

# VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY



MARCH 2017

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### 3. EXECUTIVE SUMMARY



#### INTRODUCTION

The purpose of the Silver Lake Trail Feasibility Study is to develop and evaluate concepts and alternative route scenarios for a 11+/- mile trail that would connect Letchworth State Park and the Genesee Valley Greenway to the Village of Perry and Silver Lake via the Silver Lake Outlet. This multi-use trail will take advantage of existing roadways where appropriate, optimizing them for bike travel. It will also include an existing multi-use trail, and incorporate several small informal trails in its design. Please see [Figure 1](#) for an illustration of the project location. The Silver Lake Trail could serve as a jumping off point for an even more extensive trail system, which could potentially include several large connected loops, including a trail around Silver Lake.

Project goals include

- Increased pedestrian and bicycle transportation access and safety in the project areas,
- Improved transportation choices between the communities and the two state parks served by the prospective trail,
- Enhanced and increased use of key existing public spaces along the trail including the public beach,
- Increased emphasis on the Perry area as a nearby tourist destination for visitors to Letchworth State Park.

The trail, when completed, would be the first multi-use trail in Wyoming County outside the New York State Park system. The study area includes existing roadways, an existing multi-use path, and a series of existing informal trails along Silver Lake Outlet.

The planning process for this study included outreach to both the general public and to key stakeholders. Representatives from various organizations served on the steering committee, and provided continuity and study oversight. The general public was invited to attend two public informational meetings to learn more about the trail project, and provide feedback to the committee.

## **BENEFITS OF ACTIVE TRANSPORTATION**

The extensive benefits of active transportation were documented for this study. These benefits include decreased impact on the environment through reduced motor vehicle usage, social benefits due to increased access for people without motor vehicles, increased health benefits through physical activity, and economic benefits resulting from decreased strain on our health and infrastructure systems, and increased tourism.

## **INVENTORY AND ANALYSIS**

The study included an inventory and analysis phase where the existing conditions in and around the Silver Lake Trail study area were assessed. Topography, soils, ecological character, habitat, drainage, wetlands, land use, destinations, property ownership, access, circulation, infrastructure and utilities were all evaluated. None of these factors present a significant constraint to the development of a trail in the study area. The project addresses a number of opportunities and constraints, which include: connectivity to Letchworth and Silver Lake State Parks, the potential to create a blue-green trail system incorporating Silver Lake Outlet, habitat diversity, scenic views, historic resources, active transportation, and property ownership.



## **PLANNING FOR TRAIL USERS**

Multiuse trails are used by many different user groups, each with its own needs and preferences. This section discusses different types of trail users, including bicyclists, pedestrians, emerging user groups, non-motorized winter sports enthusiasts and equestrians. The Silver Lake Trail is a multi-use trail, and has been designed to welcome as many appropriate user groups as possible.

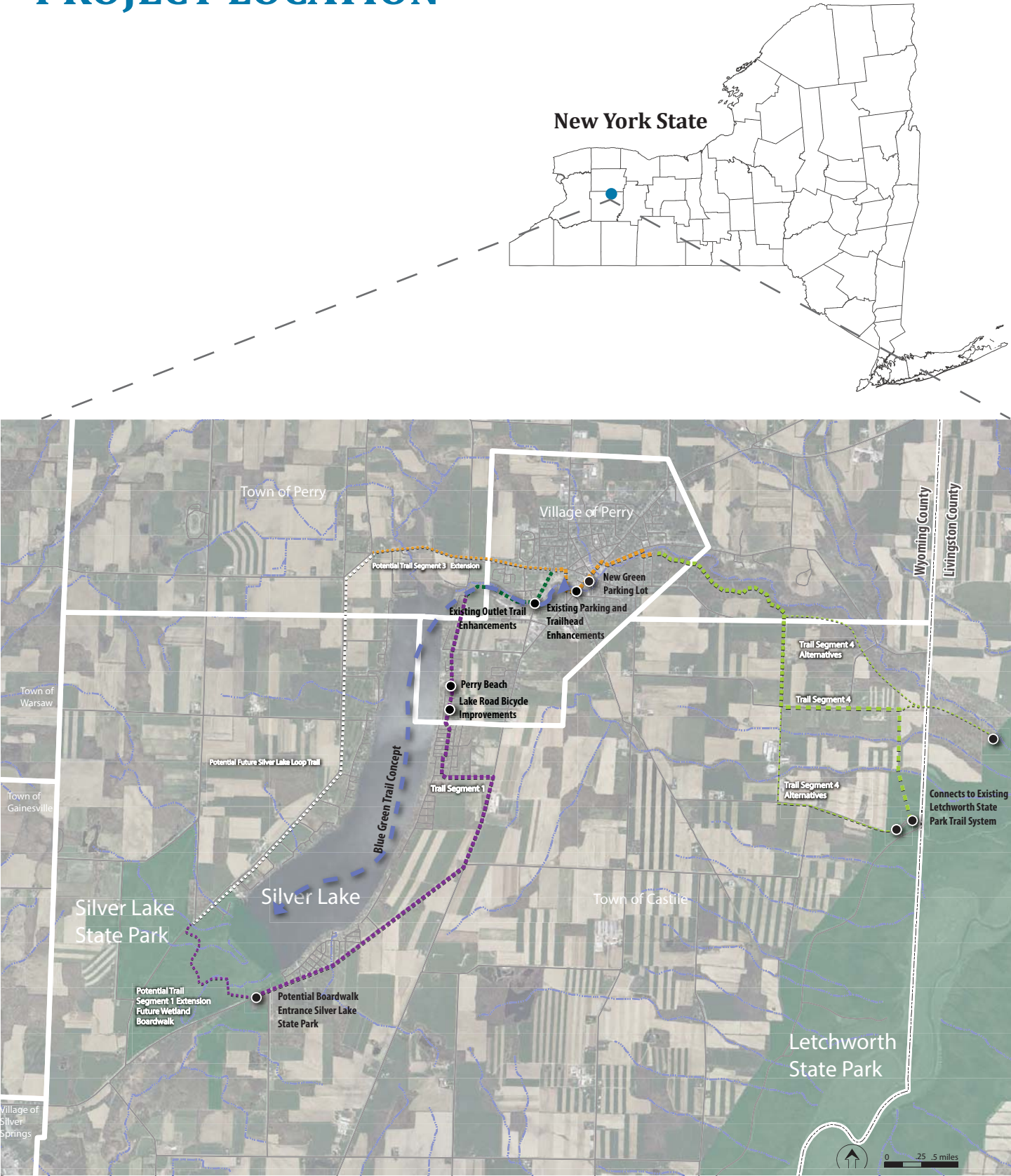
## **RECOMMENDATIONS**

The Silver Lake Trail study was primarily focused on assessing the feasibility of the trail. However, preliminary design decisions were made to allow for estimating the cost of trail development. These decisions are explained, and typical construction details are provided. A primary trail alignment was identified, as well as secondary trail opportunities and site improvements along the primary trail. A project phasing plan is also included in this section.

## **IMPLEMENTATION**

The feasibility study includes implementation information regarding SEQRA documentation, the permitting process, and funding. The study also addresses trail construction standards, user guidelines, and operations and maintenance. Appendices are included that provide a summary of public input, an overview of schematic costs, the community impact of trails, potential areas of conflict between trail users, and sustainable trail construction.

# PROJECT LOCATION





## 4. INTRODUCTION



### 4.1 BACKGROUND AND PURPOSE OF STUDY

The purpose of the Silver Lake Trail Feasibility Study is to develop and evaluate concepts and alternative route scenarios for a 11+/- mile trail that would connect Letchworth State Park and the Genesee Valley Greenway to the Village of Perry and Silver Lake via the Silver Lake Outlet. This multi-use trail will take advantage of existing roadways where appropriate, optimizing them for bike travel. It will also include an existing multi-use trail, and incorporate several small informal trails in its design. Please see [Figure 1](#) for an illustration of the project location. The Silver Lake Trail could serve as a jumping off point for an even more extensive trail system, which could potentially include several large connected loops, including a trail around Silver Lake.

#### STUDY AREA

The Silver Lake Trail corridor begins in the Town of Castile, in Silver Lake State Park, on the southern shore of Silver Lake. The corridor extends north east into the Village of Perry, and then continues south east until it ends at Letchworth State Park, in the Town of Castile. The study area includes approximately 1/2 to 1 miles on each side of the prospective trail alignment alternative. The Silver Lake Trail corridor, within the project limits, is owned by many parties, including private land owners, the Village of Perry, the Town of Perry, and roadways under various jurisdictions.

## STUDY OBJECTIVES

The Silver Lake Trail Feasibility Study was guided by the following objectives:

- Establishing active transportation connections with neighboring communities.
- Establishing connections to nearby State Parks.
- Connecting residents with the regional trail network.
- Maintaining user safety.
- Providing opportunities for universal access.
- Improving access to walking and bicycling facilities.
- Protecting and enhance existing resources.
- Emphasizing sustainability and maintainability.

These efforts are aimed at improving quality of life for Perry residents, offering opportunities for physical activity and improved health, and making the Village of Perry and the surrounding communities even better places to live.

## 4.2 COMMUNITY INVOLVEMENT

Planning of any kind cannot be done in a vacuum, and must be informed by local residents. GTC regularly identifies community participation as an objective in the Long Range Transportation Plan for the Genesee-Finger Lakes Region, which guides their planning efforts. The Plan states, *“The transportation planning process should be conducted in as open and visible a manner as possible, encouraging community participation and interaction between and among citizens, professional staff, and elected officials.”* New York State has also identified principles to guide community planning processes, which states that planning should be continuous, comprehensive, participatory, and coordinated. Citizen participation is a key component in the process, not just a requirement, but a critical element of a successful plan. **Table 1** chronicles the meetings that were conducted regarding this project.

*Table 1: Chronology of Community Involvement*

<b><i>Date</i></b>	<b><i>What</i></b>	<b><i>Purpose</i></b>
October 14, 2015	Project Advisory Committee Meeting	Project Kick-Off
January 25, 2016	Site Visit and Meeting with Rick Hauser and Ryan Fitzsimmons	Site Analysis
October 26, 2016	Project Advisory Committee Meeting	Project Status Update
December 06, 2016	Public Meeting	Open House
March 02, 2017	Project Advisory Committee Meeting	Project Status Update

The planning process for this study included outreach to both the general public and key stakeholders. A project advisory committee, members listed below, was comprised of representatives from the Village of Perry. In addition, representatives from the following organizations will need to be contacted:

- Town of Perry,
- Town of Castile
- Town of Leicester
- Wyoming County
- Livingston County
- GTC staff
- NYSDOT
- NYSDEC
- NYSOPRHP

Committee members provided continuity and study oversight. [Appendix A](#) includes information related to public outreach.



### PROJECT ADVISORY COMMITTEE

- Rick Hauser - Village of Perry - Mayor
- Jacquie Billings - Village of Perry - Resident, Chair of Perry Main Street Association
- Ryan Fitzsimmons - Village of Perry - Resident, Vice Chair of Perry Main Street Association
- Sandy Schneible, Resident, Member Perry Main Street Association
- Richard Eliaz, Town of Castile Planning Board Chairman, Silver Lake Association Vice President
- Frank Vitagliano, Resident
- Brian Parker, Resident, Town of Perry Planning Board Chairman
- Renee Koziel, Village of Perry Parks Director
- Kelly Paganelli, Silver Lake Association, Water Quality Committee Co-Chair
- Doug Kelly, NYSOPRHP
- Roland Beck, NYSOPRHP
- James Stack, GTC

### 4.3 RELATIONSHIPS TO OTHER PLANS AND STUDIES

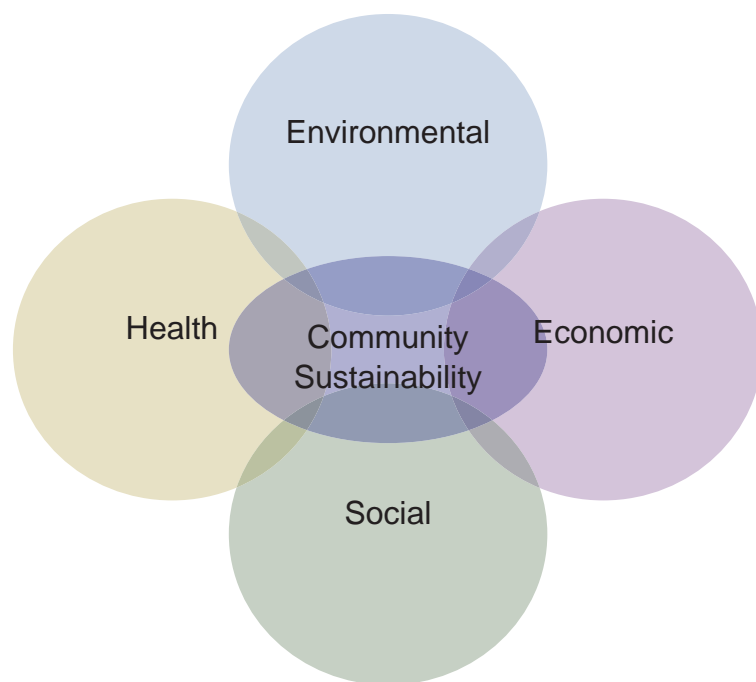
The goal of planning is to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations (APA, 2011). Planning enables civic leaders, businesses, and citizens to play a meaningful role in creating communities that enrich people's lives. In developing new plans, it is important to refer to plans and studies that have already been completed to evaluate how the new plan relates to existing plans. The trail amenities as proposed are compatible with the general principles and specific projects found in the planning documents listed below.

- ***The 2015 Perry Village Comprehensive Plan*** The trail concept is consistent with the plan's theme to promote multi-modal transportation options in the Village and to implement projects that will contribute to economic development and tourism.
- ***2008 Unified Planning Work Program funded Circulation, Access and Parking Study*** completed for the Village recommended a trail component in the Downtown area along the Silver Lake Outlet.
- The trail is anticipated to be included in the updated ***Regional Trails Initiative***.
- The trail will cross and connect to the \$1 million ***TEP Downtown Perry Streetscape and Traffic Calming Initiative***.

## 5. BENEFITS OF ACTIVE TRANSPORTATION



The goal of creating a new multi-use trail as a part of an improved active transportation system is compatible with other community planning efforts related to transportation and sustainability. While pedestrian and bicycle improvements are important to meet the needs of today, they are likely to be even more important in meeting the needs of tomorrow. With the development of this feasibility study, the Village of Perry is taking a progressive stance in addressing important issues, such as rising fuel prices, environmental degradation, and health problems related to inactivity. The Silver Lake Trail is part of a greater active transportation system and will help the Village and the region to harvest long-term economic, environmental, health and social benefits of active transportation.



