



Morris Avenue in Front of the Washington's Headquarters Area of Morristown NHP  
Source: Volpe Center (September 2019)

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<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> Amanda Jones, RLA Alternative Transportation Program Manager National Park Service - Interior Region 1, North Atlantic - Appalachian 1234 Market St. (20th Floor) Philadelphia, PA 19107				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b> NPS Interior Region 1	
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<b>14. ABSTRACT</b> This report describes the alternative transportation challenges and opportunities for Morristown National Historical Park, located in New Jersey. Walking, bicycling, and using micromobility devices and mobility-assistive devices to travel within and between the four park areas and other nearby cultural, recreational and historical destinations, is a challenge due to the auto-oriented nature of the transportation network in the region. The report details infrastructural options for improving alternative transportation safety and accessibility, including traffic calming strategies, increasing visibility, and reducing vehicle speeds. The report also includes suggested operational strategies to encourage alternative transportation use.					
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## Report Notes

This report was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center, in Cambridge, Massachusetts. The project team was led by Jonah Chiarenza, of the Transportation Planning Division, and supported Rachel Chiquoine, PhD, of the Transportation Planning Division and Ben Bressette, of the Program Development and Capacity Building Division.

This effort was undertaken in fulfillment of PMIS 144368, *Morristown NHP Alternative Transportation Feasibility Study Update*. The project statement of work was included in the July 2018 Interagency Agreement between the National Park Service and the Volpe Center (NPS agreement P18PG00356).

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#### *National Park Service, Interior Region 1*

Amanda Jones, Alternative Transportation Program Manager

### Stakeholder and Partner Organizations

#### *Morris County Historical Society at Acorn Hall*

Amy Curry

#### *Macculloch Hall Historical Museum*

Ryan Hyman

#### *Morris County Arts*

Tom Werder

#### *Morris County Office of Information Technology*

W. Stuart Walter

#### *Morris County Park Commission*

David Helmer

#### *Morris County Office of Planning & Preservation*

Christine Marion

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Dede Murray

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#### *Morris Museum*

Dr. Cleveland Johnson

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Cathy Wilson

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Daniel Callas

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## Definitions

The following terms are used in this report:

AASHTO	American Association of State Highway and Transportation Officials
CMA	Commercial Management Authorization
CUA	Commercial Use Agreement
DOT	Department of Transportation
FHWA	Federal Highway Administration
LPI	Leading Pedestrian Interval
MORR	Morristown National Historical Park
MPH	Miles per hour
MUTCD	Manual on Uniform Traffic Control Devices
NACTO	National Association of City Transportation Officials
NEPA	National Environmental Protection Act
NHP	National Historical Park
NHPA	National Historic Preservations Act
NJ DOT	New Jersey Department of Transportation
NJTPA	North Jersey Transportation Planning Authority
NJ Transit	New Jersey Transit
NPS	National Park Service
STIP	Statewide Transportation Improvement Program
TBD	To be determined
TIP	Transportation Improvement Program
TMA	Transportation Management Association
W3R	Washington Rochambeau Revolutionary Route

## Executive Summary

In 2018, the National Park Service (NPS) requested the U.S. Department of Transportation (DOT) Volpe National Transportation Systems Center (Volpe) to update a prior (2010) Alternative Transportation Phase II study for Morristown National Historical Park (Morristown NHP). This report documents the findings from that study update, which focus on improving pedestrian and bicycle access within and to and from Morristown NHP.

Established in 1933, Morristown NHP is the nation's first National Historical Park, located thirty miles from New York City in northern New Jersey. The park is composed of four areas, each of which played host to important events during the Revolutionary War: Washington's Headquarters (HQ), Fort Nonsense (FN), Jockey Hollow (JH), and New Jersey Brigade (NJB), all of which are geographically separated from one another (see Figure ES-1).

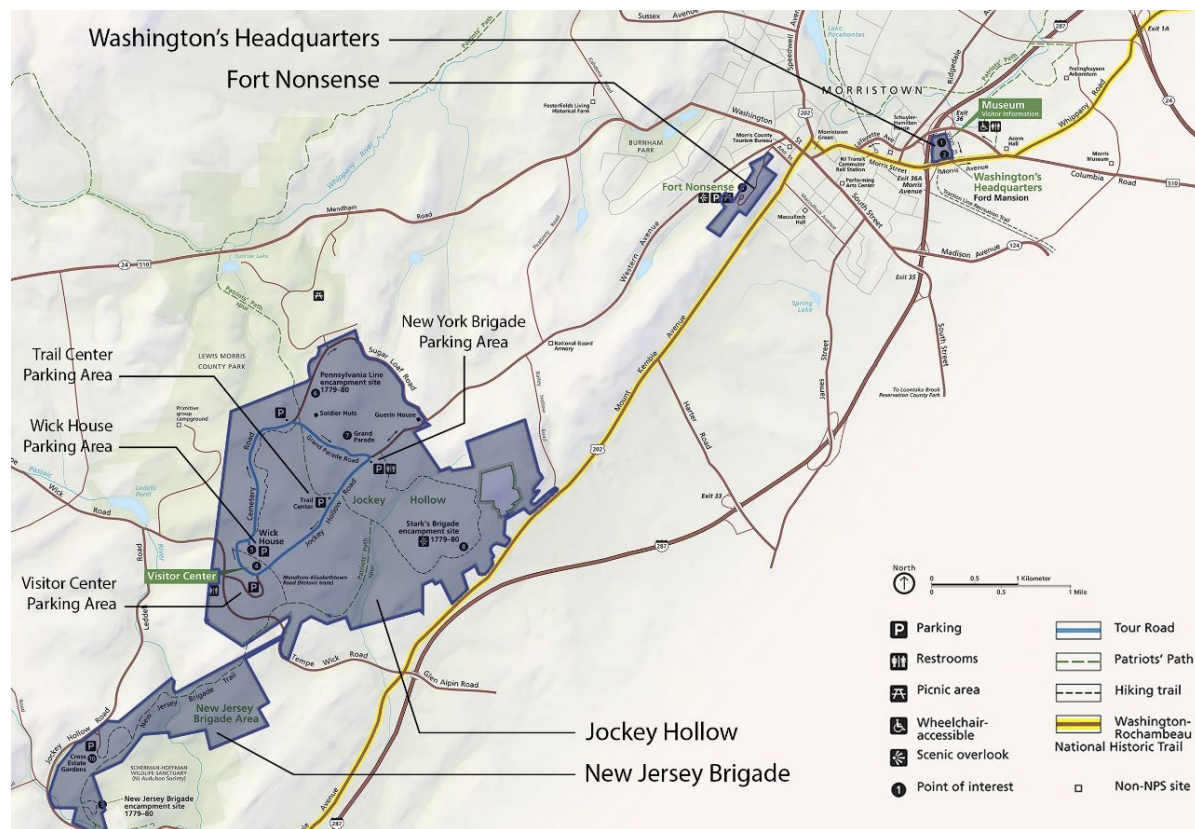


Figure ES-1: Morristown NHP Site Map.  
Source: NPS. Modifications: Volpe

## Challenges

A network of forested trails and low-volume, paved roads provide visitor access through FN, JH, and NJB, while the HQ area of the park is connected to multi-use trails and sidewalks and surrounded by high-volume paved roads. Park staff and stakeholders identified vehicle speeding and potential for conflicts between drivers and non-motorized travelers as the key challenges to safe and comfortable alternative transportation on-site. Staff also noted that some residents may not be aware of the park and its opportunities for recreation and cultural exploration, which may also inhibit active<sup>1</sup> transportation within park boundaries.

Active transportation faces a different set of challenges off-site, between the four Morristown NHP areas. Despite close proximity to one another, the transportation and land use environment surrounding Morristown NHP is primarily conducive to motor vehicles. As such, park visitors depend heavily on access by private vehicles for intra-park travel between the four areas, along roadways owned and maintained by local, county, and state agencies. To improve alternative transportation safety and comfort on these routes requires close coordination and collaboration with these partner agencies for planning, design, and funding of any infrastructure or operational changes.

## Opportunities

On-site, Morristown NHP boasts an expansive set of trails, totaling approximately 27 miles, that connect with an even larger regional trail network. The Jockey Hollow area of the park is anchored by a tour road loop that provides access to historical sites within the park and provides an attractive recreational destination for visitors. The other three areas also feature popular destinations accessible via low-volume roads and/or trails. Low-cost traffic calming projects can help manage vehicle speeds and highlight potential conflict points where trails cross NPS roadways. Improving the visibility of crossings can help visitors take better notice of the trail network. Park programming, including car-free days and guided tours by foot or on bike, can also help encourage more people to enjoy Morristown NHP without the use of a personal vehicle.

Beyond its boundaries, Morristown NHP benefits from an abundance of neighboring cultural, recreational, and commercial destinations. This means that alternative transportation improvements both on and off NPS-owned lands, trails, and roadways can benefit many other stakeholders in addition to NPS visitors. Improvements may include traffic calming, sidewalk or trail widening, improved crosswalk placement and warning signs, and reconfigured roadway geometry could provide a safer, broader range of alternative transportation options for the larger Morristown community.

## Stakeholder Engagement

NPS staff provided Volpe with extensive feedback and direction during the course of the project, from the existing conditions assessment, to review of historical visitation data, and through the development of alternative transportation programming and design concepts.

Non-NPS stakeholder engagement played an equally important role in the project. Representatives from over 15 different cultural and historical organizations, municipal agencies, and non-profit groups identified key challenges and opportunities for improvement both within and surrounding Morristown NHP. Many of the opportunities to improve alternative transportation on-site would benefit from connections to off-site destinations. In turn, off-site alternative transportation improvements would provide benefit not only to NPS-visitors and local partners, but to regional travelers as well. For these reasons, it was critical to have the input and direction of stakeholder organizations and partner agencies in developing this study.

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<sup>1</sup> <https://www.nps.gov/subjects/transportation/bikeped.htm> “active transportation” is defined as traveling by foot, bicycle or other non-motorized mode



## **Next Steps**

Many of the concepts identified in this report reflect or build upon efforts already underway, such as the pursuit of a local bikeshare pilot, leveraging redevelopment projects to improve transportation access and safety, and addressing motorist speeding while improving pedestrian access through neighborhood traffic calming projects.

This report is meant to support continued coordination between stakeholders, and advance ongoing efforts to improve alternative transportation in the area to better serve the National Park Service and its neighbors and partners.

## Section 1: Introduction

Established in 1933, the National Park Service (NPS) unit, Morristown National Historical Park (Morristown NHP), is the nation’s first National Historical Park, located thirty miles from New York City in northern New Jersey. Morristown NHP is composed of four areas, each of which played host to important events during the Revolutionary War: Washington’s Headquarters, Fort Nonsense, Jockey Hollow, and New Jersey Brigade (See Figure 1-1). The park’s four areas are geographically separated. Despite close proximity to one another, the transportation and land use environment surrounding these areas is primarily conducive to motor vehicles. As such, park visitors depend heavily on access by private vehicles for intra-park travel.

