:** Each connector between the Towpath Trail and Hike and Bike Trail is identified in the plan as multi-use connectors. The NPS identifies four multi-use connectors between these two regional trails. Loops between these two primary trails are created through the proposed multi-use connector trails and existing trails. In its implementation, the Park will introduce route options for visitors and various visitor experiences.

***Concern Statement*:** The Preferred Alternative reduces neighborhood connector trails that will limit opportunities for residents of adjacent neighborhoods to the Park to have less non-motorized options for access to Park trails.

Response: The Trail Plan does not eliminate neighborhood connectors and actually increases opportunities for neighborhood connectors through the increase of multi-use connectors, improvements of roads entering the park for short-distance bicycle access and three neighborhood connector hiking trails as described on p. 78 of the Plan. Two of the proposed neighborhood connectors are located on Cleveland Metroparks and Metroparks, Serving Summit County lands. Those entities will determine the implementation of these proposed neighborhood connectors on their lands.

***Concern Statement*:** Create connections to adjacent Metroparks and make them a high priority.

***Response*:** The Trail Plan identifies connections to both Metroparks trail systems to assist in creating a wider trail network and continue to build the cooperative partnerships between both Metroparks and NPS. Prioritization of these connections will be part of the implementation strategy development of the Trail Plan.

Concern Statement: The Plan does not include enough long-distance trails and instead adds more short distance trails thereby diminishing visitor experiences.

Response: Because we provide three long-distance trails currently, (Towpath Trail, Buckeye Trail, Valley Bridle Trail), our design approach for expanding long-distance trails within the Park was to not just create new long-distance trails but instead to focus on connecting existing trails systems to create new long-distance trail opportunities. This approach meets the Trail Plan goal to minimize the footprint of the trail system in the Park. The long-distance expansion includes connections in the southern portion of the Park between the Towpath near Howe Meadow and Plateau-Oak Hill System and the introduction of the South Carriage and Five Falls trails for hiking creating linkages to the Towpath and other Park features north and south. It is our understanding that park visitors seek a variety of experiences that includes both short and long distance experiences.

Concern Statement: The preservation of the Original Boy Scout Trail should occur.

Response: We agree and have continued to work in partnership with the Great Trail Council Boy Scouts to provide signage markers along the trails within NPS that follow the original Boy Scout trail.

***Concern Statement*:** Increasing mountain bike trail miles over 20 miles will increase the opportunities to make the Park a destination, increase visitors, and benefit the local economy.

***Response*:** The NPS intent for the Trail Plan is not to increase visitation, but to provide valuable visitor experience to a variety of trail users. While 20 miles of off-road bike trails may expand opportunities for the local economy and increase the Park as a mountain bike destination, the Park intent is to provide a quality off-road bike trail experience, with the necessary mileage to meet the variety of goals set forth for the Plan. Page 139 of the Trail Plan outlines some of the information collected related to distance traveled to use a trail and the distance of the trail the user travels to enjoy.

***Concern Statement*:** Increase access for the public to view the beauty of the Cuyahoga River on foot.

***Response*:** We believe the Preferred Alternative provides for increased access to the Cuyahoga River on foot for viewing the river. The Cuyahoga River is the centerpiece of the Park and the NPS agrees access to the river is important. Hiking-only trails that provide access to the river include the CVC Boardwalk Trail, Hunt Farm Trail and the Ira River Trail. Additionally, the Park will introduce paddle launch sites and riverside campsites to explore the river through a variety of outdoor recreation experiences.

***Concern Statement*:** The Buckeye Trail is a state-wide recognized trail system and the segment between Boston Mills Road and Station Road provide a unique visitor experience. This experience should be preserved. Introducing new uses on the trail would adversely affect this value.

Response: The Park will retain the segment of the Buckeye Trail between Boston Mills Road and Station Road for future off-road bicycle use with conditions as stated as part of the Preferred Alternative. Conditions under which implementation could occur upon evaluation of conditions described on p. 78 of the Plan. The Park will continue to work in full cooperation with the trail stakeholders groups in partnership with the Ohio Trails Partnership throughout the planning and design process for all trails within CVNP.

***Concern Statement*:** Comments were received supporting the use of the Buckeye Trail for mountain bike use citing high visitor experience value for that particular use.

Response: The Park will evaluate the use of the Buckeye Trail between Boston Mills Road and Station Road for off-road bicycle use upon actions described in p. 78 of the Plan.

Equestrian Trail Design

Concern Statement: An equestrian trail system must consider the length due to the riding speed of an equestrian trail rider, therefore requiring more trail miles than hiking trails. Typically equestrian trail rides have the duration of 1 to 5 hours at a rate of 3-4 miles per hour. If the removal of equestrian trail miles proposed in the Trail Plan occurs, new bridle trails will need to be considered to meet the demand for equestrian trail use.