Transportation accounts for more than 25 percent of the carbon dioxide emissions in the United States (EPA, 2014). In addition, transportation is a significant household expense for many people. However, there are other transportation options besides using a motorized vehicle, which include active transportation possibilities, such as walking and bicycling. Walking and bicycling as a means of transportation offer environmental, health, economic and social benefits.

Active transportation has benefits in each one of these categories, but the synergy between these varied and disparate benefits results in enhanced community sustainability:

- A local economy that is robust and balanced, with better access to jobs, education and health care.
- Increased health for persons engaging in active transportation, and increased safety for all.
- Ecosystems that thrive as a result of reduced air pollution and reduced greenhouse gas emissions.
- Infrastructure that encourages culturally and socially diverse groups to prosper and connect to the larger community.

## **5.1 ENVIRONMENTAL BENEFITS**

Switching to active transportation reduces emissions of greenhouse gases and other pollutants that contribute to global warming, smog, and acid rain. Choosing active transportation is an easy way to reduce our environmental impact – bicycling and walking create zero greenhouse gas emissions. Active transportation can reduce air pollution, minimize traffic congestion, and help to lessen our national dependence on petroleum. Bicycling and walking can also serve as the final leg of transit trips to and from other parts of the region, allowing riders to get between home and their boarding stop and between their disembarking stop and their final destination.

***A four mile bike trip  
keeps 15 pounds of  
pollutants out of the  
air we breathe***

*(Worldwatch Institute)*

## **5.2 HEALTH BENEFITS**

Improved bicycling conditions add to the vitality and quality of life of the community and provide access to recreational destinations across the region. Despite the proven benefits, most people – including more than 50% of American adults – do not get enough physical activity to provide health benefits (CDC, 2012). With this in mind, opportunities for exercise and healthful outdoor activity are more than expendable extras. Parks, trails, and open space resources take on new meaning and value. Active transportation provides an opportunity to incorporate regular physical activity into the daily routine.

***Overweight and  
obese children have  
lowered academic  
achievement in  
standardized tests***

*(California Department of  
Education, 2005)*

Land use and building patterns exacerbate health problems by providing new, disconnected neighborhoods that have few opportunities for walking or biking. In addition, our lifestyles have become increasingly sedentary in our post-industrial society. Walking and bicycling provide an opportunity to simultaneously obtain the benefits of transportation and physical exercise.

The relationship between weight loss and physical activity is clear, but there are also less expected health benefits to active transportation. Active transportation has a calming effect on traffic that results in fewer fatalities for all users, motorists, cyclists, and pedestrians. Countries with the highest number of bike commutes have lower transportation fatality rates. For example, Holland, which has a bike commuter rate of over 30%, has three times lower motor vehicle fatality rate than the US, three times lower cyclist fatality rate, and six times lower pedestrian fatality rate than the US (RCA, 2016). The same rule holds true for cities in the US, for example, in Portland, Oregon, as the active transportation rate increased, bicycle crashes went down by 50%.

***50% of American adults do not get enough physical exercise to provide health benefits***

*(Centers for Disease Control and Prevention, 2012)*

### 5.3 ECONOMIC BENEFITS

Health care costs and insurance rates are escalating, causing serious impacts to the local economy. Lack of physical activity is a contributing factor to a growing number of serious illnesses and health problems among all age groups. In addition to health-related costs, operating a personal automobile is very expensive. With the money saved on a vehicle, or even just the additional parking, fuel and maintenance required to commute in a vehicle, an active commuter can pay for transit expenses, purchase a good quality bicycle, or buy new walking shoes, with money left over.

***Cities that promote bicycling tend to retain youth, attract young families, and increase social capital***

*(Indianapolis Bicycle Master Plan)*

The construction and maintenance of the road and highway system for cars is a very expensive task for governments, from the local to federal levels. An analysis by the Victoria Transport Policy Institute estimated that a bicycle bears an external cost less than a penny per mile traveled, while a mile of walking costs 0.2 cents; the costs of driving amount to more than 29 cents per mile (USPIRG). As such, every trip that is not taken by car represents a significant cost savings to the community, with the largest beneficiary being local governments that maintain local and neighborhood roads.

Better bicycling conditions will provide access to recreational and work destinations, schools, public transit, and local shops. This will, in turn, promote additional economic development in the vicinity of these destinations. The number of people bicycling can be a good indicator of a community's livability - a factor that has a profound impact on attracting new residents, businesses, workers, and tourists all of which contribute towards stimulating the economy. By developing transportation programs and encouraging active transportation, the local economy would capture these potential savings and keep shoppers centrally located, resulting in increased community reinvestment.

*Trails attract and support businesses. "Three new gift shops have recently opened, another bike shop, a jewelry store, an antique and used furniture store, a thrift shop, a Wendy's Restaurant and a pizza and sandwich shop have also cropped up. All this is happening, and only with the prospect of the trail opening in July. There is an air of excitement and anticipation now within this community."*

*(Chris Wagner, Executive Director of the Greater Connellsville Chamber of Commerce, Pennsylvania)*

## 5.4 SOCIAL BENEFITS

Improving transportation equity by cultivating better walking and bicycling conditions provides mobility for the one-third of people in the United States who do not have cars. This improves access to jobs, education, and health care. Bicycling and walking can serve as appealing for families looking to engage in new recreational opportunities while increasing opportunities for social interaction and contributes to a sense of community. Communities across the county have embraced non-motorized transportation as a popular and beneficial option that residents increasingly expect and visitors actively seek when making choices about where to locate their families. Cities that promote bicycling tend to retain youth, attract young families, and increase social capital.

Active transportation can reduce stress and allow for more community interaction. Riding a bicycle allows a commuter to choose a less busy route and by-pass traffic lights. Walkers and cyclists see more of their community than stoplights, white lines and car bumpers, and benefit from the stress relief that accompanies physical exercise. It is easier and less expensive to park a bike than a car, which further reduces the stress of commuting. In addition, a culture dependent on cars encourages urban sprawl, which destroys communities and keeps people isolated from one another. With this Plan, the Village of Perry is taking important steps towards a future in which bicycling, walking and transit are experienced as viable options for trips of all purposes.



## 6. INVENTORY AND ANALYSIS



This section contains inventory and analysis of existing conditions in and adjacent to the Silver Lake Trail. The topics discussed in this section include the physical and environmental conditions of the study area, property ownership, circulation and transportation, and an assessment of key issues.

### 6.1 PHYSICAL AND ENVIRONMENTAL CONDITIONS

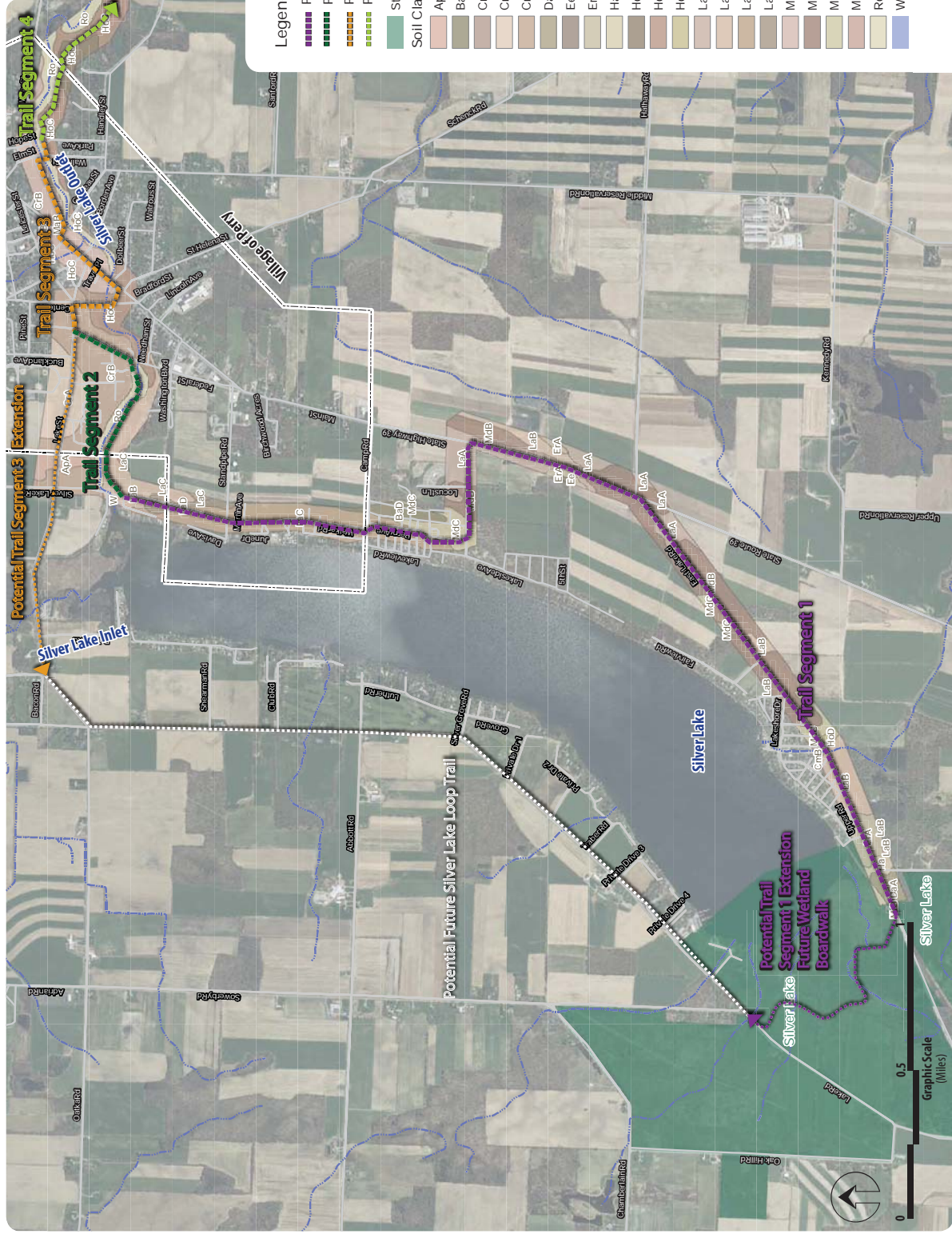
This section describes the existing environmental conditions within the study area and in some instances, the surrounding area. Information is presented on topography, soils, ecological character, drainage and water-related issues, and land use.

#### SOILS

The United States Department of Agriculture Natural Resources Conservation Service online mapping tool “Web Soil Survey” has mapped general soil associations and types within the United States. The soil survey indicated that at least 26 different soil types are present within the study area. The soils found in the largest quantities in the study area are identified in [Table 2](#) below.

# VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

FIGURE 2  
SOILS  
SEGMENT 1



## Legend

- Preliminary Alignment: Segment 1
- Preliminary Alignment: Segment 2
- Preliminary Alignment: Segment 3
- Preliminary Alignment: Segment 4

## Soil Classification

- APA: Appleton gravely silt loam, 0 to 3 percent slopes
- BAD: Bath chamney silt loam, 15 to 25 percent slopes
- CMB: Chenango chamney silt loam, fans, 3 to 8 percent slopes
- CRA: Conesus gravely silt loam, 0 to 3 percent slopes
- CRB: Conesus gravely silt loam, 3 to 8 percent slopes
- DAA: Dalton silt loam, 0 to 3 percent slopes
- Ee: Chippewa silt loam, 0 to 3 percent slopes
- ERA: Erie silt loam, 0 to 3 percent slopes
- Ha: Halsey loam
- HoB: Howard-Madrid gravely loams, 3 to 8 percent slopes
- HoC: Howard-Madrid gravely loams, 8 to 15 percent slopes
- HoD: Howard-Madrid gravely loams, 15 to 25 percent slopes
- LaA: Langford chamney silt loam, 0 to 3 percent slopes
- LaB: Langford chamney silt loam, 3 to 8 percent slopes
- LaC: Langford chamney silt loam, 8 to 15 percent slopes
- LaD: Langford chamney silt loam, 15 to 25 percent slopes
- MaB: Madrid fine sandy loam, 2 to 8 percent slopes
- MaC: Madrid loam, 2 to 8 percent slopes
- MaD: Madrid loam, 8 to 15 percent slopes
- MRB: Madrid chamney silt loam, 3 to 6 percent slopes
- Ro: Rock outcrop
- W: Water

*Table 2: Soils Predominantly Found in Study Area*

<b>Abbreviation</b>	<b>Soil Name</b>	<b>Slopes</b>	<b>Hydrologic Soil Group &amp; Drainage</b>
CnB	Churchville silt loam	2-8% slopes	somewhat poorly drained
CoB	Collamer silt loam	3-8% slopes	moderately well drained
CrA	Conesus gravelly silt loam	0-3% slopes	moderately well drained
DaA	Dalton silt loam	0-3% slopes	somewhat poorly drained
ErA	Erie silt loam	0-3% slopes	somewhat poorly drained
HmC	Howard gravelly silt loam	8-15% slopes	well drained
HmD	Howard gravelly silt loam	15-25% slopes	well drained
HoD	Howard-Madrid gravelly loams	15-25% slopes	well drained
LaA	Langford channery silt loam	0-3% slopes	well drained
LaB	Langford channery silt loam	3-8% slopes	well drained
MaB	Madrid fine sandy loam	2-8% slopes	well drained
MdC	Madrid loam	8-15% slopes	well drained
Ro	Rock Outcrop	not specified	

For trail planning purposes, most of the soils are fundamentally suitable for trail use. However, in select areas, some soils may present an erosion problem, and some soils may have drainage issues. Areas of Churchville silt loam, Dalton silt loam and Erie silt loam, which are somewhat poorly drained, will need to be taken into consideration during design development. More details about soil composition can be found in [Figure 2](#).

## **DRAINAGE AND WATER-RELATED ISSUES**

The study area includes streams and wetlands. There are federal and state designated wetlands in or near the study area based on preliminary review of both United States Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping and the NYSDEC freshwater wetlands mapping database.



**FIGURE 2**  
**SOILS**  
**SEGMENT 1**



***Waters of the United States.*** Waters of the United States as defined by the United States Army Corps of Engineers (Corps), include all lakes, ponds, streams (intermittent and perennial), and wetlands. Wetlands are defined in Section 404 of the Clean Water Act as “*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions*” (EPA, 2001). Jurisdictional wetlands are defined by the presence of three criteria: hydrophytic vegetation, hydric soils, and evidence of wetland hydrology during the growing season (Environmental Laboratory, 1987). However, it has been determined that the Corps does not have jurisdictional authority over waters that are “*non-navigable, isolated, and intrastate*” (EPA, 2001). Ultimately, the status of all delineated waters will need to be determined during a field visit with a local District Corps representative.

Review of NWI mapping indicates there are federally-mapped wetlands located within the study area. The federally-mapped wetlands are identified in [Figure 3](#). The wetlands associated with the project are associated with Silver Lake State Park and the Silver Lake Inlet. A boardwalk through the wetland areas of Silver Lake State Park is one of the alternatives listed in the Recommendations section. See [Figure 14](#) in Recommendations section of this report. If this alternative is proposed, a low impact boardwalk design such as a floating boardwalk or helical pillar system would be recommended during design development.