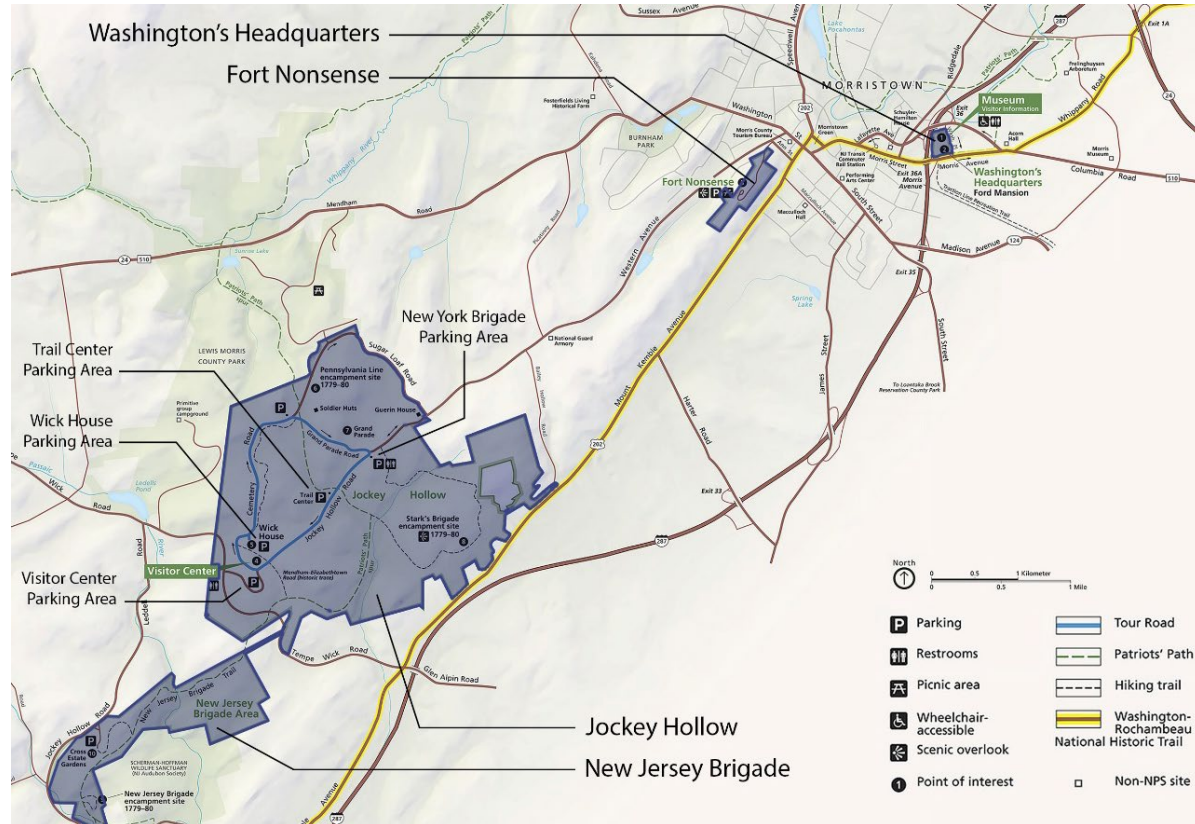


Figure 1-1: Morristown NHP Site Map.  
Source: NPS. Modifications: Volpe

### Original Study: 2010

In 2010, the U.S. Department of Transportation (DOT) Volpe National Transportation Systems Center (Volpe) completed an Alternative Transportation Phase II study for Morristown NHP. The 2010 study recommended a shuttle service that would circulate through the Town of Morristown, Morris Township, and Morris County, connecting visitors to the four Morristown NHP areas, and surrounding historic and cultural destinations. The shuttle service was not ultimately implemented because of challenges related to funding and operating the proposed shared service. Nevertheless, since the conclusion of this original study, Morristown NHP has remained interested in exploring alternative transportation opportunities for visitor travel to and from NPS areas that does not require a personal vehicle.

## Study Update: 2020

In 2018, NPS, Interior Region 1 approved support from Volpe to revisit the Phase II study and consider new opportunities to improve alternative transportation options for people visiting the four areas that compose Morristown NHP. NPS staff directed Volpe to focus this study on making it safer and more convenient to walk and bike within and between the areas, as well as to improve access for people using other modes including wheelchairs and other mobility devices used by people with disabilities, people accessing existing transit services, and people using emerging mobility options such as bikeshare.

As with the prior study, NPS staff were eager to consider access improvements not only between Morristown NHP areas, but connections with other nearby cultural and recreational destinations. The goal of this study update was to identify infrastructure and operational improvements that could better link all NPS and neighboring locations for people interested in walking, bicycling, or using another methods of alternative transportation.

## Project Area Context

### Washington’s Headquarters and Fort Nonsense

Figure 1-2 provides a map of downtown Morristown, New Jersey and environs. This map includes numbered references to key NPS sites: the Morristown NHP Washington’s Headquarters area, which includes the museum (1) and Ford Mansion (2), as well as the Fort Nonsense area (3), the site of the historic former fort on a bluff overlooking the Town of Morristown.



Figure 1-2: Map of Downtown Morristown showing two Morristown National Historical Park areas “Washington’s Headquarters” and “Fort Nonsense” as well as primary historical and cultural destinations in the surrounding Morristown area.

Source: NPS, Google Maps. Modifications: Volpe

Washington’s Headquarters and Fort Nonsense bookend downtown Morristown and are surrounded by several other cultural and historical destinations, as well as recreational, community, and alternative transportation destinations. These non-NPS locations represent important stakeholders and partners relevant to Morristown NHP and the study of local alternative transportation issues and opportunities. Because access improvements for Morristown NHP necessarily require changes to the roads, sidewalks, and trails that connect the four NPS areas, they also stand to provide similar benefits to visitors and users of these nearby destinations as well.

Cultural/historical stakeholders and partner organizations:

- Acorn Hall (Morris County Historical Society)
- Morris Museum
- Frelinghuysen Arboretum
- Schuyler-Hamilton House
- Mayo Performing Arts Center
- Macculloch Hall
- Morris County Tourism Bureau
- Historic Speedwell
- Washington-Rochambeau Revolutionary Route (National Historical Trail, *alignment shown in yellow highlight on Figures 1-1, 1-2, and 1-3*)

Recreational, community, and alternative transportation destinations:

- Patriots' Path regional trail and connected trail links
- Traction Line Recreational Trail
- Morristown Green
- Lake Pocahontas
- NJ Transit Commuter Rail Station

### **Jockey Hollow and New Jersey Brigade**

Morristown NHP's Jockey Hollow and New Jersey Brigade (which includes the Cross Estate Gardens) areas are located south of the Town of Morristown. Jockey Hollow is entirely within Morris County, while the New Jersey Brigade includes acreage in both Morris and Somerset counties. The two areas are adjacent to regional Morris County Parks, and the New Jersey Audubon Society Scherman-Hoffman Wildlife Sanctuary. These locations are all linked to one another through the regional trail network, along the spine of Patriots' Path. See Figure 1-3 for a map of the Jockey Hollow and New Jersey Brigade areas, and Figure 1-4 for a more detailed map of trail networks and key locations within Jockey Hollow.

### **Regional Partners**

In addition to local stakeholders and partners as listed above, Morristown NHP is bordered by several distinct municipalities, and is connected by transportation networks—roads, sidewalks, trails, and transit service—administered by the following agencies:

- Town of Morristown
- Morris Township
- Morris County (and Morris County Parks)
- New Jersey Department of Transportation
- New Jersey Transit

These agencies and municipalities represent critical partners in fostering improved alternative transportation access to Morristown NHP. Since access improvements would be outside of NPS jurisdiction, these agencies would need to lead the design and implementation of any such improvements, as owners of the transportation facilities. In addition, any alternative transportation improvement concepts to serve visitors to Morristown NHP would also impact these agencies and municipalities and their constituents. Figures 1-5 and 1-6 show which roads are owned and operated by each of the above agencies, based on data provided by Morris County and reviewed by Morristown NHP and Volpe.

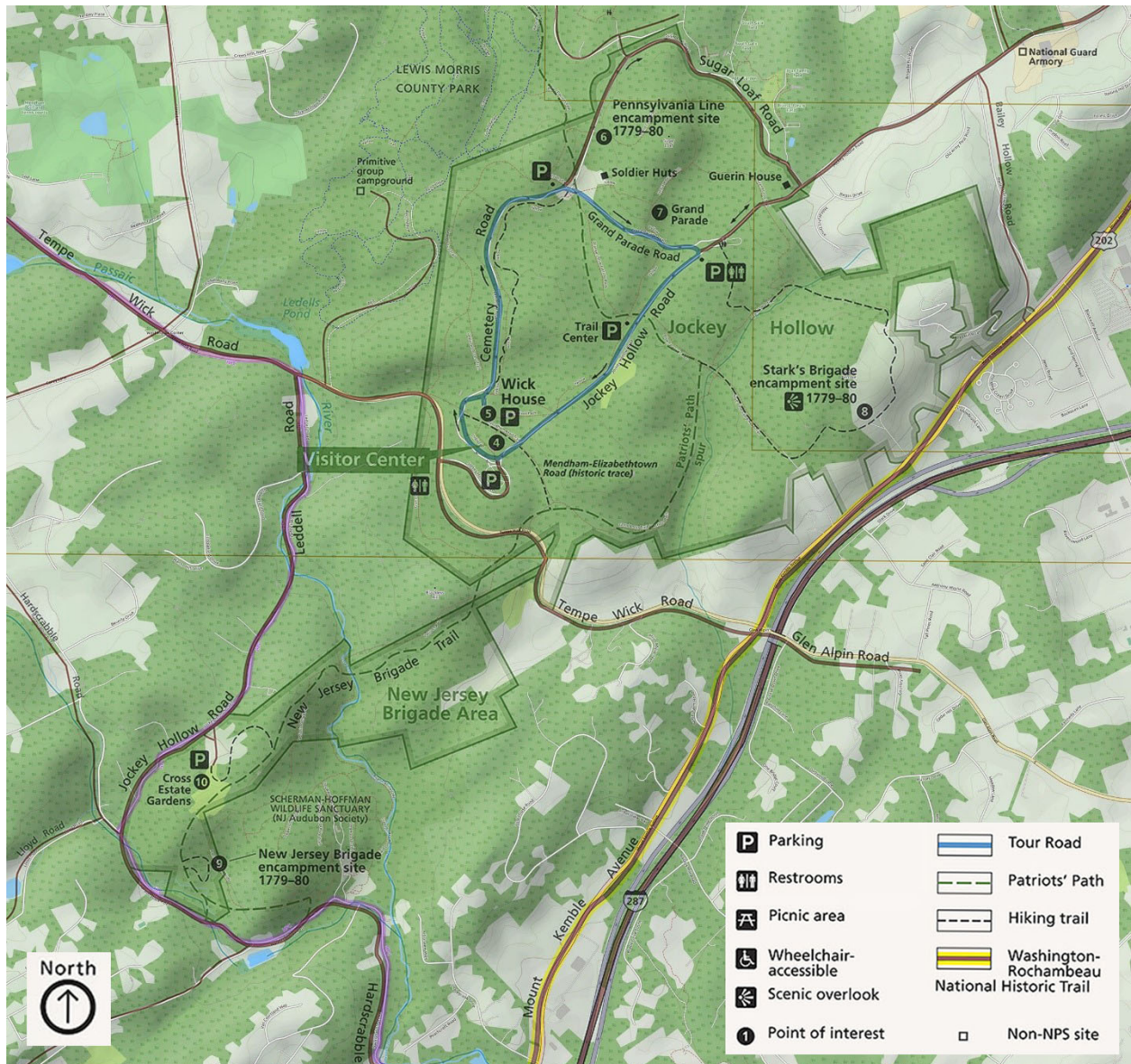


Figure 1-3: Map of Morris County south of Town of Morristown showing two Morrirstown National Historical Park areas “Jockey Hollow” and “New Jersey Brigade” as well as primary roads and trails, and nearby recreational and cultural destinations.

Source: NPS, Google Maps. Modifications: Volpe



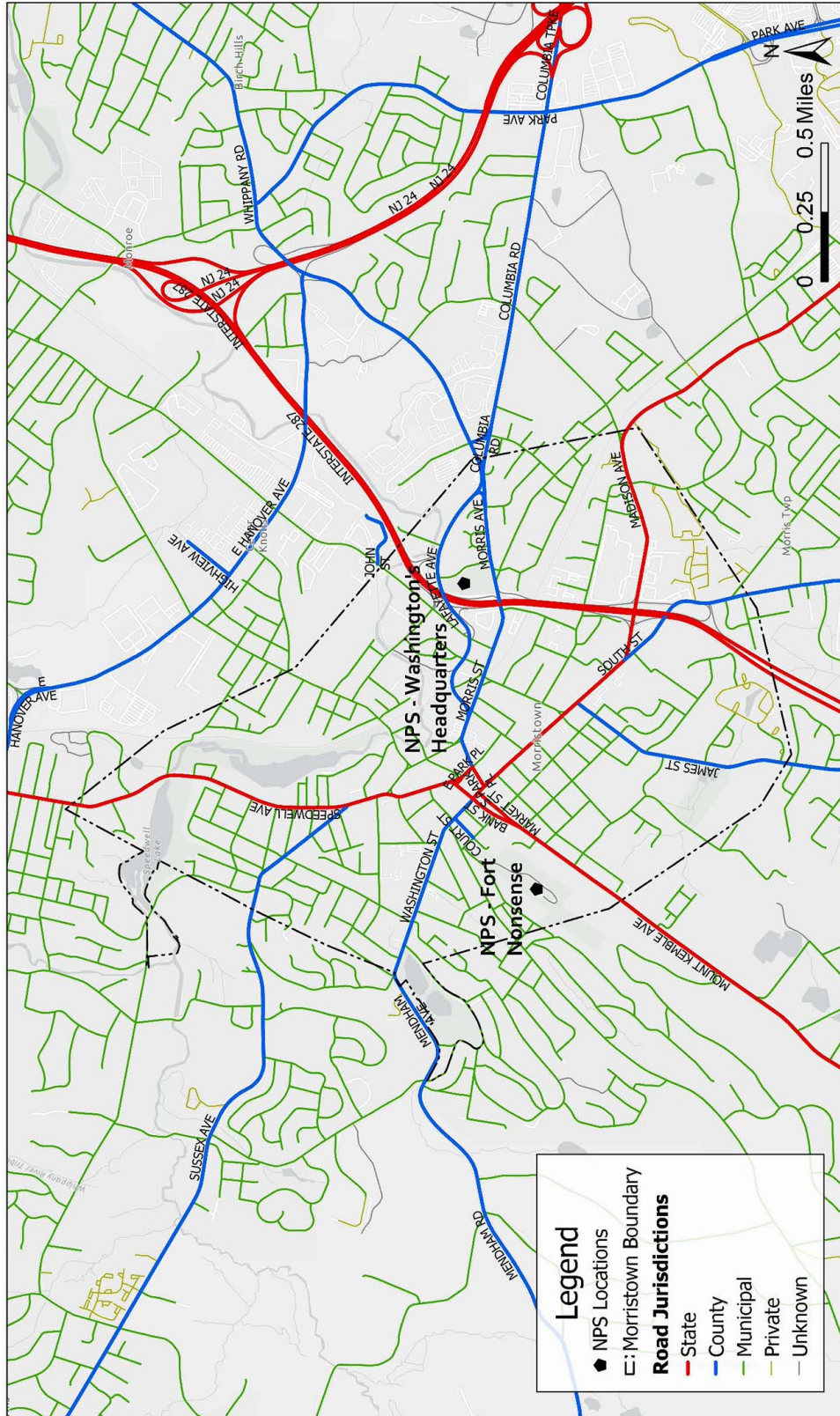


Figure 1-5: Downtown Morristown and Surrounding Area: Roadway Ownership.  
 Source: Morris County. Modifications and formatting: NPS and Volpe.