Response: The information provided in Chapter 3, Sections 3.6.3 and 3.6.4 outlines the estimated trail use by the variety of trail user groups and the network of trails available beyond CVNP boundaries for each use. Based upon local, state and national data, equestrian use is lower than other trail uses. The rate of travel for trail users of 3-4 miles per hour for 1 to 5 five hours is also typical of an active hiker, which is typically the most frequent user group on trail systems. The Park utilized the available data to establish the proposed trails and their uses. The Park will continue to evaluate and monitor trails to consider the use of trails and the needs of trail user groups.

***Concern Statement*:** Clarification of equestrian trail miles defined as new or rerouted in Actions Common to All Alternatives is needed.

Response: The Plan has been revised for the Perkins/Riding Run reroutes as Common to All Action Alternatives since they are included in all Action Alternatives (p.53). The trail areas identified are conceptual. Specific trail miles for rerouting and/or removal will need to be field evaluated. The Perkins and Riding Run reroute trails may not be the same amount of trail miles as removed, due to new alignments, therefore, there may not be a no-net change in trail miles for these trails. The proposed reroutes for equestrian trails will remain in the Plan as proposed new trails. Removal of trails does not necessarily require replacement of reroutes, hence, removal and reroute are two separate actions of the proposed alternatives.

***Concern Statement*:** The Plan is unclear on the design of proposed equestrian trails and the use of a loop system.

Response: The Trail Plan is conceptually identifying general areas for trails and their designated uses. Layout and design of trails, including the loop systems, will be further developed during implementation of the Trail Plan for each trail element through the utilization of the Sustainable Trail Guidelines and any

additional best practices for equestrian trail design. The Park will work with user groups and trail design professionals to ensure a trail is designed to provide a desirable visitor experience while protecting park resources.

***Concern Statement*:** The proposed mileage for mountain bike trails within the Park is not sufficient. Equestrians have more mileage and fewer users. Mountain bike user groups should get more miles than equestrian users.

Response: The Park utilized the information provided during public scoping and evaluated all trail uses as part of the impact analysis of Chapter 4 of the FEIS in conjunction with the goals of the Trail Plan. The preferred alternative limits increase of new trail miles for equestrian use and consolidates some equestrian trails with a compatible use, hiking. Trail mileage for off-road bicycle use was developed as part of the overall visitor experience for all visitors to the Park and the land available for a well-designed off-road, single-tract trail for bicycle use.

Off-Road Bicycle Trail Design

***Concern Statement*:** There are four main concerns regarding the design of the proposed mountain bike trail system in the Trail Plan's Preferred Alternative, Alternative 5; length, layout, location and connections. These concerns will diminish visitor use experience for mountain bike use.

***Response*:** The layout of off-road, single track bicycle trails drawn on the Alternatives maps are intended as conceptual, and only identify general areas for off-road bike trails. Detailed site evaluation, layout and design will be conducted for the designated area, in accordance with the recommendations of the Sustainable Trail Guidelines, NPS Sustainable Guidelines and guidance of the International Mountain Bike Association (IMBA). Expertise from IMBA and local and regional mountain bike users and trail designers will be utilized as part of the implementation process. Best design practices for off-road bike trails with consideration of present site conditions will be implemented to create a valuable visitor experience while minimizing adverse impacts on park resources.

The Trail Planning process evaluated numerous options for off-road bike trails within the Park during public scoping. Due to a variety of issues identified and evaluated during the impact analysis including, property ownership, other trail uses, natural and cultural park resources, current park use trends, and visitor use conflicts, a 10-mile trail designated specifically for off-road bike use with availability for use by hikers and runners, in the location proposed was included in the Preferred Alternative. The proposed location of the off-road bike trail within the Preferred Alternative was part of the recommendations submitted by Cleveland Area Mountain Bike Association (CAMBA) during public scoping. The location of the trail will also provide the opportunity to provide a physical link, via the Hike and Bike trail, to other emerging off-road bike trails in both Metroparks systems to establish a regional off-road bike trail system that is larger than what NPS can provide while still meeting its mission.

Concern Statement: The proposed mountain bike in the Preferred Alternative is located on the Krejci Dump site. Because of its environmental conditions, it is not a good location for a mountain bike trail and limit visitor experience due to poor conditions to implement a well-designed system.

Response: Placing trails near the former Krejci dump site on Hines Hill Road in Boston Township will not have an adverse impact on the off-road bike experience or public health and safety. The site was recently (August 2012) declared clean of toxins and is in the process of being restored. There is minimal

siting of new trail on the site. The remote location of the trail will assist the Park in meeting the goals of the Trail Plan associated with visitor experience for all park users.

Visitor Use Conflicts

***Concern Statement*:** Some commenters indicated that the sharing of trails between user groups will increase visitor conflicts and diminish visitor experiences. Alternatively, comments were received indicating the desire for more shared trails among trail user groups and that visitor conflicts were overblown in the document.