***New York State Freshwater Wetlands & Protected Streams.*** The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law) gives the NYSDEC jurisdiction over state-protected wetlands and adjacent areas (100-foot upland buffer). The Freshwater Wetlands Act requires the NYSDEC to map all state-protected wetlands (typically over 12.4 acres in size) to allow landowners and other interested parties a means to determine where state jurisdictional wetlands exist. The state-regulated wetlands are identified in [Figure 3](#).

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the beds or banks of protected streams. In addition, small lakes and ponds with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under the stream protection category of Article 15. Protected streams means any stream, or particular portion of a stream that has been assigned by the NYSDEC any of the following classifications or standards: AA, AA(t), A, A(t), B, B(t) or C(t) (6 NYCRR part 701). A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing. Streams designated (t) indicate that they support trout, and also include those more specifically designated (ts) which support trout spawning. Classification D is unprotected waters and suitable for fishing and non-contact recreation.



**FIGURE:2**  
**SOILS**  
**SEGMENT 1**



These streams, along with all other perennial and intermittent streams in the study area, are also protected by the Corps under Section 404 of the Clean Water Act.

The primary stream within the area of interest for this project is the Silver Lake Outlet, which is a Class C stream, suitable for general recreation use and support of aquatic life, but not as a water supply or for public bathing. There are no health advisories in place limiting the consumption of fish from this water-body (beyond the general advice for all waters) (NYSDEC, 2015).

The proposed alignment for this project crosses two other streams on existing roadways.

A formal wetland delineation would be required during design development to make a final determination of wetland and stream boundaries. The wetland delineation would need to be conducted according to the three-parameter methodology presented in the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the updated methodologies presented in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North-central and Northeast Region (2009).

A final determination of jurisdictional status can only be made after an on-site agency review of identified boundaries.

## **TOPOGRAPHY**

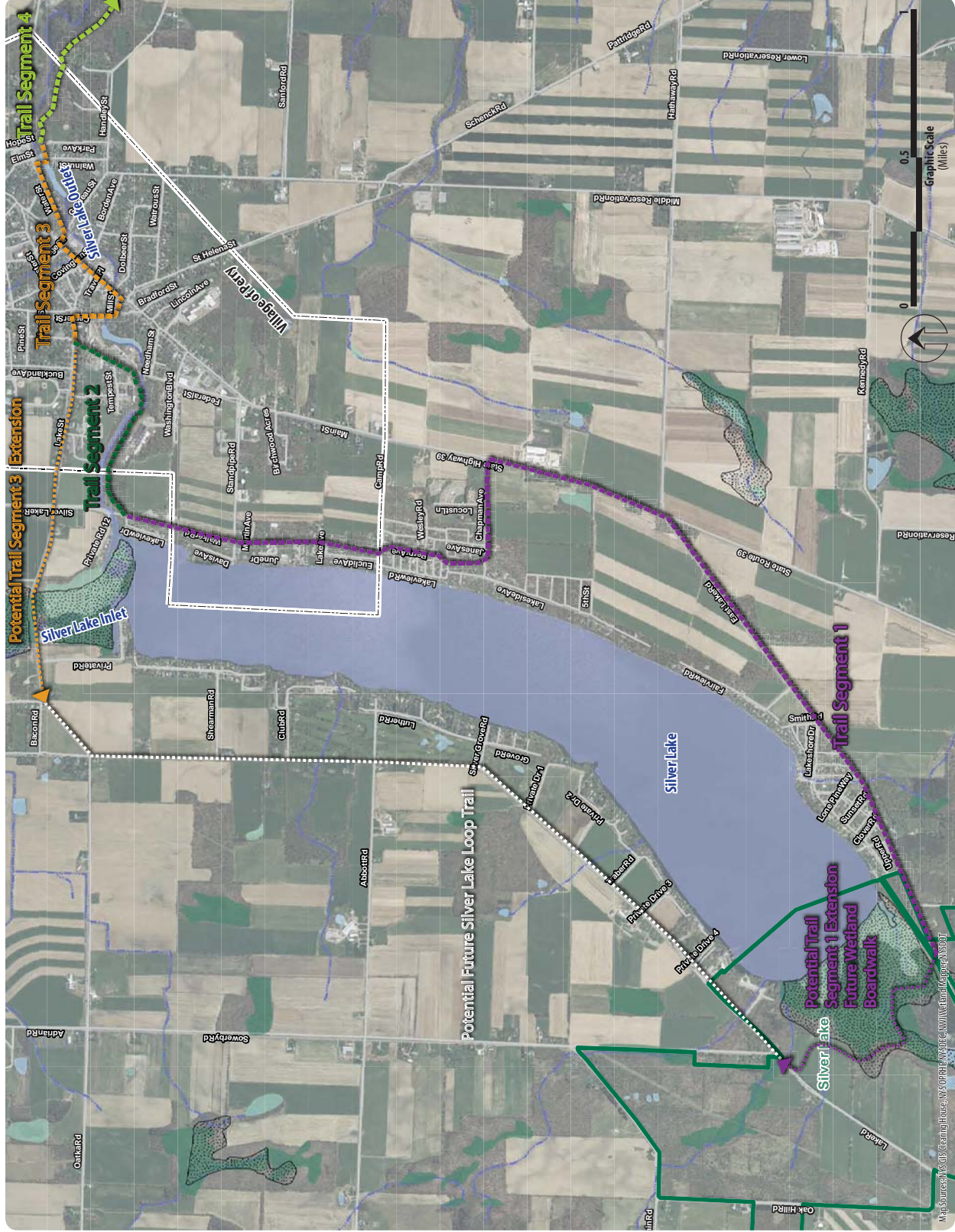
The primary route proposed in this report involves approximately 600 feet of topography change over the course of 11 miles. Though this is not a dramatic ratio, certain sections of the project may require additional consideration of topography during design development. See [Figure 4](#) for Slope details.



**VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY**

**FIGURE 3  
EX. ENVIRONMENTAL FEATURES  
SEGMENT 1**

- LEGEND**
- Village of Perry
  - Preliminary Alignment: Segment 1
  - Preliminary Alignment: Segment 2
  - Preliminary Alignment: Segment 3
  - State Parks
- Wetlands**
- NWI Wetlands
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Lake
  - NYSDEC Wetlands



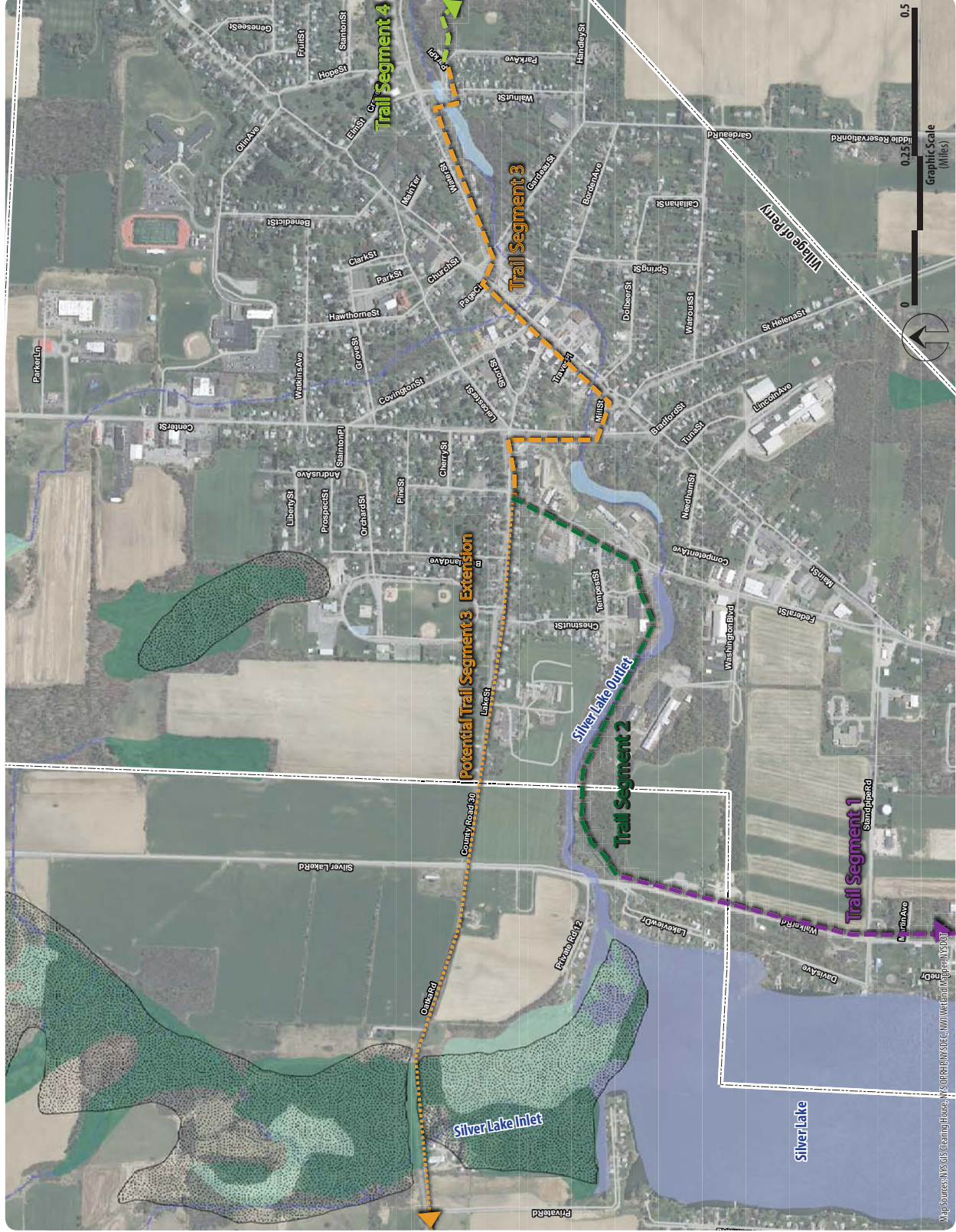
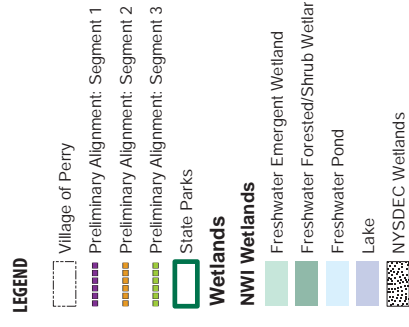
Map Sources: NYS GIS Clearing House, NYS Office of General Services, NYS Office of Parks, Recreation and Historic Sites





VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 3  
EX. ENVIRONMENTAL FEATURES  
SEGMENTS 2 & 3



Map Sources: NYS GIS Clearing House, NYS CORPUS NYSDEC, NWI Wetland, and NYS DEC



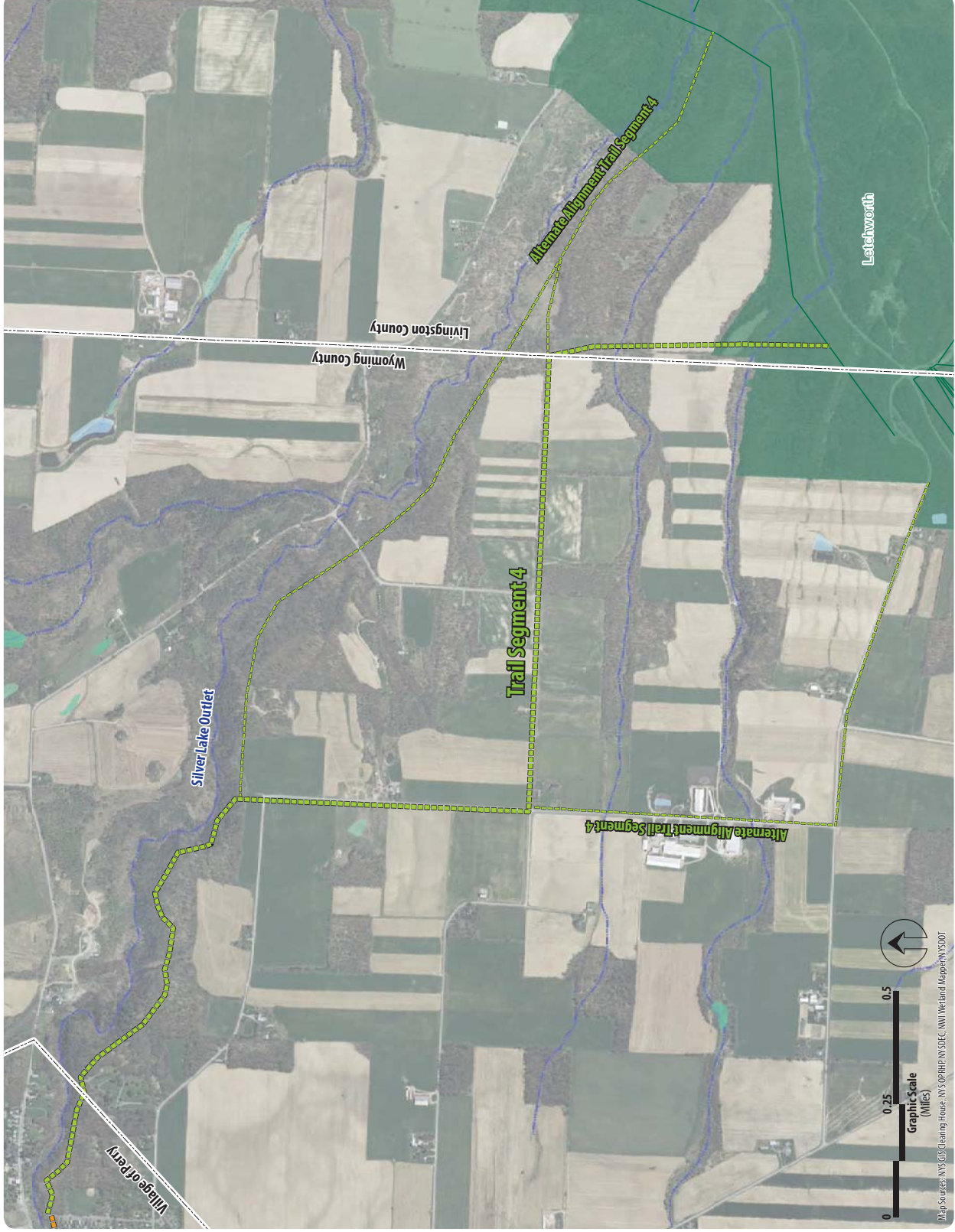


VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 3  
EX. ENVIRONMENTAL FEATURES  
SEGMENT 4