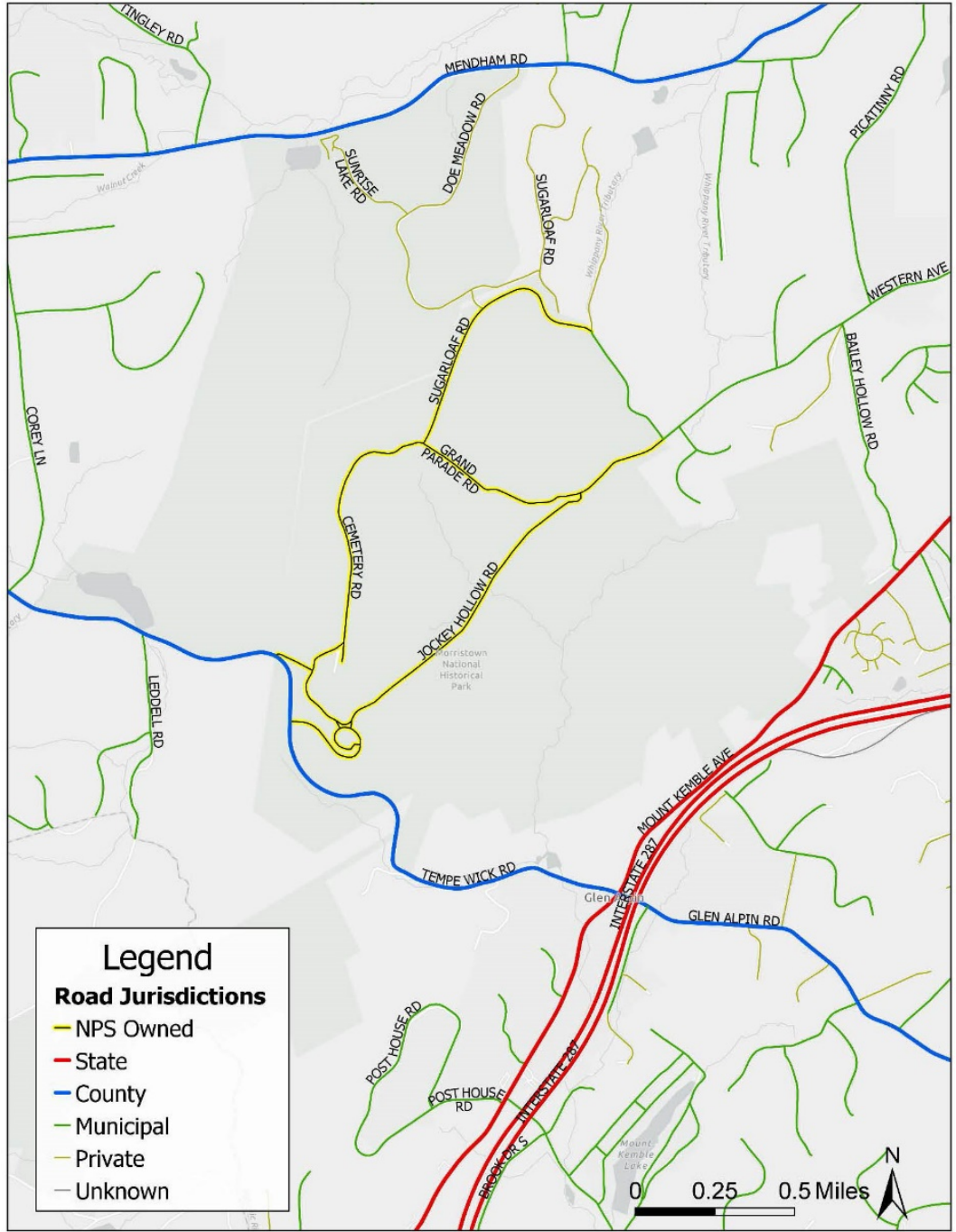


Figure 1-6: Jockey Hollow and New Jersey Brigade and Surrounding Area: Roadway Ownership. Source: Morris County. Modifications and formatting: NPS and Volpe.



## *Stakeholder Engagement*

The NPS is committed to improving alternative transportation access, including active transportation. For example, the 2018 *National Park Service Active Transportation Guidebook*<sup>2</sup> promotes building “partnerships beyond park boundaries” and “encourages park staff and their partners to focus on active transportation infrastructure and programs both within and outside of park boundaries to create meaningful connections.”

As emphasized in this *Guidebook*, engagement with surrounding partners is critical to building successful connections. This is especially true for parks like Morristown NHP that are composed of multiple areas connected by non-NPS-owned transportation networks and situated adjacent to non-NPS-owned lands.

### **Stakeholder Input on Alternative Transportation Issues and Opportunities**

The project kick-off meeting for this study was held in Morristown NHP headquarters on April 22, 2019. The meeting served as an orientation to the alternative transportation issues and opportunities present in the area, and provided a valuable stakeholder engagement opportunity.

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<sup>2</sup> <https://www.nps.gov/subjects/transportation/bikeped.htm>

Appendix A: Project Stakeholders provides a list of project stakeholders who participated in the kick-off meeting and/or follow-up conversations.

The Morristown NHP Alternative Transportation Project stakeholders listed in Appendix A represent 15 separate organizations, agencies, and municipalities. All of the concepts presented within this report are the result of input received from NPS staff and these key stakeholders. Many of the concepts reflect or build upon efforts already underway, such as a local bikeshare pilot, leveraging redevelopment projects to improve transportation access and safety, and addressing motorist speeding while improving pedestrian access through neighborhood traffic calming projects. As such, this report is meant to support continued coordination among stakeholders, and advance ongoing efforts to improve alternative transportation in the area to better serve the NPS and its neighbors and partners.

## Section 2: Existing Conditions

### *Historical Planning*

Morristown NHP's original 1934 General Plan recognized the difficulties posed by disconnected areas. It proposed a parkway running along Mount Kemble Ridge connecting Jockey Hollow with the town via Fort Nonsense. The intention was to spare visitors the "intermingling of traffic" during their visit, present "beautiful scenic effects," and to "further enable the visitor to gain an appreciation for the region as a whole." This parkway was never built, and travel between the areas remains a challenge. Travel between Washington's Headquarters and Jockey Hollow can take longer than anticipated to cover approximately seven miles. Frustration with traffic congestion and difficulty navigating between the areas on winding and numerous different roads results in many visitors cutting short their visits before they have seen all of the park's areas.

As a result of its unique challenges, Morristown NHP outlined in its 1976 Master Plan that a sustainable alternative transportation solution would make a visit to park areas more enjoyable and facilitate the park's efforts to provide quality interpretation of these locations' historical significance. Providing a convenient, non-motorized means of travelling between and within park areas would give visitors an expanded insight into the context these locations provided during the pre-automotive era of the Revolutionary War. Additional benefits include reduced vehicle congestion within the park, reduced potential for conflicts between motorized and non-motorized traffic within and between each area, reduced parking lot congestion, and improved access to the park for those with an interest or requirement to travel via means other than a personal vehicle (e.g. people hiking or bicycling for recreation and people with disabilities using sidewalks and paved ADA-accessible trails).

### *Visitation Analysis*

Annual visitation to Morristown NHP varies widely from year to year. Because of the park's historical significance, visitation tends to increase during significant events like the NPS Bicentennial. During the early 1990s, visitation regularly reached between 650,000 and 700,000, but has not risen above 400,000 since 2003. During the year, visitation is highest in the spring and summer months. It is expected that Morristown NHP will see an increase in visitation for the 2026 United States Semiquincentennial, the 250<sup>th</sup> anniversary of the 1776 establishment of the United States of America (hereafter referred to as the 250<sup>th</sup>).

#### **Historical Visitation Trends**

Figure 2-1 shows how visitation has changed over the past three decades. The Phase II study was completed in 2005 (highlighted in orange in the chart) when the park experienced a relatively low visitation figure of about 242,000. This dip in visitation was due to the shutdown of the Washington's Headquarters Museum for major rehabilitation beginning in 2005. The highest visitation during this period was about 730,000 in 1992. Since 2005, park visitation has changed incrementally from year to year, but remained relatively constant with an average annual record of 270,000 visits.

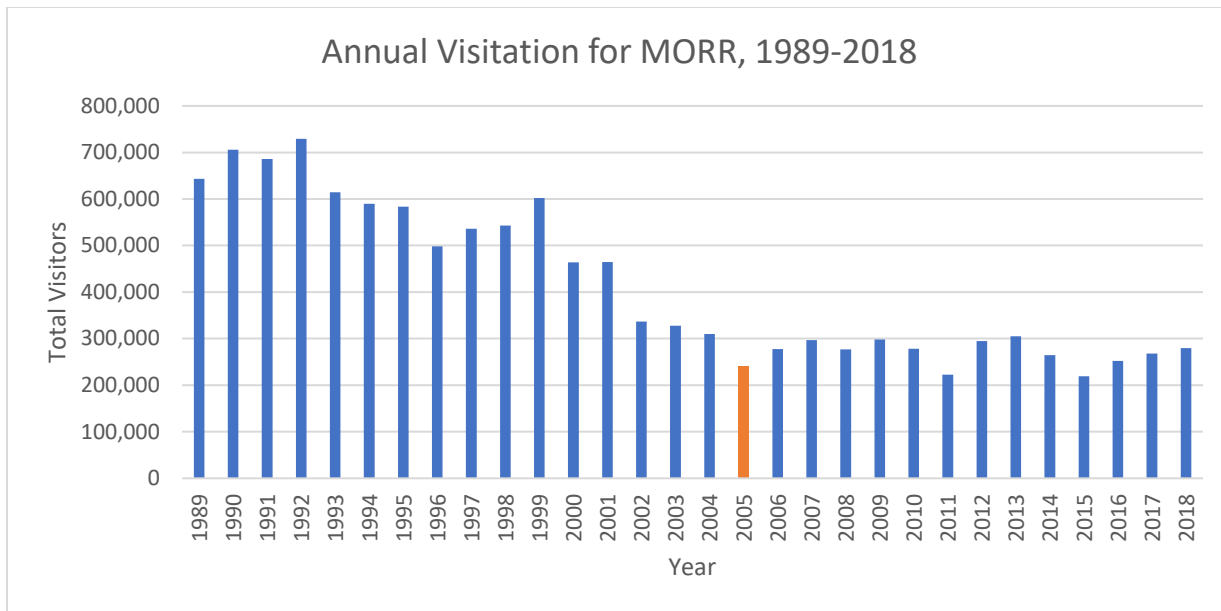


Figure 2-1: Annual Visitation, 1989-2018.  
Source: NPS Integrated Resource Management Applications

Figure 2-2 shows all visitation data since recording began in 1933 through 2018. Over this time, average annual visitation is a little above 408,000. Notably, the highest visitation on record occurred during the Bicentennial year of 1976, with over 900,000 visitors. As a Revolutionary War era park, Morristown NHP attracted an increasing number of visitors leading up to and following this important national milestone.