***Response*:** Public scoping provided a variety of ideas regarding trail sharing among different user groups. The Park utilized data and research available on a variety of trail systems to evaluate visitor experience of trail uses, as outlined in Chapter 4. The information indicated that some trail uses are more compatible with each other than others. The Preferred Alternative provides opportunities for increased trail sharing among compatible trail uses and limits sharing between less compatible trail user groups. The sharing of trails among compatible user groups will assist the Park in meeting goals of the Trail Plan to minimize the footprint of trails within the Park to protect its resources.

Concern Statement: Equestrian and mountain bike trails cross each other and will cause visitor safety concerns.

***Response*:** The Trail Plan presents a separate trail system between the equestrian and off-road bike trail uses. There is a limited instance where off-road bike trails and equestrian trails may cross paths, near the Dugway Trail and its connection with the Akron-Peninsula Connector Trail. The use on Valley Bridle Trail is projected to be low for equestrian users and visitor use conflict will therefore have minimal adverse impacts.

Socioeconomic

***Concern Statement*:** Some trails are close to private residential or institutional areas and that may impact private properties, particularly near Mudcatcher Trail and the Highland Road Connector Trail.

Response: The Park evaluated each trail element and its proximity to private property in addition to other adverse and beneficial impacts that trails may have on the Park and resources outside of the Park. For trail elements identified in the preferred alternative with adjacent private property concerns, we will conduct additional public outreach to adjacent property owners in coordination with the local jurisdictions as part of additional planning described on pp. 76 of the FEIS. This coordination will help determine if the trail can be designed and implemented without adverse impacts to adjacent private property owners. If this planning effort concludes that a trail cannot be realized without undesirable impacts, the trail element will not be implemented.

***Concern Statement*:** The Park should not be concerned about business opportunities available in regards to the Alternatives of the Trail Plan.

Response: The effects of trails and trail users on local businesses were identified as an issue during public scoping. The Park's location within multiple jurisdictions clearly indicates a potential for impacts and therefore this topic was considered in the analysis.

Park Operations

Concern Statement: Inadequate mountain bike trails do little to reduce operations, law enforcement problems or user conflict. This is particularly true in the South Carriage Trail areas where mountain bike use has been an ongoing activity prior to the parks creation. Because of that, and it's location near a large user base, this activity is likely to continue. Any resource impacts would be greatly offset by a reduction in operations and law enforcement impacts. Since the adverse effects have already been considered as minimal in option 3B it is highly recommended area be included in whatever plan is eventually selected.

Response: The Trail Plan considered a variety of issues for proposed off-road bike trails within the Park as outlined in Chapter 4, Environmental Consequences of the Plan. Previous unauthorized use as a substantial reason to permit use was not considered a viable justification to consider as part of the Plan. Issues considered included access, adjacent private property, trail mileage available for a desired off-road bike trail experience and park resource conditions.

Concern Statement: Designation of a stewardship coordinator and groups and individuals to enhance the use of volunteers for the implementation of the Trail Plan is recommended.

Response: We agree that staffing to coordinate and engage groups and individuals for the implementation of the Trail Plan is essential. This action is identified on p. 50 of the FEIS, Use of Volunteers.

Concern Statement: Please provide clarification on designation of hiking anywhere in the park and the guidance to stay on established trails.

Response: Park policy generally permits open use of its lands by the public (except where closures have been designated by the Superintendent). In keeping with the goals of the Trail Plan and the mission of the NPS and Park, to minimize human impact to park resources, the Park recommends the use of designated park trails for visitor use.

Concern Statement: Mountain bike riding should be available during the night to disperse use and expand visitor experience opportunities.

Response: Determination of off-road bike trail use hours will be part of the implementation of the Trail Plan.

Concern Statement: To enhance the visitor experience of hikers, the park should consider alternative use days on mountain bike trails that would include designated hike-only days to hike mountain bike trails without bikers.

Response: Hiking is permitted on all existing and proposed trails within the Park. Off-road bike use will be permitted on a particular trail system within the Park, therefore, less mileage for off-road bike use will be available than to hikers Since hikers have numerous options for trail use within the park and off-road bike use will be limited in designated areas, further restrictions of off-road bike use is unlikely due to these conditions. However, operations and regulations for trail use on new use trails will be fully determined during implementation of the Trail Plan.

Coordination & Consultation

Concern Statement: One of the equestrian stakeholder groups involved in the public scoping of the Plan was not identified in Section B of Appendix A.

Response: We have revised Section B of Appendix A to include all equestrian stakeholder groups that were involved in the public scoping of the Plan.

Concern Statement: The comment period was not widely known. More direct mailings or publicity on its availability would provide more time to review and comment on the Plan.

Response: We believe we were diligent in letting the public know this document was available for review. We followed all federal requirements for public notice and involvement of the public throughout the two-year planning process. A notice of the Draft EIS availability for public review and comment was provided through the two major regional newspapers (Cleveland Plain Dealer and Akron Beacon Journal) and also carried in several other local newspapers. Additionally a notice was published in the Federal Register, letters were sent to all local jurisdictions, agencies and organizations, and emails were sent to over 250 individual stakeholders and interested parties. All notices included an invitation to three public meetings during the 60-day comment period.