LEGEND

- State Parks
- Preliminary Alignment: Segment 3
- Preliminary Alignment: Segment 4
- Alternate Alignment: Segment 4
- State Park Trails
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- NYSDEC Wetlands



Map Sources: NYS GIS Clearing House, NYS DPHP, NYSDEC, NWI Wetland Mapper, NYS00T





Map Sources: NGS GIS Clearing House, NGS (ORHS) GIS Survey, Geographic Information Database, USGS, USGS





**VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY**

**FIGURE 4  
SLOPES  
SEGMENTS 2 & 3**

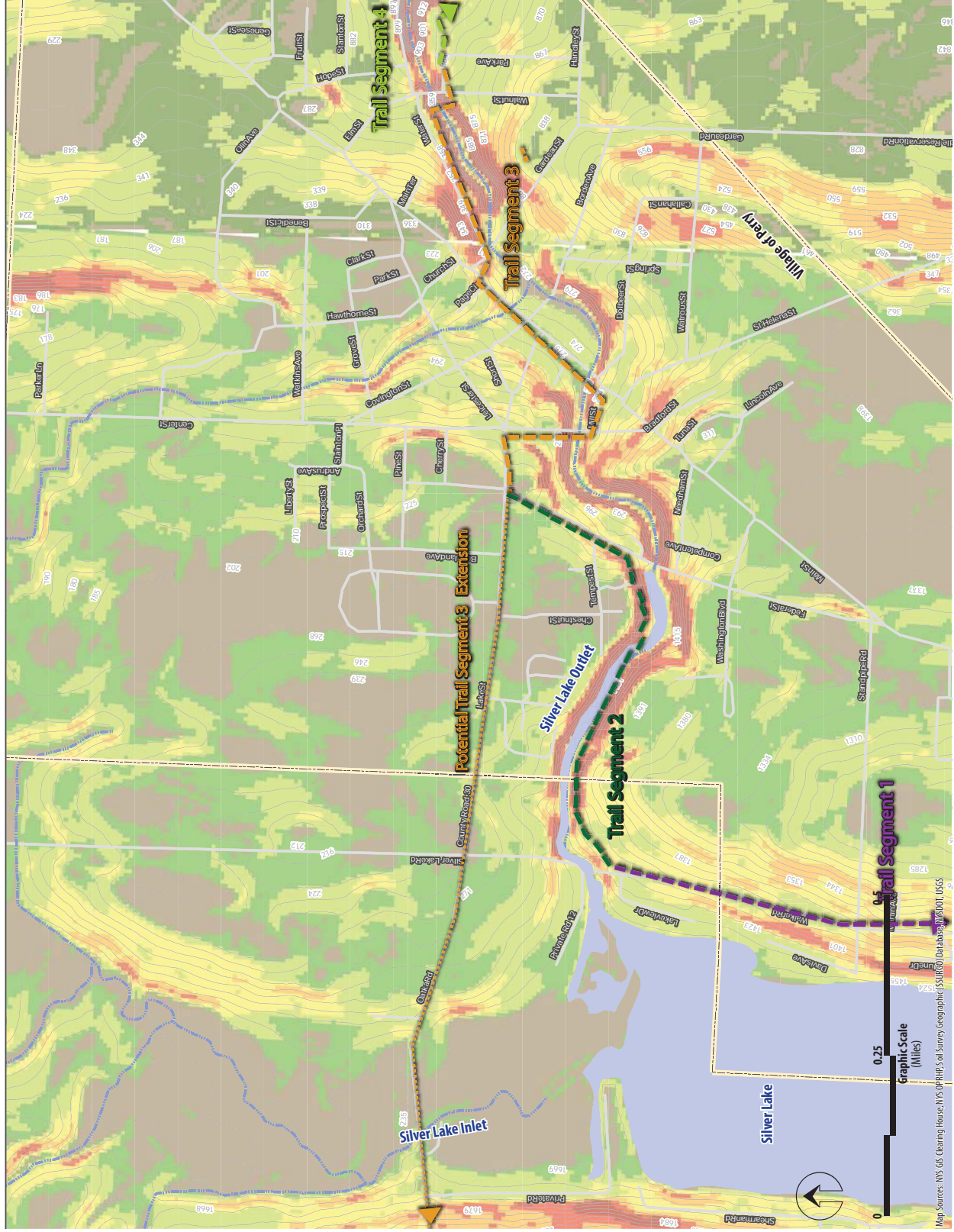
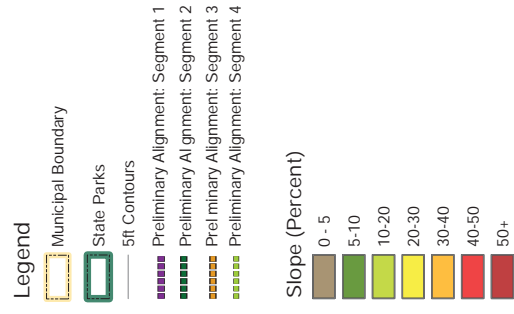
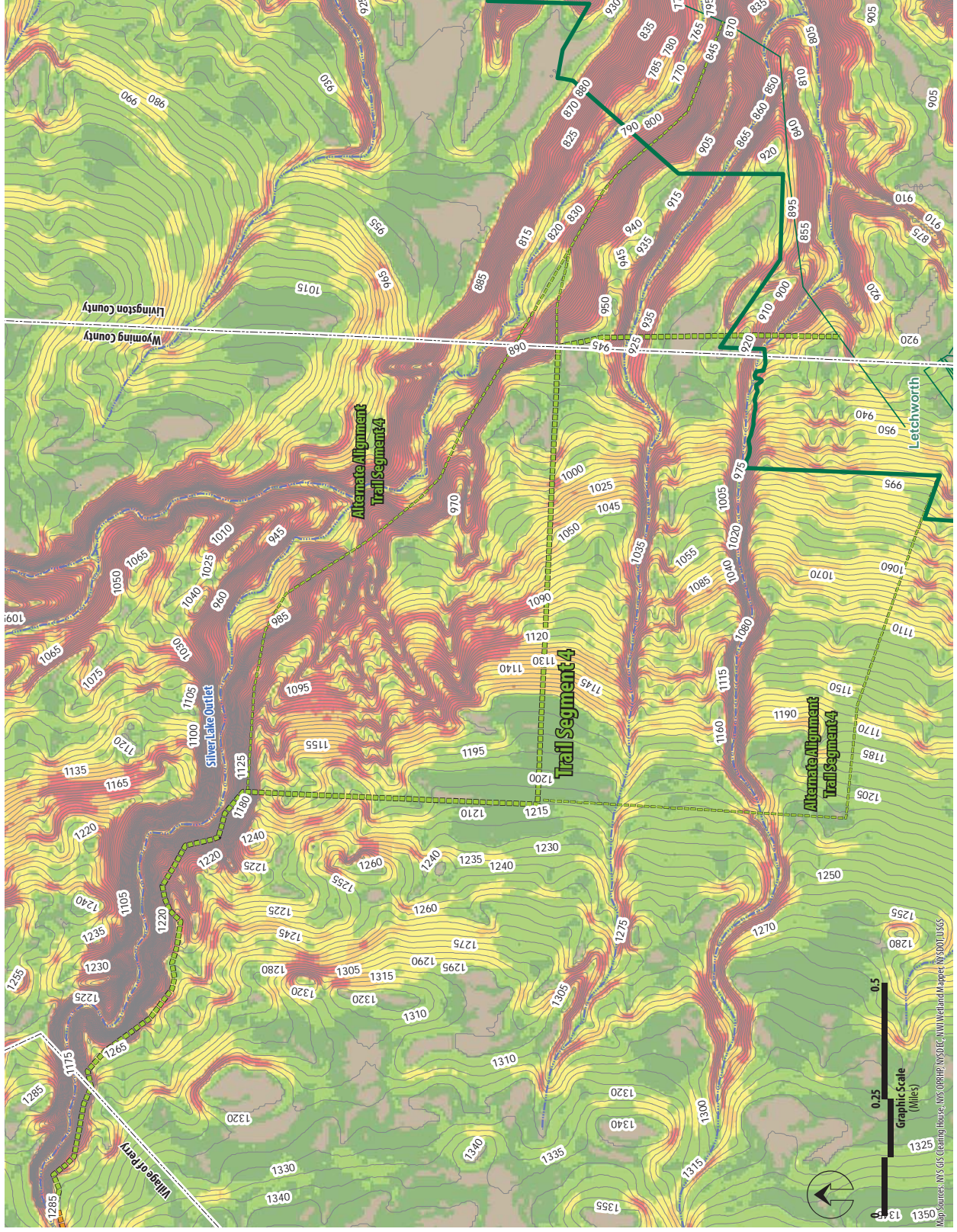
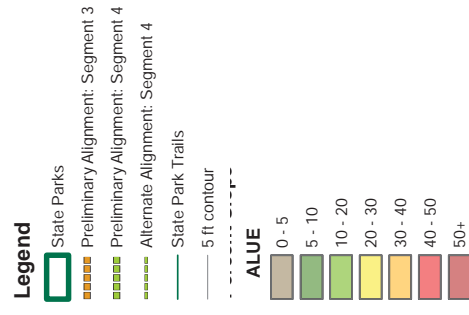






FIGURE 4  
SLOPES  
SEGMENT 4

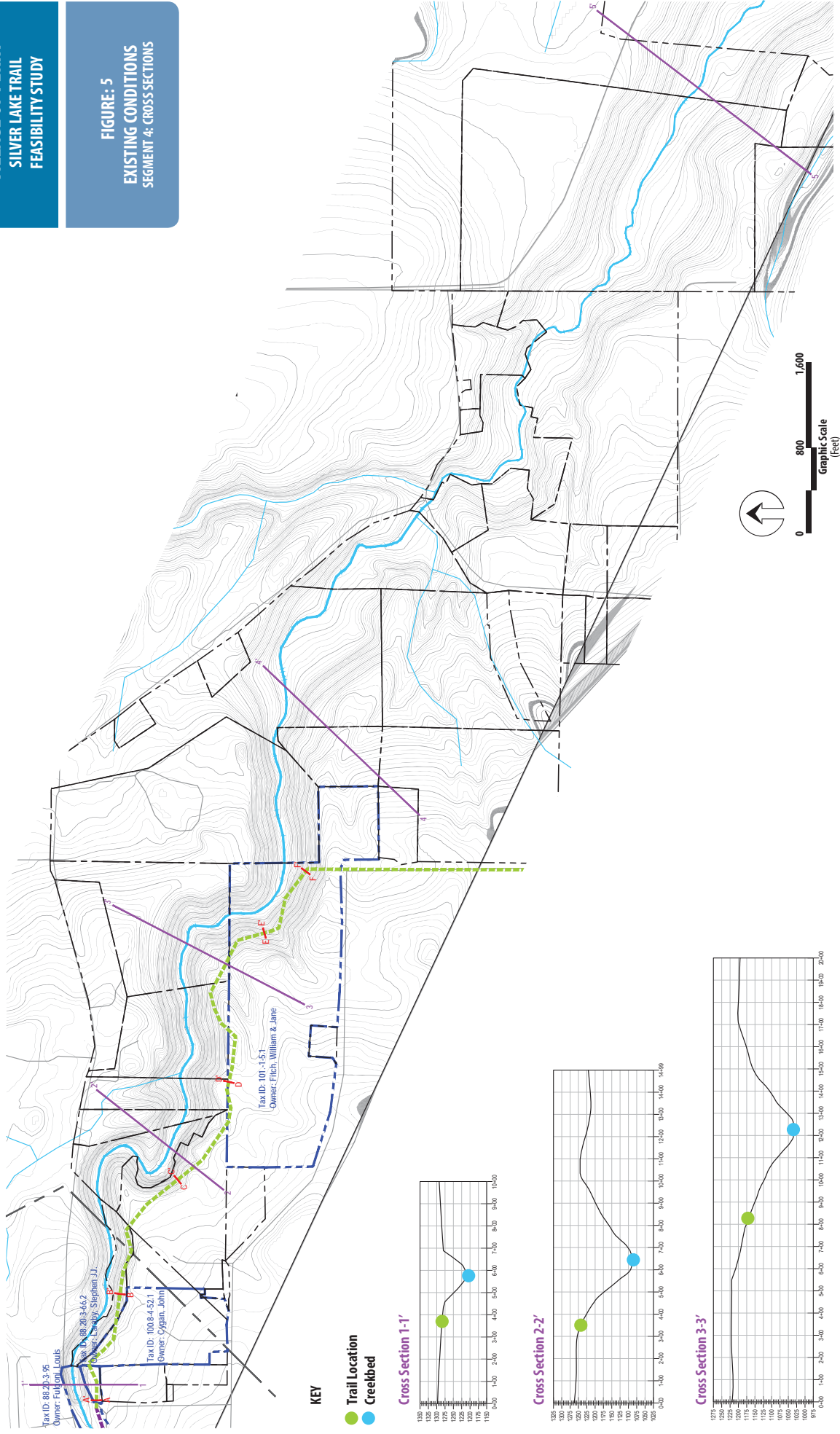






VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 5  
EXISTING CONDITIONS  
SEGMENT 4: CROSS SECTIONS



## 6.2 PROPERTY OWNERSHIP

This section reviews adjacent property ownership, as well as easements and rights of way within the study area.

### 1. OWNERSHIP

The proposed Silver Lake Trail primary alignment includes properties owned by the Town of Perry, Village of Perry, and a number of private property owners.

Where possible, routes on publicly owned land have been selected. The primary routes for trail segments 1, 2 and 3 are exclusively on public land. In order to take advantage of existing informal trails adjacent to the Silver Lake Outlet, the primary route for trail segment 4 involves passing through private property. This could potentially include the property of as many as fifteen land owners. These land owners have been identified but not yet contacted. Contacting these landowners and building support for the trail will be a necessary step in early design development. An alternate route for trail segment 4, along existing roadways, has been identified.

See [Figure 6](#) for details.

Additional secondary routes could potentially impact a larger number of private property owners. Contacting these landowners and building support for the trail will be a necessary step in early design development for each additional trail segment.