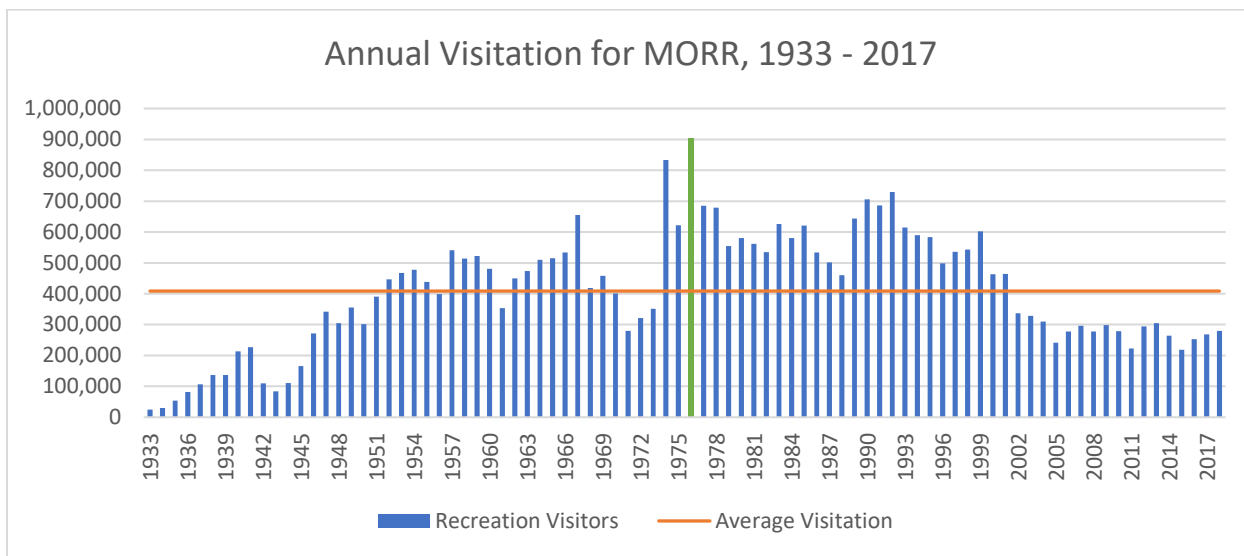


Figure 2-2: Annual Visitation, 1933-2018.  
Source: NPS Integrated Resource Management Applications

Figure 2-3 provides a closer look at the years leading up to and following the Bicentennial. This chart shows the variation that preceded 1976, the spike between 1974 and 1978, and the subsequent return to more consistent visitation, albeit at a higher average than before the Bicentennial. Figure 2-4 shows additional information about these years, displaying the average visitation figures over the peak years of 1974-1978, along with the average visitation from the preceding and subsequent 8-year periods. These

data reveal that average visitation jumped by nearly 75 percent with the Bicentennial. While visitation then declined by over 20-percent in the subsequent 8-year period, the park recorded an average of nearly 150,000 more visitors per year over the pre-Bicentennial period, an increase of over 35-percent.

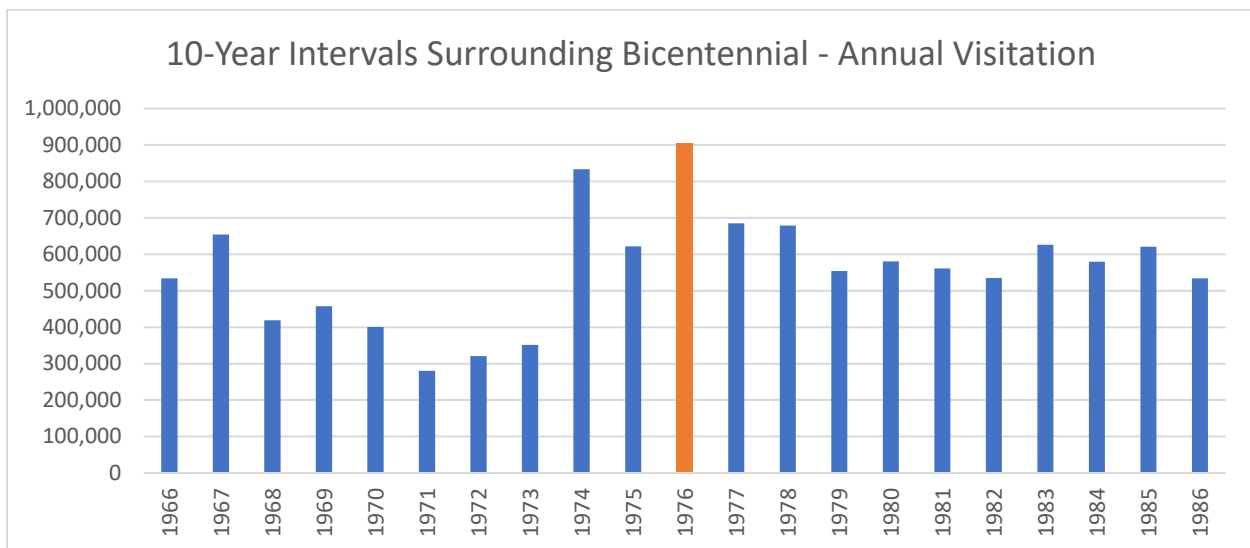


Figure 2-3: 20-year window around the Bicentennial.  
Source: NPS Integrated Resource Management Applications

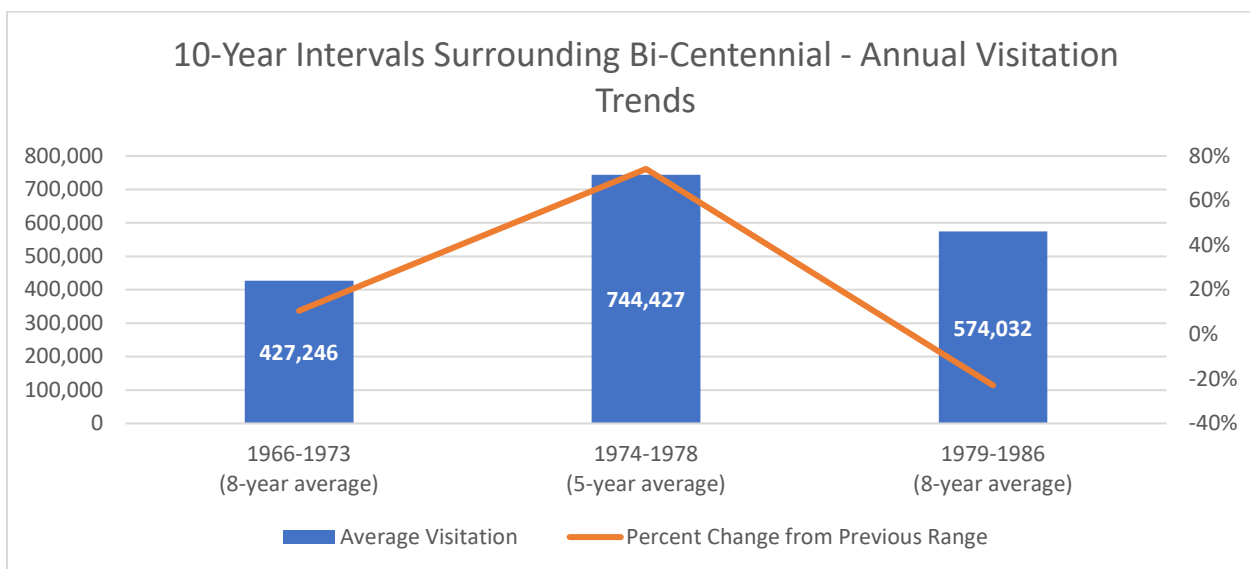


Figure 2-4: Average Visitation and Percent Change before and after the Bicentennial.  
Source: NPS Integrated Resource Management Applications

It is difficult to determine how much of an impact the 250<sup>th</sup> will have on Morristown NHP visitation. If the 250<sup>th</sup> results in similar trends as those seen for the Bicentennial, Morristown NHP will experience an increase in visitation leading up to 2026 and maintain a higher average visitation in the years to follow.

## Seasonal Visitation Trends

Figure 2-5 shows monthly visitation for 2018. These trends reflect typical NPS, Interior Region 1 trends for NPS park units in the northeast like Morristown NHP, with peak visitation in the summer months and in the shoulder seasons of spring blooms and fall foliage, and lower visitation over the winter months.

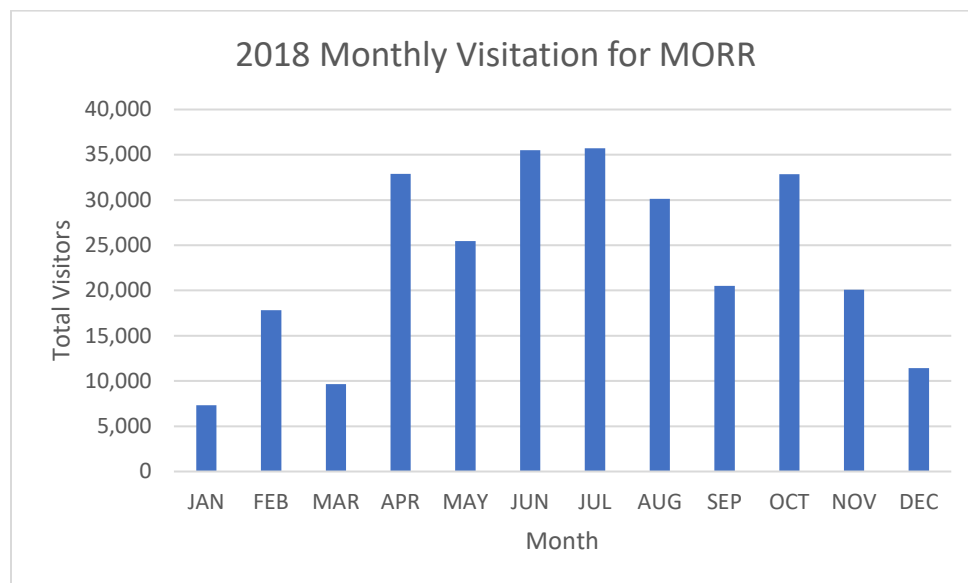


Figure 2-5. Monthly Visitation, 2018. Source: NPS Integrated Resource Management Applications

## Detailed Visitor Data

Data on visitors traveling between the Washington’s Headquarters/Fort Nonsense areas and the Jockey Hollow/New Jersey Brigade areas are limited. The only data that exist are traffic counts at individual entrance points, but these do not capture how many of the same visitors access multiple areas, and in which order they sequence their trip.

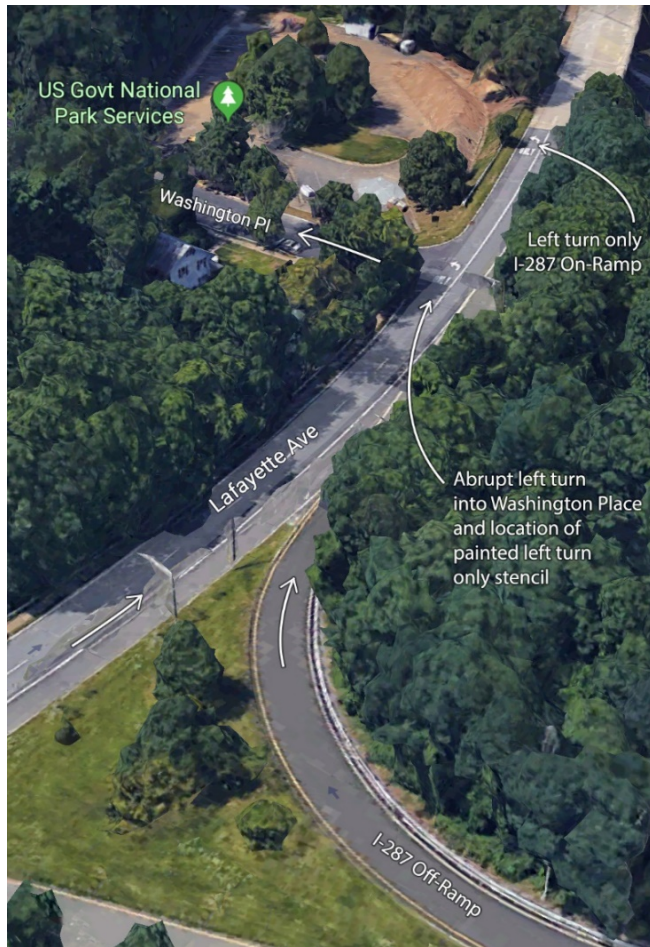
Based on discussions with Morristown NHP staff, anecdotally many visitors to Jockey Hollow and the New Jersey Brigade areas are there for local recreation activities, rather than for the locations’ historical significance. This differs from visitors to Washington’s Headquarters, who typically have an interest in the historical significance of Morristown NHP, and often intend to access multiple areas during their visit.