### 2. ADJACENT PROPERTIES

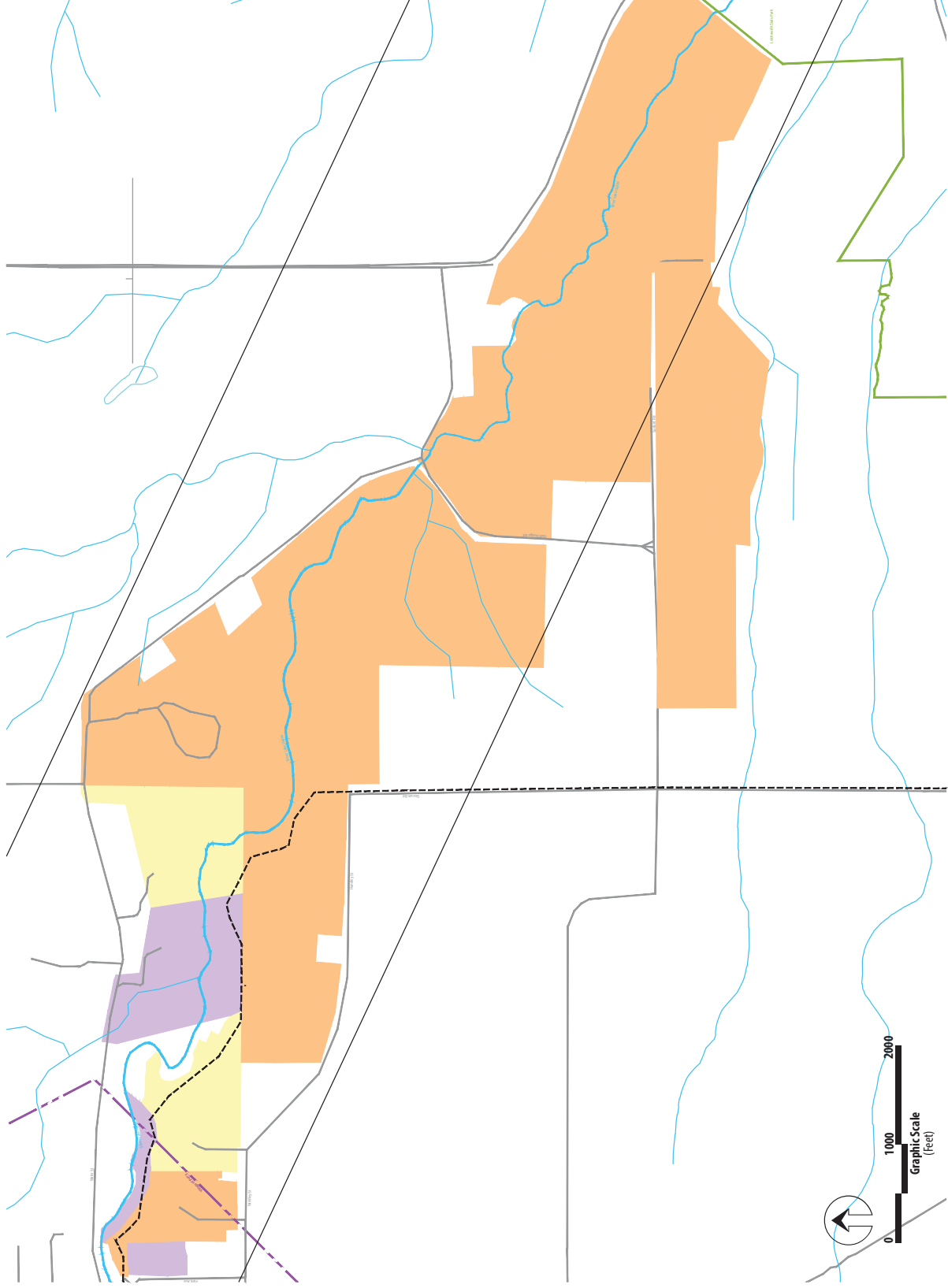
A substantial number of properties are located adjacent to the study area, resulting in a significant number of property owners that would potentially be affected by the proposed trail improvements. Every effort should be made to invite further community involvement as this project progresses.

Please see [Appendix A - Community Input Summary](#), and [Appendix C, Community Impacts of Trails](#), for more information.

VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 6  
PROPERTY OWNERSHIP

- Legend**
- Village Boundary
  - Roads
  - Streams
  - Parcel Boundary
  - Possible Trail Alignment Alt 1
- Parcels Within Study Area**
- Village Owned Parcels
  - Town Owned Parcels
  - Privately Owned Parcels



Map Sources: NYS GIS Clearing House, NYSDOT, Wyoming County Online Mapping

## 6.3 CIRCULATION AND TRANSPORTATION

### 1. TRAIL CONNECTIONS

The Genesee Valley Greenway Trail is a multi-use trail that follows the historic Genesee Valley Canal, and is the largest north-south trail within the Finger Lakes region. This trail connects to nearby Letchworth State Park. By connecting the Village of Perry to Letchworth State Park, the Silver Lake Trail could help connect the Village of Perry with the regional trail system.

*“In Rochester the Greenway connects with the Erie Canal Trail and the Riverway Trail. A little south of Scottsville, the trail meets the Lehigh Trail and in Letchworth and south of Portageville, the Greenway and the Finger Lakes Trail coincide. For about a mile in this area they are also both part of the North Country Scenic Trail. Because of its length and location, the GVG is the backbone of the Region’s trail system... The trail makes use of the canal tow path and the rail bed and when completed will be 90 miles long and pass through 5 counties. About 60 miles of trail are now open, mostly between Rochester and Letchworth Park.”* (Friends of Genesee Valley Greenway, 2016).

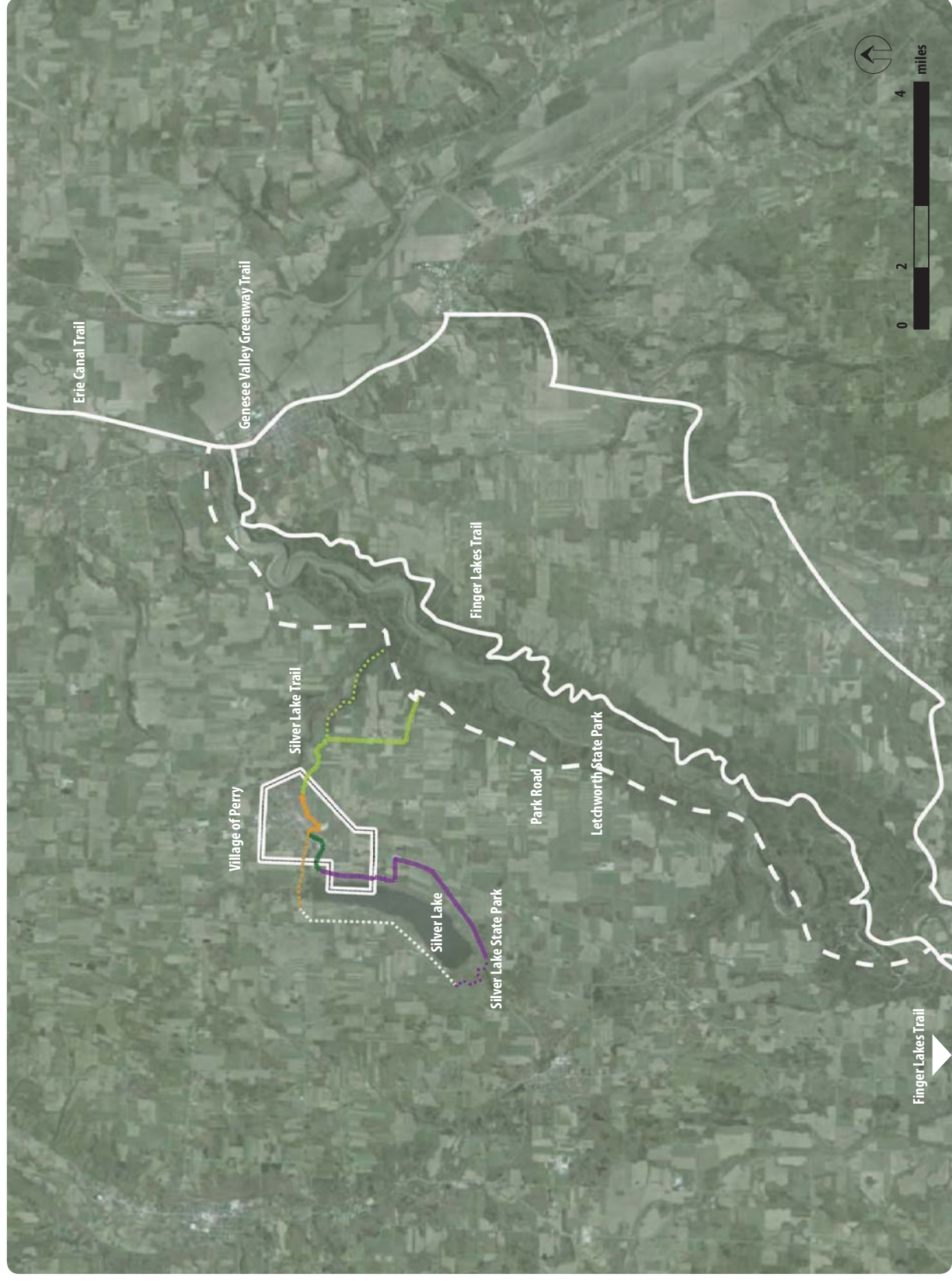
The Genesee Valley Greenway Trail runs just east of Letchworth State Park. It passes through Mt. Morris and Portageville, which are located at the northern and southernmost tips of the park. A leg of the Finger Lakes Trail extends through Letchworth State Park along the east side of the Genesee River, and also connects Mt. Morris and Portageville.

The proposed route for Silver Lake Trail ends at the Perry entrance of Letchworth State Park, which is west of the Genesee River. No existing trails would connect the Silver Lake Trail directly with either the Genesee Valley Greenway or the Finger Lakes Trail, however, an existing park road along the western edge of the park connects to both Mt. Morris and Portageville.

The Silver Lake Trail would be an essential step in connecting Silver Lake and the surrounding communities with the larger trail system, including the Genesee Valley Greenway, the Finger Lakes Trail, and the Erie Canal Trail. Efforts could be made to work with Letchworth State Park to have the park road designated as a bikeway, which would complete the connection and create a more clear relationship between the Silver Lake Trail and the greater upstate New York trail system. This possibility is discussed further in the Recommendations section of this report.

See **Figure 7** for Regional Trail Network Connectivity





## 2. SIDEWALKS, ROADWAYS, INTERSECTIONS AND TRAIL ACCESS

The Silver Lake Trail primary alignment is mostly along existing roadways. Signage on these roadways will be important both to increase safety for trail users and to make the trail route easy to identify. See [Figure 8](#) for signage details.

The primary alignment for the first segment of the trail is entirely along existing roadways. A trailhead is recommended for the southern entrance to this segment, along the east edge of Silver Lake State Park, and trailhead improvements are recommended for the northern entrance, at the junction of Lake Road and Lakeview Drive. Additional trail parking and access will be available at the Perry Beach site, on the corner of Walker Road and Euclid Avenue. This trail segment is primarily along rural roads with no sidewalks.

The second segment, which is mostly comprised of an existing trail, requires trailhead improvements and signage for increased visibility. This segment is accessible from the junction of Lakeview Drive and Lake Road, and from South Federal Street. The South Federal Street entrance is connected to the Village downtown by the Village of Perry Sidewalk system. Further information about the design of these trailheads is included in the Recommendations section of this report.

The third segment, which passes through the Village of Perry, is comprised of existing roadways and sidewalks. This segment will be designed using a combination of bike boulevards and shared roadways. The third segment is connected to the Village sidewalk network, and is accessible along its length. Further details are available in the Recommendations section of this report.

The fourth segment includes both on road sections and a new trail that passes through private property, on land where there is currently an informal trail system. The western entrance to this trail, on the corner of Gardeau Street and Water Street, is connected to the Village downtown through the Village of Perry sidewalk network. New trailheads will be necessary where the trail switches between on-road and off-road sections. In addition, signage will be necessary to identify privately owned parcels. See [Figure 8](#) for signage details.

Roadways within the trail corridor fall under the jurisdiction of NYS Department of Transportation, Wyoming County Department of Transportation, and local jurisdiction. Any recommendations will need to be coordinated with the corresponding jurisdiction.

## DIRECTIONAL & WAYFINDING SIGNS



Photo example from the El Camino Trail in Rochester, NY

Photo example from NYS Canal Signage Guidelines



Typical Auto Wayfinding



Perry Silver Lake Trail Logo

### TYPES OF LOCATIONS

- » Trail intersections

### FREQUENCY

- » As needed

### ANTICIPATED QUANTITY

- » TBD

### INFORMATION

- » Destinations / points of interest
- » Connectivity to other trails / paths
- » Directions



Photo example from the El Camino Trail in Rochester, NY

## KIOSKS



Typical Low Profile Waypoint Exhibit Panel

Photo example from NYS Canal Signage Guidelines

## MILEPOST BOLLARD & EMERGENCY LOCATION MARKERS

### TYPES OF LOCATIONS

- » Along trail corridor
- » Emergency markers located on remote sections of the trail where there is no easily identifiable landmarks

### FREQUENCY

- » Every 1/4 of a mile

### ANTICIPATED QUANTITY

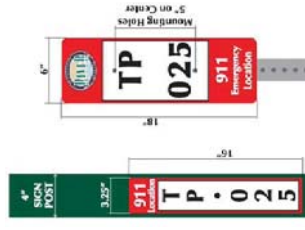
- » TBD

### INFORMATION

- » Trail icon
- » Trail distance
- » Each emergency marker has a unique code specific to its location and is GPS located and entered into the 911 system with notes on how to access each specific location



Photo example from the El Camino Trail in Rochester, NY



Example from Turning Point Park in Rochester, NY

### TYPES OF LOCATIONS

- » Trailheads (existing and proposed)

### FREQUENCY

- » All primary access points

### ANTICIPATED QUANTITY

- » TBD

### INFORMATION

- » Trail map with trail length
- » Access points and destinations / points of interest
- » Connectivity to other trails / paths

## VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

### FIGURE 8 PRELIMINARY SIGNAGE SCHEDULE

#### ROAD & TRAIL SIGNAGE EXAMPLES





## 6.4 VILLAGE OF PERRY HISTORY

*“About one hundred and seven years ago, several of the energetic and enterprising settlers from Massachusetts, Vermont, Maine and other States, emigrated from their native homes and established themselves within the bounds of the present Town of Perry. The wilds rapidly gave way to civilization; the forests fell as the dwellings arose, soon the unobstructed streams were arrested, their currents made subservient to the will and comfort of man, and the conquering power of industry and science, with the profuse bounties of Nature, combined to render this one of the most beautiful and prosperous abodes of man.”*

Frank Roberts, 1914, History of the Town of Perry

The history of Perry is immortalized in many sites in the National Register of Historic Places, including the Perry Downtown Historic District, which contains 41 historic buildings, and the Silver Lake Institute Historic District, which contains 76 historic buildings, both of which are along the course of the Perry Silver Lake Trail. In addition, nearby Letchworth State Park is also in the National Historic Register.

The Village of Perry has an opportunity to benefit from its historic and cultural assets, attracting tourists who enjoy visiting historic sites. One way to encourage this tourism is to include signage marking historic places along the Silver Lake Trail.

In fact, Perry has a history of taking advantage of tourism opportunities. The first sighting of the Silver Lake Sea Serpent was in 1855. The Silver Lake Sea Serpent attracted many tourists, filling local hotels and bringing in revenue for the community. An actual model sea serpent was constructed and placed in the lake, and attached to enormous bellows in a local blacksmith shop, which floated the serpent so that visitors might catch a glimpse.