## Transportation Challenges

Morristown NHP staff note that visitors regularly communicate to park staff that they are confused about how to travel between the four areas, and it is common for visitors to abandon plans to visit multiple areas because of the challenge of navigating between them. Difficulty in navigating between areas is not unique to out-of-town visitors. Park staff report that local community members are concerned about poor connectivity between areas due to traffic, circuitous driving routes, including many one-way streets, and poor or nonexistent pedestrian and bicycle infrastructure and wayfinding on the most direct routes between areas.

## Washington’s Headquarters and Fort Nonsense

Vehicle access to Washington’s Headquarters can be confusing to visitors. Washington Place is a one-way street (southbound) with single family residences on the east side of the street and Park Service property on the west side. To access the on-site parking for the museum and Washington’s Headquarters, visitors must travel past the site along Morris Avenue, which is one-way eastbound, and drive nearly one mile, making a sharp left turn onto Lafayette Avenue, which is one-way westbound. Further complicating this



route is the subsequent and very abrupt left turn onto Washington Place from Lafayette Road, which is challenging to see because of the street curvature (see Figure 2-6). There is an off-ramp from Interstate-287 (I-287) onto Lafayette Avenue (Exit 36B) positioned nearly opposite the intersection with Washington Place. Although vehicles coming off Exit 36B are supposed to continue westbound along Lafayette Avenue to its intersection with Ridgedale Avenue, many local motorists use this off ramp to get to Washington Place, crossing a solid line, as a time-saving route to Morris Avenue. During the morning and afternoon rush hour, Exit 36A off I-287 is often backed up with vehicles onto the highway's breakdown lane due to congestion. All visitors to the park are directed to use Exit 36A and drive down Morris Avenue and take a left turn onto Lafayette Avenue to access Washington Place and the museum areas parking lots. However, Park staff report that drivers using Exit 36B to access Washington Place have resulted in numerous car crashes in this area due to the illegal merging across three lanes to make a very quick left turn onto Washington Place. Park staff, including NPS law enforcement, indicated that several of these crashes have resulted in the destruction of the park's gateway sign at this location as well as overturned vehicles in the Washington's Headquarters parking lot.

Figure 2-6: Aerial view of Lafayette Avenue and Washington Place (Note: this aerial was taken before the I-287 shield was painted on the travel lanes)

Source: Google Earth. Modifications: Volpe



Figure 2-7: Washington Place at Lafayette Avenue looking toward NPS parking lot and I-287 on-ramp

Source: Volpe

Access on foot or by bike to Washington’s Headquarters from downtown Morristown requires traveling across the I-287 bridge and crossing either an on- or off-ramp from this interstate. These pedestrian and bicycle crossings are challenging because of poor sidewalk and curb ramp conditions, and the high-speed geometry of the curves (see Figures 2-8 and 2-9).



Figure 2-8: Morris Avenue looking east  
Source: Volpe



Figure 2-9: Morris Ave on the bridge over I-287 looking east toward the on-ramp  
Source: Volpe

Fort Nonsense is accessed via Ann Street, off Western Avenue. Once on Ann Street, visitors make a quick turn onto Chestnut Street, which leads to the Fort Nonsense access road. The access road up to Fort Nonsense is unstriped and is intended for two-way traffic. The access road includes a wooden guardrail



but provides no dedicated pedestrian or bicycle facilities. With the exception of the sharp turn in the access road part-way up the bluff, this road has relatively good visibility and the traffic moves relatively slowly, due in part to the narrow and wooded character of the roadway. The access road features an annual bicycle hill climb competition and is a popular location for bicycle “hill repeats”—a training exercise in which riders repeatedly climb and descend the hill (see Figure 2-10).



Figure 2-10: Fort Nonsense Access Road looking north  
Source: Google Street View

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### **Jockey Hollow and New Jersey Brigade**

Route 202 (Mt. Kemble Avenue) is a busy route that parallels I-287. It connects Morristown with points south in Morris County, including the Jockey Hollow and New Jersey Brigade sites. Route 202 was recently repaved and a fog line that marks the edge of the legally drivable portion along the majority of the roadway. The line creates a small shoulder; however, this space is not suitable for occasional bicyclists (see Figure 2-11). The other primary roadway that connects downtown Morristown with Jockey Hollow is Western Avenue, a primarily residential street that, while narrow, appears to have relatively less traffic than Route 202 (see Figure 2-12).



Figure 2-11: Route 202 (Mt. Kemble Avenue) looking south  
Source: Google Street View

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Figure 2-12: Western Avenue looking south  
Source: Volpe

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There are a number of barriers to alternative transportation at the Jockey Hollow and New Jersey Brigade areas. Connections across Tempe Wick Road are limited to two trail crossings on the Grand Loop Trail, and potential conflicts between cars and alternative transportation users are a concern. This limits non-motorized access between Jockey Hollow and New Jersey Brigade. On the tour road loop within Jockey Hollow—Cemetery, Grand Parade, and Jockey Hollow Roads—there are some locations with poor sight distance because of curving roads and topography (e.g. on the approach to road summits – see Figure 2-13).



Figure 2-13: Grand Parade Road in Jockey Hollow  
Source: Volpe

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While data are not available, anecdotal reports from site visits and discussions with park staff indicate that there are often more people on foot than in vehicles on the tour road loop. Many visitors arrive by private vehicle and park in the lot closest to their entry point, using the loop for a recreational walk or run. Many families are present, and some users walk dogs or push strollers, while others, including children, ride

bikes. Park staff, including law enforcement officers, report that most vehicles on the tour road loop and the connecting segments of Sugarloaf and Jockey Hollow Road maintain appropriate speeds for the shared-use nature of these roads. However, because of the many trail crossings and the mix of motorized and alternative transportation modes on the roads, park staff expressed interest in traffic calming and speed reduction strategies to reduce the potential for conflicts. The forested nature of Jockey Hollow and the New Jersey Brigade areas, and the rural character of the park roads in these areas, are important components of the cultural and recreational setting. To maintain the areas' cultural and scenic character, signage and roadway striping are intentionally minimized.

Park staff indicated that visitors can be confused about parking areas, including navigating to the overflow parking at Wick House. New visitors to Jockey Hollow may also be confused by the one-way loop that comprises tour road loop, which requires motorists, once they travel beyond the parking areas, to complete a full loop or exit the area at a different location than where they entered.

### *Transportation Opportunities*

Certain local transportation routes provide a benefit to park visitors who wish to use alternative transportation options. The Traction Line is a paved multi-use path parallel to commuter rail tracks, which terminates at Morris Avenue across from Washington's Headquarters less than one-tenth of a mile west of Washington Place. Patriot's Path is the spine of a cross county (east-west) regional trail network that connects Washington's Headquarters to Jockey Hollow and the New Jersey Brigade areas, among many other cultural, recreational, and commercial sites. Several spurs off the Patriots' Path and other trails form a substantial off-street alternative transportation and recreation network.

Local projects have improved on-street alternative transportation access as well. Complete streets design projects were implemented nearby, including residential traffic calming on Washington Avenue and shared bike stencils and bike parking infrastructure along South Street in Morristown.

The Washington's Headquarters area's close proximity to Morristown's vibrant downtown can attract more visitors to the park when there are activities at the Morristown Green or along South Street. The park can also capitalize on proximity to other cultural and historical institutions, such as the Morris County Historical Society at Acorn Hall, the Frelinghuysen Arboretum, Macculloch Hall Historical Museum, Morris Museum, and Schuyler-Hamilton House, among others. The New Jersey Brigade shares a boundary with the New Jersey Audubon's Scherman-Hoffman Wildlife Sanctuary and connects to the sites through two hiking trail connections.

Morris County, Morris Township, and the towns of Morristown and Madison are working with TransOptions, the Northern New Jersey Transportation Management Association (TMA) to implement a bikeshare program to improve alternative transportation options in the region. Washington's Headquarters and Fort Nonsense are sites that will likely benefit from availability of bikeshare, as it may allow visitors to travel more easily between those sites and other adjacent destinations. At this time, the Jockey Hollow or New Jersey Brigade areas may not be likely destinations for bikeshare users participating in the pilot system. The planned deployment area puts the focus on bikeshare users in and around downtown Morristown. E-bikes<sup>3</sup> in particular may be attractive for users who would like to ride the tour road loop, which features some significant grades. Leveraging the WiFi service at the Visitor Center, such a system could potentially operate without significant NPS staff resources.

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<sup>3</sup> Electric bikes, also known as "e-bikes" and "e-assist bikes" are motorized, battery-powered bicycles that provide additional propulsion when a rider pedals, or are propelled by a throttle mechanism alone.

### Section 3: Alternative Transportation Options: On-site Locations

Morristown NHP on-site locations, including the lands, roadways, parking areas, and trails owned and maintained by the National Park Service, provide several opportunities to enhance alternative transportation. Jockey Hollow and New Jersey Brigade areas in particular have well-used trail and road networks, which support walking, hiking, and biking. Both areas attract local, regional, and out-of-town visitors for a combination of historical interest, recreation, and wildlife viewing.

The geographical proximity of these areas and their connections with adjacent non-NPS wooded, cultural, and recreational areas further support alternative transportation use within and between them. Jockey Hollow is adjacent to Lewis Morris County Park with connections via roads and trails to active recreation like ball fields, a swimming lake, dog park, mountain bike and hiking trails. New Jersey Brigade area provides access to the New Jersey Audubon Society Scherman-Hoffman Wildlife Sanctuary and Morristown NHP's Cross Estate Gardens. All of these locations are accessible via the regional trail network.

These on-site locations provide alternative transportation opportunities that can be grouped into two categories:

1. *Operations efforts*, for which Morristown NHP staff would develop programming to support and encourage the use of alternative transportation.
2. *Infrastructure efforts*, including the implementation of changes to the roadways, trails, and parking areas, to improve alternative transportation access and safety.

#### *Programming Opportunities*

“Open streets” or “car-free” opportunities and events enable visitors to enjoy walking and bicycling on park roads without automobile traffic (open streets and car-free are used interchangeably). Car-free opportunities have occurred in some cities and in local, state, and national parks around the country for over 50 years, and there are currently a number of NPS units that provide such experiences for visitors. These events vary in scale, frequency, and level of partnership involvement.

Open streets are excellent ways for visitors to experience parks without automobile traffic, while also engaging in active transportation and recreation; some parks have noted that their car-free experiences have attracted first time visitors<sup>4</sup>. Car-free opportunities can provide many health, environmental, safety, economic, and visitor experience benefits for parks, their partners, and nearby communities by:

- Promoting active living and encouraging modes of travel other than private motor vehicles;
- Assisting parks with addressing congestion and air quality issues;
- Providing opportunities for visitors to engage more meaningfully with the surrounding landscape and experience the park in a new way;
- Encouraging more visitors to use active transportation to travel in the park beyond the car-free event;
- Encouraging partnership efforts and building relationships with gateway communities;
- Spurring tourism and economic growth in surrounding communities; and
- Increasing the value that communities place on having a national park in their backyard

Table 3-1 provides examples of the various types of car-free events that have been deployed throughout the NPS. Within Jockey Hollow, car-free days could initially take the form of special events on a few

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<sup>4</sup> Examples of car-free events include Crater Lake National Park's “Ride the Rim” event, and pedestrian and bicycle-only access to Cades Cove Loop in the Great Smokey Mountains National Park on set days and times during the summer.

specific dates during a given year. These dates could be selected to correspond with other community or regional events, and could feature guided tours along the tour road loop. Guided tours of park areas could highlight the travel modes available to Revolutionary Era soldiers, meaning travel on foot or by horse. Traveling through Jockey Hollow on foot or by bicycle would allow NPS staff to highlight for visitors how the distances between sites and the experience of the land would have been different for the soldiers and officers.