*Strange Creatures from Time and Space The Great Sea Serpent of Silver Lake, New York.*

### Sources:

National Register of Historic Places,  
 “The Founding of the Town of Perry” - Town of Perry  
 “Perry History” - Perry Main Street Association,  
 “History of the Town of Perry, New York” - Frank Roberts.



## 6.5 OPPORTUNITIES AND CONSTRAINTS

The following opportunities and constraints were considered in relation to the study area and possible trail routing possibilities.

### 1. OPPORTUNITIES

The following characteristics of the trail corridor are presented as opportunities, or elements that can be exploited to the advantage of the project.

***Trail Connections.*** The eastern end of the Silver Lake Trail connects to Letchworth State Park, from which the Genesee Greenway Trail and Finger Lakes Trail are easily accessible. Both of these are large-scale trails which provide access to the greater upstate New York trail network. See Circulation and Transportation section for more information.

***State Park Connections.*** By connecting to Letchworth State Park and Silver Lake State Park, the Silver Lake Trail takes advantage of two existing State Parks which already attract visitors and provide opportunities for recreation and relaxation. Letchworth State Park, in particular, is well known and attracts visitors from a wide area. In 2015, Letchworth won the USA TODAY Readers' Choice Award for Best State Park in the United States.

***Existing Small Parks.*** As part of this feasibility study, key public spaces have been identified to be included within the Silver Lake Trail system. These include Perry Beach and Memorial Park in Perry Village. Improvements to these parks are included in this proposal.

***Historic Resources.*** The trail will not only provide access to open space, but also to historic resources. The Silver Lake Trail passes several sites on the National Historic Register, including two Historic Districts, the Perry Downtown Historic District and the Silver Lake Institute Historic District. Letchworth State Park is also on the National Historic Register. Coordination with the State Historic Preservation Office will be required for National Historic Register sites.

***Habitat Diversity.*** The trail corridor crosses through different habitats and vegetative cover types, which provides opportunities for environmental education related to wildlife habitat, species diversity, and other related topics. Even if there were no formal interpretive efforts, the corridor provides access and opportunities to view a natural landscape in a relatively developed area.

**Active Transportation.** Developing a trail system that provides connections to numerous destinations, as well as the roadway/sidewalk network, and a number of other trails provides a significant opportunity to advance the regional active transportation network. Active transportation is a means of getting around that is powered by human energy, primarily walking and bicycling. Offering ample opportunities for people to engage in active transportation helps to address health problems and environmental concerns.

**Blue-Green Corridor.** By creating more opportunities for paddlers in Silver Lake and Silver Lake Outlet, the trail system can become a fully integrated Blue-Green Corridor, encouraging multiple modes of outdoor recreation, both in and out of the water.

## 2. CONSTRAINTS

The following issues are presented as constraints, or elements that may challenge the success of the project.

**Safety.** The trail includes sections along existing roads and on sidewalks. Maximizing trail user safety in these areas will need to be a consideration during design development. See [Appendices B and C](#).

**Residential Properties.** The primary alignment for Silver Lake Trail passes through a number of residential properties, and additional secondary trails may pass through more. In addition, the trail is in proximity to a substantial number of properties, subsequently resulting in numerous property owners that would potentially be affected by the proposed trail improvements.

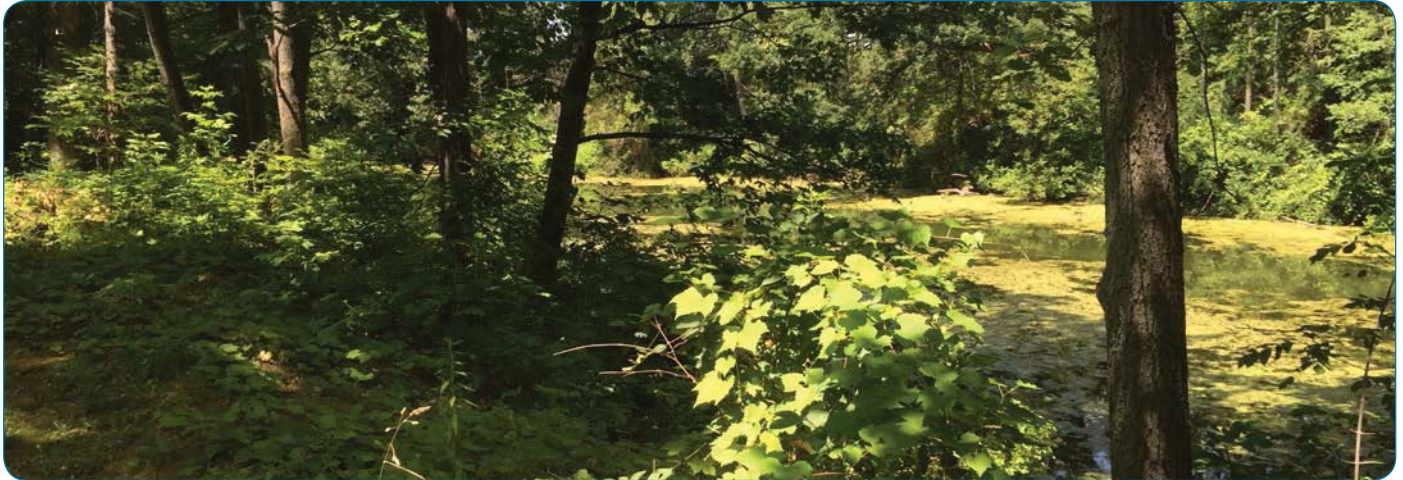
## 3. BOTH

Some issues are presented as both an opportunity and a constraint, because they have elements of advantage and challenge for the project's success.

**Isolated Areas.** Throughout the trail corridor, there are isolated areas with low natural surveillance. Natural areas of relative solitude are uncommon in urban, developed areas. The opportunity to be alone in natural surroundings is an opportunity for many people to enjoy the peace and quiet of nature. However, for other people, isolated areas present a constraint, as they may have concerns regarding their personal security.



## 7. PLANNING FOR TRAIL USERS



The following section discusses different types of trail users, including bicyclists, pedestrians, emerging user groups, non-motorized winter sports enthusiasts and equestrians. The Silver Lake Trail is a multi-use trail, and has been designed to welcome as many appropriate user groups as possible. Please also see [Appendix B](#) for a discussion of managing conflict between trail users.

### 7.1 BICYCLISTS

On average, bicyclists require a minimum width of 40 inches to operate. When bicyclists are traveling alongside motor vehicles, a width of five feet or more is recommended to allow bicyclists to safely maneuver (AASHTO). While the minimum operating space and bicycle facility width remains relatively the same between users, the skills, confidence and preferences of bicyclists vary significantly. The challenge in planning for bicycle facilities is designing for the diversity of user skills. According to the Federal Highway Administration (FHWA), the Federal policy goal for bicycling is “to accommodate current use and encourage increased use, while enhancing safety.”

The FHWA identifies the following types of bicycle users:

- Group A: Advanced Bicyclists
- Group B: Basic Bicyclists
- Group C: Children



Defining the bicyclist skill level through three groups and designing for the specific groups helps to refine roadway and path treatments. A description of the three different types of bicycle users by the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities is provided below.

***Group A: Advanced Bicyclists.***

Group A is comprised of advanced or experienced riders who are generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with minimal detours and delays. Advanced riders are typically comfortable riding with motor vehicles in traffic. They comprise the majority of the current users of collector and arterial streets and are best served by the following:

- Direct and convenient access to destinations usually via the existing street and highway system.
- The opportunity to operate at maximum speed with minimum delays.
- Sufficient operating space on the roadway or shoulder to reduce or preferably eliminate the need for either the bicyclist or the motor vehicle operator to change position when passing. Ideally for Group A riders, all roads would be “bicycle friendly.”

***Group B: Basic Bicyclists.***

Group B is comprised of basic adult and teenage riders who may also be using their bicycles for transportation purposes, such as getting to the store or visiting friends. Group B bicyclists are less confident of their ability to operate in traffic without special provisions for bicycles. Basic riders prefer to avoid roads with fast and busy motor vehicle traffic unless there is ample roadway width to allow easy overtaking by faster motor vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets. Some will develop greater skills and progress to the advanced level, but there will always be many millions of basic bicyclists.

Group B Bicyclists prefer:

- Comfortable access to destinations, preferably by a direct route, using either low-speed, low traffic-volume streets or designated bicycle facilities, avoiding routes with high volume or high traffic speeds.
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders) or separate bike paths.

Group B bicyclists would be best served by designated bicycle facilities on key routes through main travel corridors with lower volume rates and similar travel times.

***Group C: Children.***

Group C bicyclists are children riding on their own or with their parents. This group may not travel as fast as their adult counterparts, but still require access to key destinations in their community, such as schools, convenience stores and recreational facilities. It is important to make sure children do not develop a false sense of security if they are encouraged to ride on a busy street. Group C bicyclists prefer the following:

- Access to key destinations surrounding residential areas, including schools, recreation facilities, shopping, or other residential areas.
- Residential streets with low motor vehicle speed limits and volumes linked with shared use paths and busier streets with well-defined pavement markings between bicycle and motor vehicles.
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets linked with shared use paths and other bicycle facilities.

Group C bicyclists would be best served by routes that provide access to key destinations, but keep them off of busy roads, as safety is more important than travel time.

*Table 3: Pedestrian Characteristics by Age*

<b>Age Group</b>	<b>Traits</b>
Infants and Toddlers 0-4	Learning to walk Require constant adult supervision Developing peripheral vision, depth perception Act impulsively and unpredictably
Young Children 5-8	Increasing independence but still require supervision Limited peripheral vision and poor depth perception Act impulsively and unpredictably Susceptible to darting out at intersections
Preteens 9-14	Poor judgment Sense of invulnerability Improved awareness of traffic environment
High School Aged 14-18	Poor judgment Feel invincible
Adults 19-40	Active Fully aware of traffic environment
Middle Aged Adults 41-65	Still active May experience slowing of reflexes, range of motion, and observational skills
Senior Adults 65+	Difficulty crossing street High fatality rate if hit

## 7.2 PEDESTRIANS

On average, two people walking side-by-side or passing one another generally require 4.67 feet of space, while two people in wheelchairs need a minimum of 5 feet to pass one another (AASHTO). While the minimum operating space and pedestrian facility width are relatively the same between users, the skills, confidence and preferences of pedestrians vary. These variations are mostly a result of differences in age and differences in physical, cognitive and sensory abilities.

The 2010 New York State Supplement to the National Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways 2009 Edition mandates that crossings be designed to accommodate a walking speed of 3.5 feet per second. This walking speed should be used in the design of any crossing facilities.



The 2004 AASHTO Pedestrian Guide provides an overview regarding different types of pedestrians. It is more difficult to classify pedestrians into the same types of categories presented for bicyclists. Pedestrians exhibit a wide range of physical, cognitive, and sensory abilities and disabilities. All pedestrians are part of the transportation mix and should be anticipated in the design of pedestrian facilities. **Table 3** lists some of the common characteristics of pedestrians at various ages.

Both AASHTO and the FHWA note that there is no single “standard pedestrian” and that the transportation network should accommodate a variety of pedestrians. For example, children and adults perceive their surroundings differently. Children require adult supervision in order to navigate the transportation system safely and independently. Children sometimes walk more slowly than adults, and have a lower eye height. Older adults also have different needs. This group of pedestrians requires more time to cross the street, desires more predictable surfaces, benefits from handrails in steep areas, and needs places to rest along their route. Older pedestrians are also more likely to be killed or seriously injured in a crash. Because we live in an aging population, the needs of older pedestrians will continue to increase.

In addition, some pedestrians have limited mobility. This can be due to physical disabilities, as well as carrying packages, pushing strollers, or otherwise transporting items. The ability to reach a destination depends on a person’s speed, coordination, endurance, and the types of obstacles, grades and cross-slopes he or she encounters.

Source: AASHTO Pedestrian Guide, 2004; and FHWA Bicycle & Pedestrian Program.

**7.3 EMERGING USER GROUPS**

The following section briefly summarizes a study conducted by Bruce Landis, Theodore Petrisch and Herman Huang and sponsored by the FHWA, “Characteristics of Emerging Road Users and Their Safety”, Publication No. FHWAHRT-04-103, printed in October 2004.

Emerging road and trail users constitute an increasing portion of transportation system users. With the development of new technologies and changing demographics, devices such as kick scooters, inline skates, hand cycles, and recumbent bicycles are becoming more common than they were even ten years ago. Electric personal transporter devices (e.g., the Segway™) are relatively new technologies that are now appearing on paths and roadways around the country. Additionally, the American population is aging, and the number of people using mobility assistive devices (such as manual wheelchairs, powered wheelchairs, and powered scooters) is increasing.

Emerging User Types include:

Inline skates	Electric bicycles
Kick scooters	Tandems
Strollers	Segway TM
Recumbent bicycles	Manual wheelchairs
Bicycle trailers	Assistive power scooters
Power wheelchairs	Adult tricycles
Skateboards	Hand cycles

With the increase in the number of emerging users comes a greater need to design and build suitable facilities. Many communities throughout the United States have adopted the AASHTO Guide to the Development of Bicycle Facilities as a standard for bike lane, shared roadway, and shared use trail design. As its title implies, the guide is written with bicyclists in mind, so its recommendations are based on the physical dimensions and operating characteristics of bicyclists. Emerging users have different characteristics from bicyclists, and as such, trails designed and built to accommodate bicyclists may not meet the needs of these emerging users.

The findings of this study demonstrate that there is great diversity in the operating characteristics of various road and trail user types. AASHTO's design bicycle length of 6 feet and width of 30 inches were adequate for the majority of observed users. However, bicycle trailers and recumbent bicycles exceeded the design length. Power wheelchairs exceeded the design width. The recommended two-way trail width of 10 feet gave most users traveling single-file in opposite directions enough room to pass each other, though some only barely. The recommended two-way trail width of 10 feet was not wide enough for many user types to complete a three-point turn. The growing need to accommodate emerging users is not restricted to off-street shared use paths. The results of this research are valuable in determining how to better accommodate emerging user groups.

## **7.4 NON-MOTORIZED WINTER SPORTS ENTHUSIASTS**

With a lengthy season of winter weather, sports that take advantage of cold and snow are standard in Upstate New York. Popular non-motorized winter trail uses include cross-country skiing and snowshoeing. Other less frequently practiced types of non-motorized winter sports include dog sledding, snow biking (cycling, usually with a mountain bike, on snow and/or ice), skibobbing (using a bicycle-type frame attached to skis instead of wheels) and skijoring (cross-country skiers pulled by dogs).

Winter trail uses are generally physically demanding, requiring endurance and skill. Winter sports enthusiasts can often utilize hiking, biking, or multi-use trails when they are covered with snow. Cross country ski trails are designed specifically for skiing and are often a system of looped trails of varying difficulty over rolling terrain in a park-like setting. Other winter uses are often prohibited along designated ski trails unless there is space alongside the ski tracks for the additional use. Ski trails are, however, often compatible with a variety of summer uses. Many formal ski trails are groomed for skiers while other trails are designed for backcountry skiing without mechanized grooming. Narrow ski trails often restrict users to traveling in only one direction from the trailhead while wider ski trails are often groomed with two sets of tracks for two-way traffic. Cross country ski trails are often rated to signify their comparative level of difficulty.

Information on winter sports compiled from the NY Statewide Trails Plan, 2010 and the NJ Trails Plan Update, 2008

## **7.5 POTENTIAL AREAS OF CONFLICT BETWEEN USERS**

Multi-use trails, when they are well designed, carefully maintained, and effectively managed, are a significant community resource. However, trails can have a number of conflicts and challenges, which can be addressed by physical design and management responses. Potential conflicts on the Silver Lake Trail System include conflicts between different types of trail users, conflicts between motorists and trail users at road crossings, and conflicts between trail users and property owners. **Appendix B** discusses ways to manage conflict. The trail and facilities proposed for the Silver Lake Trail System are designed to accommodate most trail users described in this section.





## 8. RECOMMENDATIONS



At approximately 11 miles in length, the Silver Lake Trail is a significant undertaking. Due to the complexity of the Silver Lake Trail Project, the preferred trail alignment has been broken down into four segments;

- Segment 1 - A primarily north-south on-road trail between Silver Lake State Park and the existing Silver Lake Outlet Trail,
- Segment 2 - Improvements to Silver Lake Outlet Trail, which runs east-west from Silver Lake to the Village of Perry,
- Segment 3 - A primarily east-west trail through downtown Perry, and
- Segment 4 - A trail from downtown Perry to Letchworth State Park
  - Part 1 - Along Silver Lake Outlet on private property, primarily east-west
  - Part 2 - Along existing roads, with both east-west and north-south portions
  - Part 3 - On private property, primarily north-south

Each of these segments will be described in greater detail below, in [Section 8.1, Preferred Trail Alignment](#). See [Figure 9](#) for alignment details.

VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

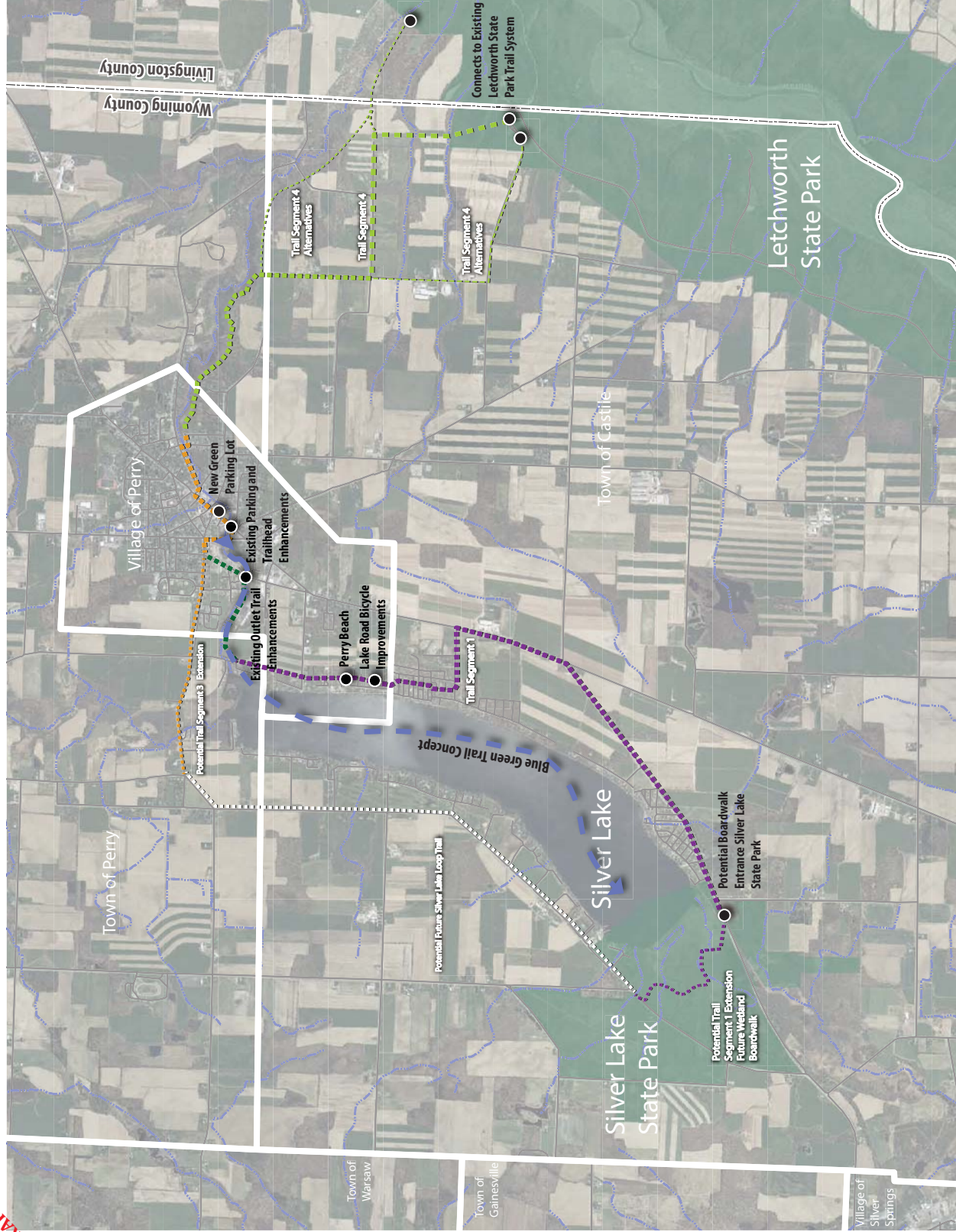
FIGURE 9  
RECOMMENDED TRAIL  
ALIGNMENT

- Preliminary Alignment: Segment 1**  
On road, new bike lane or shared shoulder
- Preliminary Alignment: Segment 2**  
Enhance existing outlet trail
- Preliminary Alignment: Segment 3**  
Combination of several strategies including:  
On road, new bike lane  
Utilizing existing sidewalks  
Natural surface trail following sustainable design guidelines along Silver Lake Outlet
- Preliminary Alignment: Segment 4**  
Natural surface trail following sustainable design guidelines  
On road, new bike lane or shared shoulder
- Potential Future Silver Lake Loop Trail**
- Road Network**
- Blue Green Trail Concept**
- Village of Perry**
- State Parks**
- Project Node**

All segments of Perry Trail will be designed according to best practices and design guidelines including Association of State Highway and Transportation Officials (AASHTO), Americans with Disabilities Act (ADA) & United States Department of Agriculture (USDA) Forest Service standards.



Prepared by Barton & Loguidice, DPC





In addition, there are two site improvement projects along the length of the trail that have been investigated as part of this feasibility study;

- Perry Beach Improvements
- Downtown Creekside Parking Lot Green Infrastructure Improvements

These projects are potential opportunities to develop destinations along the trail while providing improved amenities to members of the Perry community as well as visitors. These projects are described further below, in [Section 8.2, Site Improvement Opportunities](#).

There are also a considerable number of additional secondary trails that have been investigated in the course of this study. These are described in [Section 8.3, Secondary Trail Opportunities](#).

Some suggestions for phasing are included in [Section 8.4, Phasing](#). The phasing recommendations serve as a general guide for the Village of Perry in phasing implementation, but do not suggest a specific order in which projects will ultimately be constructed. Recommended improvements, regardless of their established priority, may be tied to capital improvement schedules and specific opportunities.

Finally, the Silver Lake Trail study was primarily focused on assessing the feasibility of the trail. However, preliminary design decisions were made to allow for estimating the cost of trail development. These are included in [Section 8.5, Design Details](#).

## **8.1 PREFERRED TRAIL ALIGNMENT**

### **1. SEGMENT ONE**

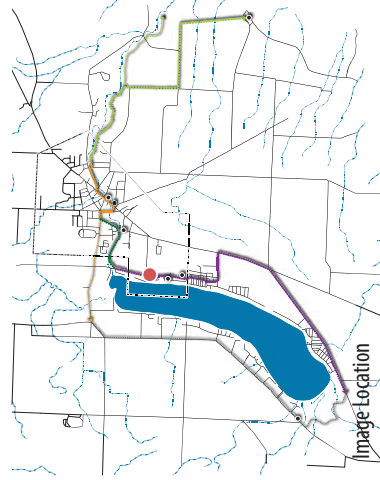
The first segment of the trail is a primarily north-south trail between Silver Lake State Park and the existing Silver Lake Outlet Trail. This segment is approximately 4.1 miles. Segment one of the Silver Lake Trail is on road, and will consist of bicycle improvements to existing roadways to make them more appropriate for shared use.

AASHTO describes a shared roadway as — a roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders. Placing signs and pavement markings along the route will serve to advise motorists that bicycles are present. In most places, these roads have existing road shoulders that can accommodate bicycle use. In some areas, additional striping, or paving of gravel shoulders may be necessary. Striped shoulders are not necessary for a shared roadway, but will provide additional room for cyclists and motorists to share space.

Segment One begins adjacent to Silver Lake State Park, on East Lake Road in Castile, NY. There is currently no entrance to Silver Lake State Park on East Lake Road, see Additional Secondary Trail Opportunities for recommendations for Silver Lake State Park.

## LAKE ROAD BICYCLE IMPROVEMENTS

- 





The trail would head north along East Lake Road to State Route 39 and continue north. The route would then turn west at Chapman Ave, and north at Perry Ave. A short left onto Camp Road would be followed by a right onto Route 22, continuing north until Route 22 meets the existing Silver Lake Outlet Trail. For a conceptual rendering see [Figure 10](#).

## 2. SEGMENT TWO

The second segment is the existing Silver Lake Outlet Trail, a .6 mile east-west trail between Silver Lake and the Village of Perry. The trail connects Route 22 to S Federal Street. Trailhead improvements and additional signage will help integrate the existing Silver Lake Outlet Trail into the Silver Lake Trail system, and increase utility for users. In addition, resurfacing of the trail with a fresh stone dust surface is recommended. For more information see the [Design Details](#) section of this report. For a conceptual rendering see [Figure 11](#).

The Silver Lake Outlet would function as part of the blue-green trail system, providing opportunities for canoeing and kayaking.

Dredging of the existing outlet should be coordinated with segment two improvements to maximize the benefits for all trail users. Dredging will remove accumulated sediment on the floor of the outlet, allowing blue trail users to more easily navigate the Silver Lake Outlet Trail.

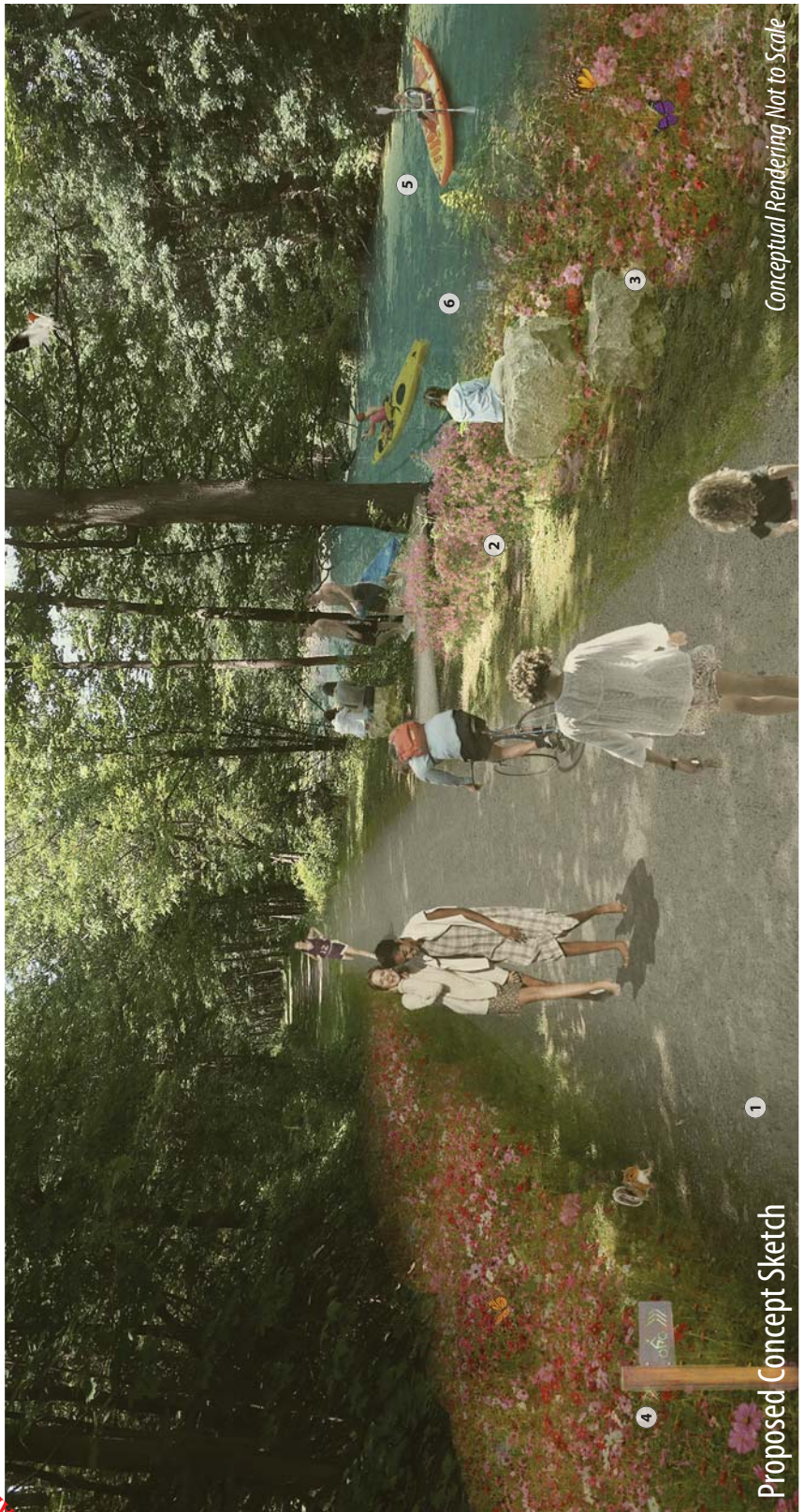
The Outlet dredging operation will support the blue trail component of the Silver Lake Trail plan by inviting and supporting additional interaction with local water resources. Encouraging human-powered watercraft adds an additional layer of Active Transportation and provides recreational, educational and fitness opportunities. Along with walking and bicycling, water travel will enhance the local tourism economy and provide physical activity and public health benefits.