Table 3-1: Existing NPS Car-Free Opportunities and Programs  
(Source: NPS Active Transportation Guidebook)

Type	Description	Level of Effort/ Considerations	Example Parks
Seasonal opportunities	Seasonal access for visitors during the shoulder season in the spring/fall when select roads are not open to vehicles due to snow (visitors are still able to access other areas of the park using motorized vehicles). Exact timeframe varies year to year depending on weather and snowfall.  Seasonal opportunities can bring tourism to gateway communities and encourage park visitation during shoulder seasons, which are typically in the spring and fall.	Requires minimal to moderate effort from park staff as plowing would take place anyway, but there are maintenance and safety considerations while visitors are using park roads. Notifications are often posted on the park website, and there may be other communications to let users know that the road is available for use. Typically no programming or amenities are provided.	<ul style="list-style-type: none"> <li>▪ Catoctin Mountain</li> <li>▪ Denali</li> <li>▪ Glacier</li> <li>▪ Grand Teton</li> <li>▪ Lassen Volcanic</li> <li>▪ Mount Rainier</li> <li>▪ Rocky Mountain</li> <li>▪ Yellowstone</li> </ul>
Routine (weekly/ monthly) opportunities	Temporary use restrictions on a park road (or a portion of a road) to allow for only nonmotorized uses on a scheduled, recurring basis. Allows visitors to regularly experience vehicle-free days at the park.	Requires a moderate level of effort to get the event established, though this can decrease once the event is routine. Event information is often available on the park website. Typically little to no additional programming or amenities are provided.	<ul style="list-style-type: none"> <li>▪ Great Smoky Mountains</li> <li>▪ Rock Creek Park</li> </ul>
Special opportunities or events	Temporary use restrictions on a park road (or a portion of a road) to allow for only nonmotorized uses once or twice a year, typically during the summer or fall.	Level of effort and coordination varies widely. Parks might simply restrict vehicle use on a designated road on specific dates and provide notification on the park website, or a destination event might be created with partner coordination to provide programming and amenities.	<ul style="list-style-type: none"> <li>▪ Acadia</li> <li>▪ Crater Lake</li> <li>▪ Colonial Parkway</li> <li>▪ Fort Dupont Park</li> <li>▪ Shenandoah</li> </ul>

Occasional closures of Jockey Hollow’s tour road loop to public vehicles would still allow visitor parking at the Visitor Center and New York Brigade areas, and would afford visitors a completely car-free experience on the Cemetery, Grand Parade, and Jockey Hollow segments of the tour road loop. Morristown NHP staff also suggested that a partial closure could be implemented, limited to the Jockey Hollow and Grand Parade segments of the tour road loop. This configuration would allow motorists to travel along Cemetery Road and enable access to the Wick House and Soldiers’ Huts parking areas. The only additional resources that this would require is park staff to enforce and guide visitors through the

park, as well as sufficient marketing materials to advertise the event. Other NPS units have experienced success with similar events through the use of social media (Facebook and Twitter), as well as traditional media channels, to attract people to events and establish expectations.

Morristown NHP staff could also engage in operational activities that encourage alternative transportation both on- and off-site. Either in tandem with or as a separate event, Morristown NHP could implement ranger-led walking or cycling tours of both Washington's Headquarters, connecting it with the Town of Morristown's historical sites via the Traction Line, Normandy Parkway, and Columbia Road to the south and east, as well as Morris Avenue and Morris Street to the west. While this could be done without any coordination of local municipalities, doing so and advocating for safer pedestrian and bicycle infrastructure along these roads would improve safety for Morristown NHP visitors and local users alike. Coordination with partner historical and cultural destinations further strengthens the potential for joint advocacy to local, regional, and state organizations that control the roadways for which this report provides active transportation alternatives.

## *Bikeshare*

Bikeshare is an opportunity for Morristown NHP to provide bicycle options to visitors without making significant investments in bicycle equipment or infrastructure. Outside of park boundaries, Morristown NHP has the opportunity to collaborate with the Town of Morristown, Madison Borough, and Hanover Township as they pursue an emerging bikeshare program with TransOptions, a regional non-profit. If implemented, this program would provide roughly 15 bikeshare docking stations throughout these municipalities, potentially providing not only additional travel modes to Morristown NHP areas, but also reinforcing the need and demand for improved bicycle infrastructure in the area. The TransOptions project is currently in the planning stage; funding is still being raised and locations for stations have yet to be identified.

Challenges for Morristown NHP to implement bikeshare include obtaining a Commercial Use Agreement (CUA) for use on park lands, cell phone connectivity in Jockey Hollow, and access to solar and/or electricity to power the bikes and docking stations. However, there are potential solutions to these issues that will require Morristown NHP to coordinate with TransOptions and the other stakeholders participating in the proposed bikeshare pilot.

Other NPS units have successfully implemented bikeshare. The National Mall model is provided through Capital Bikeshare, which is owned by District Department of Transportation (DDOT). Because this is not a private entity, a CUA is not required. There is, however, a special use permit. The National Mall special use permit example has the following benefits, costs, and requirements:

- Allows DDOT to install, maintain, and operate the bikeshare on NPS land
- Must comply with the National Environmental Protection Act (NEPA) and the National Historic Preservations Act (NHPA)
- Each station requires its own application
- DDOT is responsible for everything and assumes all cost
- No advertisements are allowed on any Capital Bikeshare infrastructure on NPS land

Many of the stations connect with existing transit, which is a benefit to NPS visitors, Capital Bikeshare users, and WMATA (Washington Metropolitan Area Transit Authority) riders. In Morristown, connections with the NJ Transit stations and existing multiuse path network could provide a similar "first mile/last mile" benefit for travelers who do not have access to or chose to avoid using a car.

An alternative to bikeshare could be a more traditional bike rental model for Morristown NHP. A bike rental program would require a commercial management authorization (CMA) for a concessionaire to operate. Rock Creek Park and Chesapeake Ohio Canal have bike rentals in operation and could provide additional insights into implementing a bike rental at Jockey Hollow. The brick-paved area outside the

Jockey Hollow Visitor Center is a good potential locations for the bike rental. Such a model would ideally operate without regular staff, similar to a docked bikeshare system, but would be maintained by the concessionaire. The Visitor Center has WiFi and power, which would enable users to access the rental bikes via a smartphone app and/or via a kiosk. Users could then rent the bikes on an hourly basis to complete the tour road loop, returning the bikes back to the Visitor Center when complete. If feasible, e-bike rental bikes would expand the potential range of visitors who might consider riding, due to the considerable hills along the tour road.

### *Infrastructure Opportunities*

NPS staff and stakeholders have repeatedly noted concern about vehicle speeding and the potential for conflicts between pedestrian and bicyclists with motorists within Jockey Hollow and on surrounding municipal and county roads. The Morristown NHP superintendent, who resides in Jockey Hollow, and NPS law enforcement officers who patrol the park confirmed that speeding is a perennial issue and that preventative measures were desirable to reduce speeding and the potential for conflicts and crashes.

In response to these specific concerns raised by NPS staff and stakeholders, Volpe developed a number of concepts for potential traffic calming and pedestrian safety upgrades in the Jockey Hollow and New Jersey Brigade area. These concepts are based on industry best practices and the context and character of these areas. All of these locations are on park owned and operated roadways (see Figure 1-6).

#### **Jockey Hollow Traffic Calming Concepts**

The principle improvement concepts are trail crossing countermeasures<sup>5</sup> on the tour road loop (Jockey Hollow Road, Cemetery Road, and Grand Parade Road). While small trailhead signs and blazes provide information to people using the trails, the locations where trails cross over the roadway are not marked with roadway signage to warn motorists of these crossings. As such, these crossings represent potential vehicle-pedestrian conflict points. Formalizing the crossings would help reduce these safety concerns. See Figure 3-1 for the locations of trail crossings, which are described in further detail below.

Various options are available to formalize the crossings. Painted crosswalk markings provide a signal to motorists that pedestrians may be present and crossing the roadway. Raised and painted crossings have the combined effect of providing an elevated, more visible crossing to alert motorists to the potential presence of pedestrians, while also helping to manage vehicle speeds through “vertical deflection” that encourages motorists to slow down in advance and while driving over the raised element of the crossing. Raised crossings are different than the abrupt speed humps one might find in a parking lot, and are designed to be driven over (or cycled over in the case of a bicyclist) at a low speed without discomfort.

Installing raised crossings at the locations where people are most likely to be crossing the road takes advantage of both aspects of this particular countermeasure. Since the trail crossings are well-spaced along the tour road loop, raised crossings could help provide consistent speed reduction throughout the loop. In certain locations speed humps, rather than crossings, could be used to maintain speed controls even where there is no trail crossing shows potential traffic calming locations.

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<sup>5</sup> “Countermeasure” is a traffic engineering term used to describe infrastructure-based elements that address adverse transportation safety conditions. These may include signs, painted markings, traffic signals, lighting, and constructed roadway elements like speed humps, sidewalk extensions, etc.

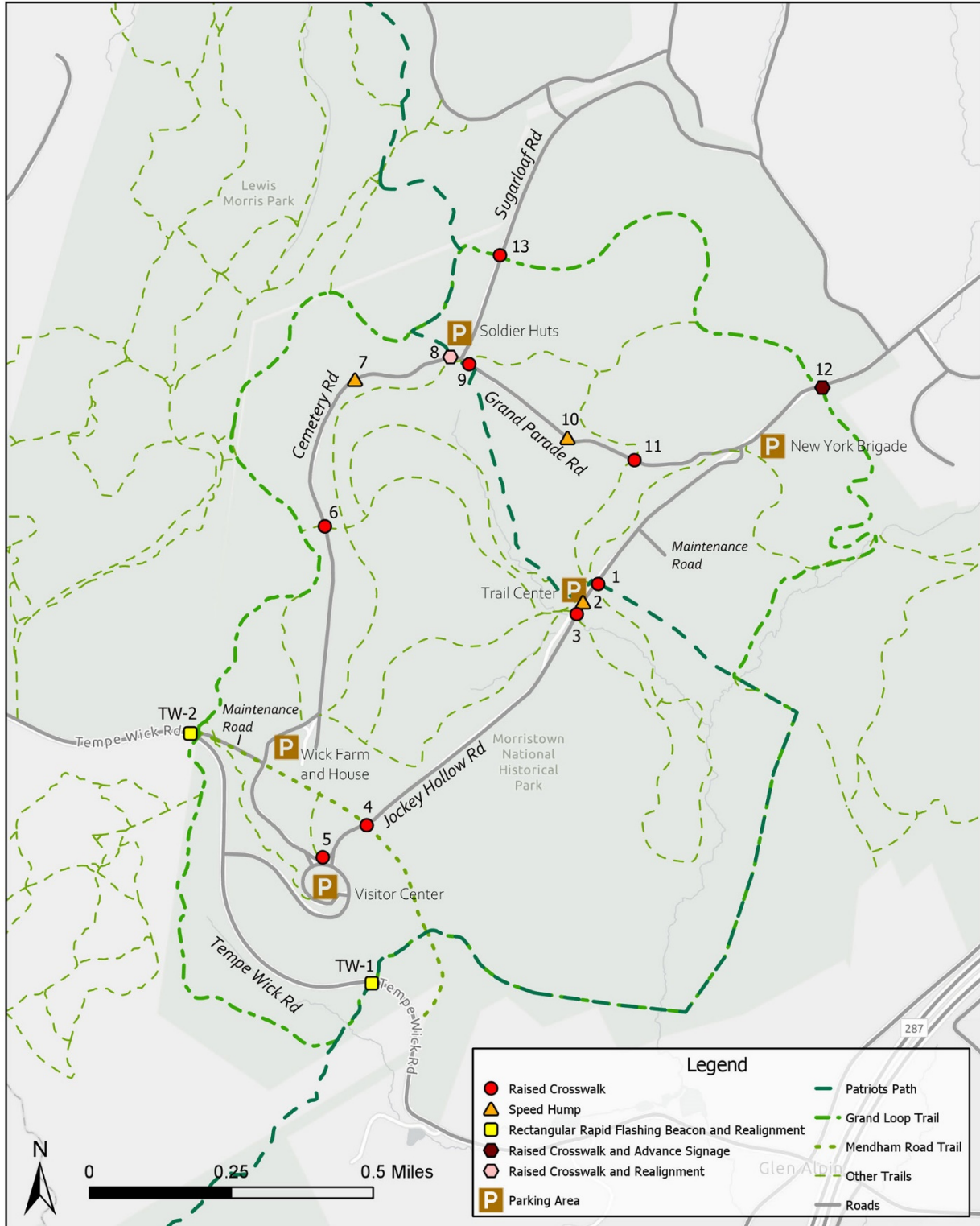


Figure 3-1: Jockey Hollow Traffic Calming Location Concepts Key Map.  
 Source: NPS, Morris County. Modifications: Volpe.



Installing traffic control devices and markings must be done with consideration to the woodland character of Jockey Hollow, and the value of maintaining the historic nature of the environment for people experiencing this important Revolutionary War site. High-visibility warning signs can be paired with high-visibility “continental” “zebra” or “ladder” crosswalk markings, or “standard” transverse lines, depending on visual preference and engineering judgement. Figure 3-2 shows options for signage to accompany the raised crossings, and Figure 3-3 shows the various types of crosswalk markings that can be used. Yield lines are often used to indicate where motorists are expected to yield in advance of crossings. Figure 3-4 shows an illustration of yield lines.

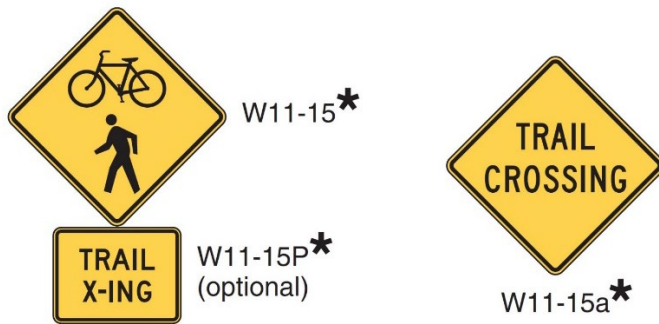


Figure 3-2: Trail Crossing Warning Signs

Source: [Manual on Uniform Traffic Control Devices \(MUTCD\) Section 2C.49](#)

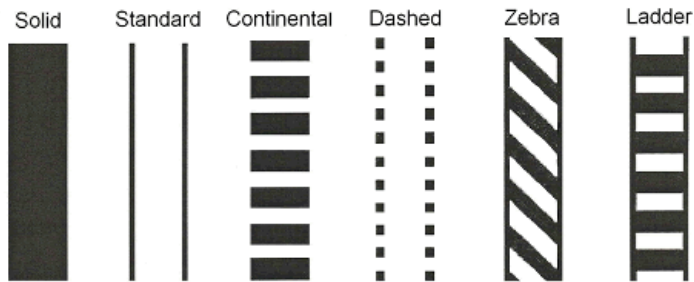


Figure 3-3: Crosswalk marking types

Source: [Federal Highway Administration \(FHWA\) University Course on Bicycle and Pedestrian Transportation](#)

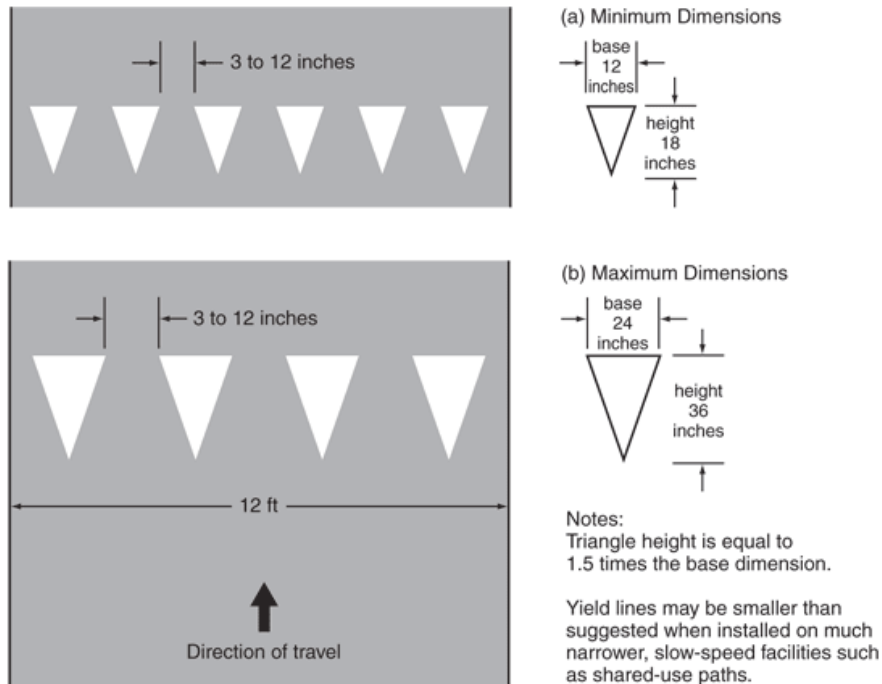


Figure 3-4: Yield lines, also referred to as “yield markings” or “shark teeth” mark the locations where motorists should yield, typically in advance of crossings.

Source: [MUTCD Section 3B.16](#)

The following include potential locations for trail crossings and traffic calming improvements on NPS-owned roads within Jockey Hollow. The tour road loop consists of single lane, one-way traffic at the majority of proposed traffic calming locations. Warning signs and yield markings are only required on the approach side. Figure 3-1 provides a key for the locations 1 through 13 where traffic calming measures are proposed. Photo-renderings of the proposed traffic calming elements are shown following the descriptions.

Jockey Hollow Road is one-directional southbound at Locations 1-4. Cemetery Road is one-directional westbound at Location 5 and one-directional northbound at Locations 6-8. Grand Parade Road is one-directional eastbound for Locations 9-11. Two proposed locations have two-way traffic, which requires warning signs for both travel directions. Jockey Hollow Road is bidirectional north-south at Location 12. Sugarloaf Road is bidirectional north-south at Location 13.

#### *Detailed Jockey Hollow Traffic Calming Descriptions*

- 1) The Location 1 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Jockey Hollow Road at Patriots’ Path. The Patriots’ Path crossing is perpendicular to Jockey Hollow Road and has a good sight distance<sup>6</sup> on the downhill, southbound approach. A raised crosswalk in this location would also encourage vehicles to slow down as they approach the Trail Center, parking area, and additional trail connections. See Figures 3-5 and 3-6.
- 2) The Location 2 proposal is a speed hump and warning sign to slow southbound vehicle traffic on Jockey Hollow Road approaching the trail crossing at Location 3. There is no official trail

<sup>6</sup> “Sight distance is length of roadway ahead that is visible to the driver,” and thus the distance from which a pedestrian is visible to the driver. American Association of State Highway and Transportation Officials (AASHTO). 2018. *A Policy on Geometric Design of Highways and Streets*. Chapter 3, pg. 3-2. AASHTO, 7th Edition.

crossing at this location, but pedestrians will either informally cross the road or walk along the road to the crossings at Locations 1 and 3.

- 3) The Location 3 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Jockey Hollow Road to connect the Yellow Trail and the Red/Primrose Brook Trail. The trail crossing is located after the Trail Center and parking area and perpendicular to Jockey Hollow Road. The raised crosswalk would also encourage vehicles to slow down on the southbound approach to the Wick House and Farm. See Figure 3-7.
- 4) The Location 4 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Jockey Hollow Road at Mendham-Elizabethtown Road Trail, which is a connection to the Wick House and Farm. The trail crossing is perpendicular to Jockey Hollow Road and has good sight distance on the downhill, southbound approach. See Figures 3-8 and 3-9.
- 5) The Location 5 proposal is two raised asphalt-paved or brick-paved crosswalks constructed between the parking lot and Visitor Center, along with pedestrian crossing warning signage and yield lines. The raised crosswalks would increase pedestrian visibility and slow vehicles navigating the parking area. Note: the below cost estimate assumes asphalt paving, not brick. See Figures 3-10 and 3-11.
- 6) The Location 6 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Cemetery Road to connect the Grand Loop Trail and Yellow Trail via the Aqueduct Trail. The Aqueduct Trail crossing is perpendicular to Cemetery Road and has good sight distance on the downhill, northbound approach. See Figure 3-12.
- 7) The Location 7 proposal is a speed hump and warning sign to slow northbound vehicle traffic on Cemetery Road. The speed hump would encourage vehicles to slow down along this narrow and windy section.
- 8) The Location 8 proposal includes a realignment of the Patriots' Path, which currently routes hikers into the Soldier Huts parking lot. The realignment would position the trailhead on the north side of Cemetery Road. Proposed traffic calming includes a raised crosswalk, trail crossing warning sign, and yield line across Cemetery Road to connect to Patriots' Path on the south side. The new trail alignment would be perpendicular to Cemetery Road, which has good sight distance from the downhill, northbound approach. The trail realignment and raised crossing would encourage vehicles to slow down as they approach the three-way intersection of Cemetery Road, Grand Parade Road, and Sugarloaf Road, as well as the Soldier Huts parking area. See Figure 3-13 and 3-14 for a rendering and a detailed plan illustration of the proposed crossing and trail realignment locations for Locations 8 and 9.
- 9) The Location 9 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Grand Parade Road to connect the Yellow Trail. The crossing would provide access to the Soldiers' Huts and encourage eastbound vehicles to slow down on Grand Parade Road.
- 10) The Location 10 proposal is a speed hump and warning sign on Grand Parade Road near its midpoint, where there are existing 15 MPH speed limit and "WATCH FOR PEDESTRIANS" signs. These signs are located where Grand Parade Road peaks, before a sharp "S-curve" (left, then right) and descent. The speed hump would encourage vehicles to slow down before this descending, eastbound curve.

- 11) The Location 11 proposal is a raised crosswalk, trail crossing warning sign, and yield line across Grand Parade Road to connect the Yellow Trail. This area has a pullout, wayside signs, and a mowed area around which the trail travels. The raised crosswalk would have good sight distance on the downhill, eastbound approach.

Note: Locations 12 and 13 are not on the tour road loop, but are on NPS-owned roads within Jockey Hollow where trail crossings occur.

- 12) The Location 12 proposal is a raised crosswalk, trail crossing warning signs, advance warning signs, and yield lines on both the northbound and southbound approaches of Jockey Hollow Road, to connect the Grand Loop Trail. The trail crossing is perpendicular to Jockey Hollow Road but has poor sight distance in both directions, which is why it should be designed with higher visibility using advance warning signs. This section of Jockey Hollow Road currently has fog lines<sup>7</sup> and a double yellow centerline, and therefore additional warning signage would not appear out of place. The raised crosswalk, warning signage, and striping would encourage vehicles to slow down, supporting the 20 MPH speed limit.
- 13) The Location 13 proposal is a raised crosswalk, trail crossing warning signs, and yield lines across Sugarloaf Road to connect the Grand Loop Trail. The Grand Loop Trail crossing is perpendicular to Sugarloaf Road, which has good sight distances on both the northbound and southbound approaches.

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<sup>7</sup> Fog lines are solid white lines that demark the edge of the legally drivable lane.



Figure 3-5: Traffic Calming Location 1 - photo rendering (side view)  
Source: Volpe

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Figure 3-6: Traffic Calming Location 1 - photo rendering (approach view)  
Source: Volpe

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Figure 3-7: Traffic Calming Location 3 - photo rendering (approach view)  
Source: Volpe

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Figure 3-8: Traffic Calming Location 4 - photo rendering (side view)  
Source: Volpe

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Figure 3-9: Traffic Calming Location 4 - photo rendering (approach view)  
Source: Volpe

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Figure 3-10: Traffic Calming Location 5 - existing  
Source: Volpe

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Figure 3-11: Traffic Calming Location 5 – photo rendering (Note: two raised crossings, one in the in foreground and one in the background)  
Source: Volpe

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Figure 3-12: Traffic Calming Location 6 – photo rendering (side view)

Source: Volpe

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Figure 3-13: Traffic Calming Location 8 – photo rendering at proposed realigned trail crossing location (looking south, away from Soldier Huts parking area)

Source: Volpe

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Figure 3-14: Detailed plan view of proposed raised crossing locations #8 and #9 and Patriots' Path trail realignment. Source: Volpe

### Tempe Wick Road Trail Crossings

There are two trail crossings of Tempe Wick Road, which is an arterial road with a posted speed limit of 40 MPH owned and maintained by Morris County (labeled TW-1 and TW-2 in Figure 3-1). The southerly trail crossing (TW-1) serves as the primary alternative transportation link between the Jockey Hollow and New Jersey Brigade areas of Morristown NHP. This connection along Patriots' Path links these areas to dozens of other cultural and recreational destinations throughout Morris County, as well as the Cross Estate and Scherman-Hoffman Wildlife Sanctuary in Somerset County. The northerly trail crossing (TW-2) is where the Grand Loop and Mendham-Elizabethtown Road trails cross Tempe Wick Road. The Mendham-Elizabethtown Road trail overlaps with a maintenance road that connects the Jockey Hollow area to Tempe Wick Road and provides continued access along the Grand Loop Trail. The Mendham-Elizabethtown Road Trail also provides another connection to Patriots' Path.

Both of these trail crossings across Tempe Wick Road are located on curves with limited sight distance. To more safely accommodate hikers on these trails that cross Tempe Wick Road, it may be necessary to realign the trails so that the crossings are located in places with better sight distance, and install higher visibility crossing markings and warning signs. Coordination with the Morris County, which has jurisdiction over Tempe Wick Road, will be necessary to make such improvements.

### Implementation

This report provides estimated materials costs for the proposed traffic calming improvements on the tour road loop. See Table 3-1 activities before construction.

Table 3-1: Cost Estimate for Traffic Calming in Jockey Hollow

for details. These costs do not include trail realignment, which requires coordination with Cultural Resource and Archeology staff. A rough estimated cost for professional engineering is included, which might include site survey, traffic analysis, and other activities before construction.

Table 3-1: Cost Estimate for Traffic Calming in Jockey Hollow

Traffic Calming Measure	Cost Per Item <sup>8</sup>	Estimated Number Needed	Estimated Total Costs
Raised Crosswalk (Speed Table with High Visibility Crosswalk)	\$8,200	9	\$73,800
Speed Hump	\$5,000	3	\$15,000
Warning Sign and Pole	\$360	23	\$8,280
High Visibility Crosswalk	\$720	4	\$2,880
Stop/Yield Line	\$65	16	\$1,040
Pre-installation Engineering Estimate	\$10,000	N/A	\$10,000
Trail Realignment	TBD based on exact alignment and conditions	1-2 locations	TBD based on exact alignment and conditions
Estimated Total Cost (2017 dollars <sup>8</sup> , without trail realignment):			\$111,000

<sup>8</sup> Traffic calming cost estimates are based on the 2017 New Jersey *Safe Routes to School* cost estimates. <http://www.saferoutesnj.org/wp-content/uploads/2013/07/SRTS-Costs-August-2017-update.pdf>

## Section 4: Alternative Transportation Options: Off-Site Locations

### *Multi-jurisdictional Coordination*

Morristown National Historical Park’s four areas are surrounded by roadways and land areas owned and maintained by local, county, and state agencies. Morristown NHP’s limited jurisdiction on the roads and trails that connect its park areas to one another—and to adjacent points of interest—means that the park must coordinate with other stakeholders to advocate for implementation of many alternative transportation solutions that will benefit their visitors. Many of the improvements that would benefit Morristown NHP visitors would also benefit visitors to other cultural and recreational destinations.

NPS staff, NPS law enforcement officers, and project stakeholders report that traffic volume and speed are chronic problems along Morris Street, Morris Avenue, Lafayette Avenue, Whippany Road, Ridgedale Avenue, Route 202 (Mt. Kemble/Speedwell Avenue), and Tempe Wick Road. This traffic presents a major barrier to pedestrian and bicycle connectivity, inhibits access for people with disabilities, and also makes it more difficult to drive in the area. Finding opportunities to improve alternative transportation access and safety on these and other nearby roads would likely provide mutual benefit for all affected stakeholders and partner organizations.

Over the past decade, many communities across the country have successfully retrofitted existing transportation infrastructure to make walking and bicycling safer and more comfortable. Depending on the scale of a given plan, projects may take place over months or the course of several years. These projects could be implemented in phases as road maintenance occurs, as part of traffic mitigation efforts due to development on adjacent property, or may be implemented as standalone efforts.

### **Maintenance- and Development-Coordinated Implementation**

It is not uncommon for bike lanes, crosswalks, or upgraded ADA-accessible curb ramps to be incorporated into repaving or utility projects. By taking advantage of planned restriping and construction mobilization, such strategies reduce the cost of standalone projects, and may allow other upgrades to hardscape elements, such as curbs, median islands, drainage, signal hardware, and other roadway features.

### **Standalone Projects**

Larger scale projects are often planned and implemented as standalone efforts because of their scale and complexity. Most large transportation projects are planned and implemented through the federally mandated statewide and metropolitan planning process<sup>9</sup>

This process allows projects to be coordinated with one another and aligned with community transportation goals. The projects become part of the North Jersey Transportation Planning Authority (NJTPA)<sup>10</sup> regional Transportation Improvement Program (TIP) and the New Jersey DOT (NJ DOT) Statewide Transportation Improvement Program (STIP). Funding for these projects comes through the Federal Aid Highways program administered by Federal Highway Administration (FHWA). Other organizations provide funding that specifically targets pedestrian, bicycle, and disabled access improvement projects. FHWA publishes a list of available federal funding opportunities for pedestrian and bicycle planning and projects<sup>11</sup>.

### *Example Multi-jurisdictional Project Corridors*

The following section provides a high-level description of four example corridors where alternative transportation projects could be implemented to improve access to Washington’s Headquarters. See Figure 4-1 for a map of these example corridors. Engaging in full planning and design for alternative

<sup>9</sup> FHWA transportation planning process overview: [https://www.planning.dot.gov/planning\\_essentials.aspx](https://www.planning.dot.gov/planning_essentials.aspx)

<sup>10</sup> <http://www.njtpa.org/Home.aspx>

<sup>11</sup> [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/funding/funding\\_opportunities.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm)

transportation improvements on these corridors would require the leadership of local, county, and/or state agencies and the involvement and support of local stakeholders. As such, these concepts are presented only to illustrate the potential of planning and design, if the relevant parties are inclined to engage and coordinate on such efforts.



Figure 4-1: Example alternative transportation improvement corridors  
Source: Volpe

### Route A: Morris Avenue to Whippany Road

The Washington Rochambeau Revolutionary Route (W3R)<sup>12</sup> is a designated National Historical Trail that runs from Massachusetts to Virginia. The route commemorates over 680 miles of land and water trails followed by the allied armies under General Washington and General Rochambeau during the Revolutionary War. This march led to the American-French victory over British forces under Lord Cornwallis at the siege of Yorktown, Virginia, a turning point in the war.

Within Morristown, the W3R route is aligned with Whippany Road, Morris Avenue, Morris Street, and Route 202, as shown by yellow highlighting in Figure 4-1. The Town of Morristown, Morris Township, and Morris County, as well as NJ DOT, control the rights-of-way along this route. The alignment with W3R gives special significance to these streets as they pass by the four areas of Morristown NHP. Active transportation improvements in this corridor could leverage this historic designation.

As a foot path used by Revolutionary War soldiers, it could be a fitting to develop active transportation improvements for people walking and bicycling along the W3R route. The route could leverage W3R as a branding identity, celebrating the country's national heritage with a local recreational and transportation upgrades. Specific improvements could include widening the sidewalks on the bridge over I-287 and realignment of the on- and off-ramps at the east end of the bridge to make them lower-speed and safer to cross on foot. The excess right-of-way on Morris Avenue could be used to add bike lanes or a multi-use

<sup>12</sup> <https://www.nps.gov/waro/index.htm>

path, and expanding and continuing the sidewalk on Lafayette Avenue along Whippany Road. This sidewalk extension could potentially be designed as an off-street, multi-use path extending to the Frelinghuysen Arboretum and Hanover Township, a community which developed a detailed plan<sup>13</sup> for on- and off-street multiuse infrastructure and already started implementing phased improvements from that plan.<sup>14</sup>

### **Route B: Morris Street to NJ Transit Station/Downtown**

W3R continues along Morris Street and Route-202. Morris Street is narrow and may only be able to accommodate an expanded shoulder of 4 to 4-½ feet in certain locations, to provide space for people to ride bikes outside of the travel lanes. If the municipalities agreed, parking removal at certain locations may allow more continuous shoulders entering downtown Morristown, but it may not be possible close to the commercial core of Downtown. Existing plans for improvements and a potential roundabout and pedestrian promenade could serve as components of this active transportation route through downtown, along with the repair of existing sidewalks, ADA-accessible curb ramp upgrades, and sidewalk extension “bulb-outs.” Signal design improvements including “leading pedestrian intervals” (LPIs),<sup>15</sup> longer pedestrian walk times,<sup>16</sup> protected turn phasing,<sup>17</sup> and other related countermeasures could be implemented along those sections of the route with traffic signals to further enhance pedestrian safety.

### **Route C: Traction Line to Normandy Parkway/Morris Museum**

The Traction Line is an existing off-street multiuse pathway that parallels the NJ Transit rail line and terminates at Morris Avenue, across the street from Washington’s Headquarters. This could be a terrific route for people looking to make a recreational walking or bicycling loop on the east side of Morristown, or connecting from Morristown NHP to the Morris Museum. In addition to the potential improvements identified for Morris Avenue in “Route A” concept above, this route could be improved through the addition of a few key features. These include a bike ramp or “runnel” on the staircase that connects the Traction Line to Normandy Street.<sup>18, 19</sup>

Normandy Street has no sidewalks and the speed limit is 40 MPH, but the road does have wide shoulders that appear to be over 7-feet wide each along the majority of the road. Depending on the sentiment in the neighborhood, there could be interest in offsetting the centerline of the roadway and shrinking the width of the shoulders to build a multiuse pathway along one side of the road. Alternatively, the centerline could remain and two smaller pathways or sidewalks could be installed on both sides of the road. The rural and estate-like character of Normandy Avenue is important context to consider in any plan for improvements along this route. It may be the case that residents like the idea of narrowing the roadway to calm traffic, make entry/exit from their driveways easier, and providing a route to walk or bike for exercise and to more safely access the traction line.

### **Route D: Ford Avenue via Franklin Street / Elm Street to South Street**

Ford Avenue, Franklin Street, and Elm Street are all too narrow to accommodate bike lanes, and they already have sidewalks. Along these neighborhood streets, where traffic volumes and speeds should be

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<sup>13</sup> <http://hanovertownship.com/DocumentCenter/View/224/Circulation-Plan-Appendix---Bicycle-and-Pedestrian-Connectivity-Framework-Plan-PDF>

<sup>14</sup> <https://www.mypaperonline.com/hanover-township-gets-connected-with-town-wide-trails.html>

<sup>15</sup> [http://www.pedbikesafe.org/pedsafe/countermeasures\\_detail.cfm?CM\\_NUM=12](http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=12)

<sup>16</sup> [http://www.pedbikesafe.org/pedsafe/countermeasures\\_detail.cfm?CM\\_NUM=47](http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=47)

<sup>17</sup> [http://www.pedbikesafe.org/pedsafe/countermeasures\\_detail.cfm?CM\\_NUM=51](http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=51)

<sup>18</sup> <https://www.thewashcycle.com/2012/02/rhode-island-avenue-staircase-with-runnel.html>

<sup>19</sup> <https://bikerumor-wpengine.netdna-ssl.com/wp-content/uploads/2018/02/Saris-Bike-Fixation-bicycle-ramp-stair-addition-2.jpg>

lower than the arterial roads they connect, shared bicycle lane markings<sup>20</sup> or “sharrows” could be added to the route where they are not already present. Along with wayfinding signage to help people navigate the zig-zag route to reach South Street, these low-cost improvements can play an important role in orienting people to the best routes to walk and bike between different parts of town along a “low stress” network of neighborhood streets.

## Section 5: Conclusion

The genesis for the original alternative transportation study (2010) for the Morristown National Historical Park was a desire to improve access to the park without requiring or generating more personal vehicle trips. That study concluded that a shuttle service could provide such access and would have the added benefit of providing access to numerous other local cultural, recreational, and commercial destinations. Despite these intended benefits, the 2010 study’s recommended shuttle system was deemed financially and operationally infeasible. Throughout the process of updating the original study, NPS staff, stakeholders, and partners clearly indicated that the need remains for improved non-automotive access to the Morristown NHP and surrounding destinations.

This report proposes a different approach to achieving such improvements. This approach involves a combination of infrastructure and operational changes, both within NPS property, and in the surrounding communities of Morristown, Morris Township, and Morris County.

On-site challenges at the Morristown NHP areas of Washington’s Headquarters, Fort Nonsense, Jockey Hollow, and New Jersey Brigade are typically the result of topography and existing roadway, trail, and parking configurations. These areas are unique, and the challenges at each location manifest themselves differently. The solutions to these challenges, as proposed in this report, can be relatively easily and cost-effectively achieved through targeted traffic calming and warning sign upgrades. Programming special events to encourage active transportation use can also help more people learn about opportunities to walk and bike within the park, and do so in a comfortable, social setting.

More significant challenges to alternative transportation access exist beyond park boundaries. Many of these challenges are due to the auto-oriented nature of roadways and land use development surrounding the park’s lands. Through a combination of stakeholder engagement and participation as a stakeholder in local and regional planning, the Morristown NHP staff can work with partners to advocate for alternative transportation improvements on local, county, and state transportation networks, as well as on trails that traverse local and county lands. There are many opportunities to pursue projects that would provide mutual benefit to all parties, public and private alike.

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<sup>20</sup> <https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/>

## Appendix A: Project Stakeholders

Name	Organization
Amy Curry	Morris County Historical Society at Acorn Hall
Ryan Hyman	Macculloch Hall Historical Museum
Tom Werder	Morris County Arts
W. Stuart Walter	Morris County Office of Information Technology
David Helmer	Morris County Park Commission
Christine Marion	Morris County Office of Planning and Preservation
Leslie Bensley	Morris County Tourism Bureau
Dede Murray	Morris County Division of Engineering and Transportation
Dr. Cleveland Johnson	Morris Museum
Cathy Wilson	Morris Township
Jennifer Wehring	Morristown Partnership
Stefan Armington	Town of Morristown, Town Council
Robert Iannaccone	Town of Morristown, Town Council
Daniel Callas	TransOptions
Phillip Gaffney	Washington Association of New Jersey





As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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