An existing pipe under a bridge across the outlet may provide some restrictions to paddlers, depending on water levels. Keeping the bank clear of woody plants at this juncture would make it easier for paddlers to cross this brief impediment on land if necessary.

*Dredging is the removal of sediments and debris from the bottom of lakes, rivers, harbors, and other water bodies. It is a routine necessity in waterways around the world because sedimentation—the natural process of sand and silt washing downstream—gradually fills channels and harbors.*

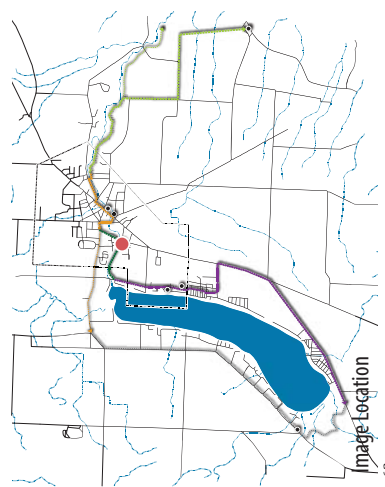
*Dredging often is focused on maintaining or increasing the depth of navigation channels, anchorages, or berthing areas to ensure the safe passage of boats and ships.*

*(National Oceanic & Atmospheric Administration)*



Proposed Concept Sketch

Conceptual Rendering Not to Scale



Existing Conditions

### GENERAL RECOMMENDATIONS

- Provide Paddler Parking for Village Access
- Trailhead Improvements: Create clearly marked trailheads at both sides of existing Outlet Trail with
  - Silver Lake Trail Signage
  - Wayfinding
  - Trail Entry Gateway
  - Map Kiosk
  - Clearly Marked Trail Parking
  - \* Refer to Preliminary Signage Schedule figure for signage examples.

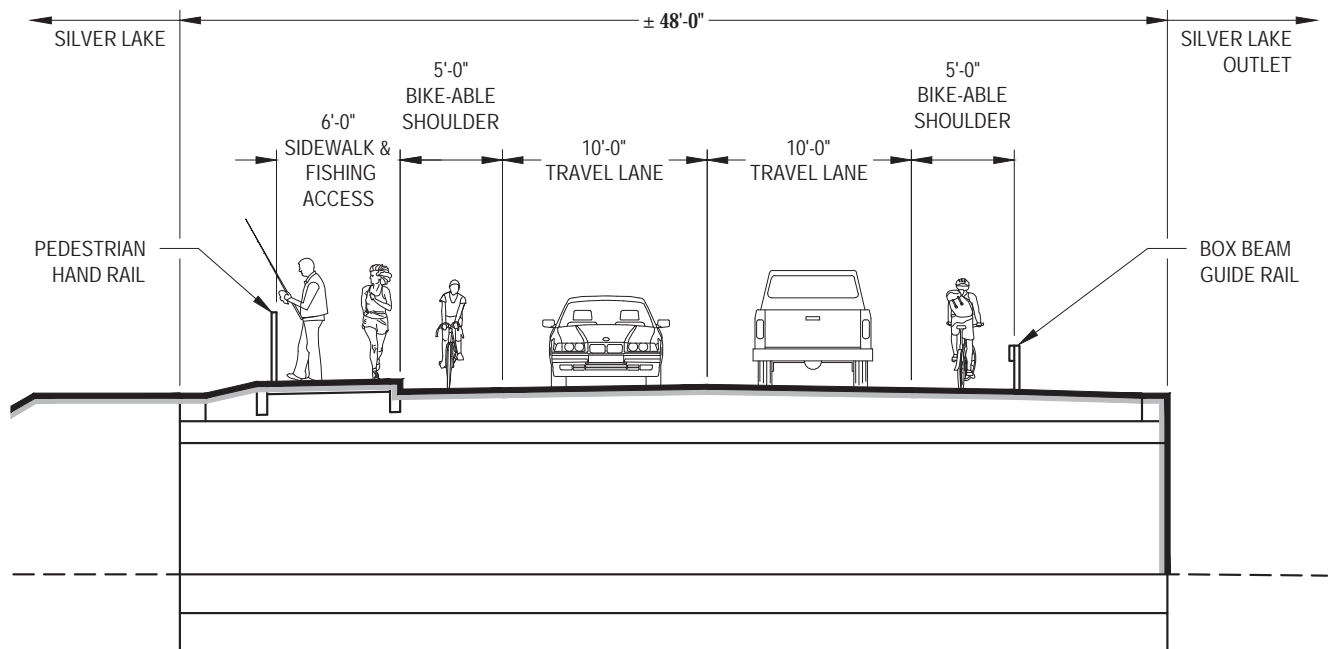
## VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

FIGURE 11  
EXISTING OUTLET TRAIL ENHANCEMENT  
TRAIL SEGMENT 2

- 1 Stonedust shared-use pathway. ADA and AASHTO compliant. To be contiguous with proposed Perry Silver Lake Trail system (currently in planning stages)
- 2 Stream buffer enhancement plantings. Mix of woody and herbaceous native species to provide bank stabilization, improved riparian habitat, and 4-season visual interest
- 3 Local stone blocks provide attractive, low maintenance, sustainable seating.
- 4 Trail markers
- 5 'Blue green trail' through Silver Lake Outlet Blue and green trails integrated into one system
- 6 Coordinate with Silver Lake Outlet Dredging Project and Walker Street Bridge Improvement Project

The Walker Road bridge is an important linkage to the Silver Lake Trail system. Currently, the bridge provides no designated space for pedestrians or bicyclists. In addition, the bridge is frequently used by snowmobiles in the winter and fishermen during the warm seasons. Repair/reconstruction of the bridge is anticipated, and should include improvements to support Active Transportation and development of the Silver Lake Trail.

Travel lanes on the bridge should be narrowed to 10' width to calm traffic, and appropriate signage and pavement markings should be placed on both approaches. Providing designated space on the bridge for pedestrians and cyclists should be included with the planned improvements. A 6' wide sidewalk on the lake side of the bridge would allow for both pedestrian mobility and occasional fishing.



### 3. SEGMENT THREE

The third segment is a 1.3 mile east-west trail through downtown Perry. This segment will include a combination of different approaches to navigate through the heart of the Village, including shared roadways, as described above, and bicycle boulevards.

A bicycle boulevard is a low volume street that has been optimized for bicycle travel through traffic calming and diversion, signage and pavement markings, and intersection crossing treatments. Bicycle boulevards are shared roadway facilities that are comfortable and attractive to cyclists with a wide range of abilities and ages. Bicycle boulevards should be located on routes that serve major origins, destinations and travel corridors (often paralleling an arterial), and should be as direct and intuitive as possible.



Traffic calming and diversion techniques are a part of the TEP Downtown Perry Streetscape and Traffic Calming Initiative, which is currently underway. In addition, signage and pavement markings would be used to make the movements of both motorists and bicyclists more predictable. In the future, striped bicycle lanes could be used to designate preferential or exclusive use by bicyclists. If bicycle lanes or additional striping were considered, the work should be done in accordance with standards outlined by AASHTO and the FHWA.

The primary alignment for Segment Three is on-road, however, additional opportunities for secondary trails along Silver Lake Outlet are identified in [Secondary Trail Opportunities](#).

Segment three begins at the east entrance of the existing Silver Lake Outlet Trail, and continues north along S Federal Street to Lake Street. It follows Lake Street east to S Center Street. The trail follows S Center Street south, and then turns east at Mill Street. The trail then extends north west on S Main Street, turns west on Gardeau Street, and continues north west on Water Street. The route turns south onto Walnut Street, east onto Park Avenue, and continues east on Park Place.

Segment three improvements should be coordinated with sidewalk and crosswalk improvements within the Village of Perry.

#### **4. SEGMENT FOUR**

Segment Four connects downtown Perry to Letchworth State Park. This trail is divided into three parts which are composed of different materials. The first section of Segment Four runs along Silver Lake Outlet on private property. This section would be a natural surface trail. Further information about natural surface trails is included in the [Trail Construction Standards](#) section of this report, and in [Appendix E, Sustainable Trail Construction](#). This section is 1.2 miles and has a primarily east-west orientation. This section starts at Park Avenue and ends on Slocum Road.

The second section is along existing roads, and would be similar to Segment One. This section begins on Slocum Road. The route follows Slocum Road south until Slocum meets Sanford Road, and then turns east until the end of Sanford Road. This segment is 1.4 miles.

The third section is a natural surface trail connecting Sanford Road to Park Road. This segment is .9 miles.

In addition, there is a secondary trail opportunity to continue the trail along Silver Lake Outlet past Slocum Road to Letchworth State Park. This is described in further detail in the [Secondary Trail Opportunities](#) section of this report.

Also see [Secondary Trail Opportunities](#) for recommendations for connecting Segment Four with the Finger Lakes Trail and Genesee Greenway.



## 8.2 SITE IMPROVEMENT OPPORTUNITIES

### *Perry Beach*

The first phase of the trail passes Perry Beach, a small parcel of Village of Perry owned land adjacent to Silver Lake. In order to develop the connection between the Silver Lake Trail system and Silver Lake, improvements on the Perry Beach parcel are recommended. These include:

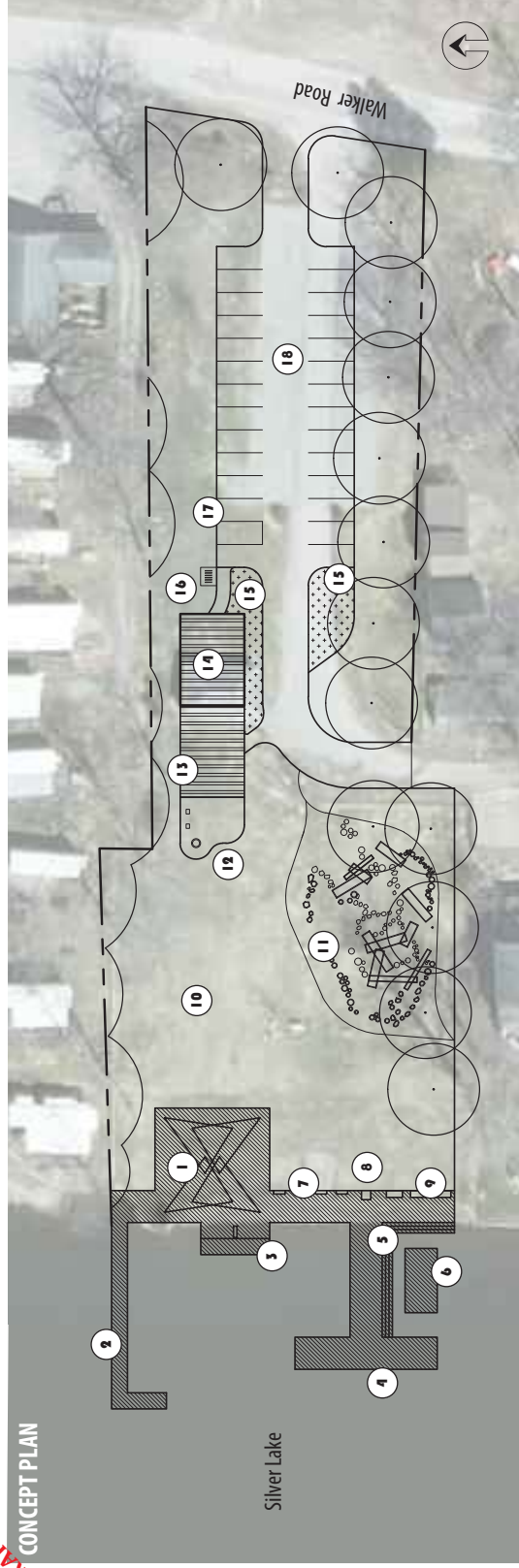
- Paddling boat dock to develop the Blue-Green Trail system
- ADA Accessible Kayak Launch for easy paddling boat entry and exit
- Floating docks and decking system for swimming, lounging and recreation designed according to regional standards to withstand local winter conditions
- Removable shade structure to provide shade for visitors, serve with decking system as new home for Shake the Lake, Perry's summer theater performance group, and provide a potential source of village income through rentals for weddings and other events
- Children's Nature Play Area
- New multipurpose building with toilet rooms, changing rooms, storage, and concessions
- New pavilion area
- Parking lot improvements, including rain garden buffer system to capture and filter stormwater before it enters the lake
- Additional canopy trees
- Barbecue
- Bicycle parking and signage
- Electrical improvements

Due to the steep topography of the Perry Beach Site, an ADA accessible ramp connecting the dock and parking lot is infeasible. However, two key zones would be made ADA accessible:

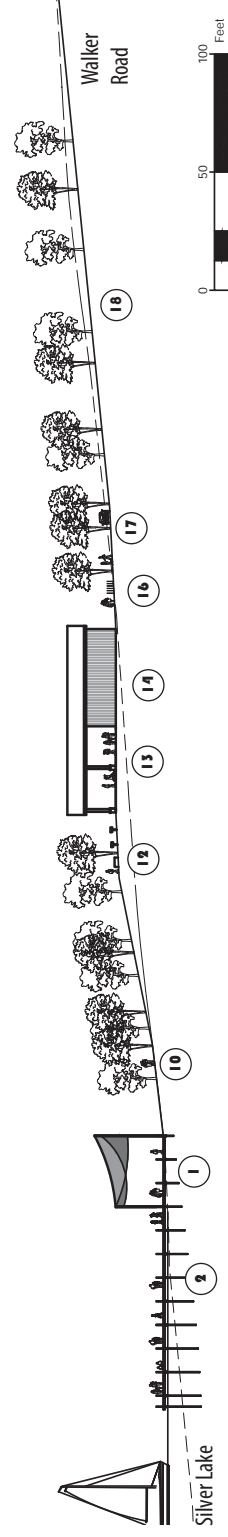
- The new building with a pavilion area and patio would be ADA accessible from the parking lot.
- The dock system would feature an ADA accessible paddle boat launch, to allow boaters easy access to the docks and performance viewing.
- The Village may want to coordinate with the Silver Lake State Park to provide an additional ADA accessible paddle boat launch at the south edge of the lake. This would strengthen the Blue-Green trail by providing multiple public access points. In addition, Silver Lake State Park does not have the same topographic constraints and may be better equipped to provide a fully accessible route from the paddle boat launch site to parking.

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CONCEPT PLAN



CONCEPT ELEVATION



Reference Image: Shade Structure



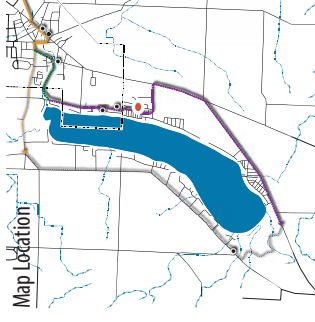
Reference Image: Kayak Ramp



Reference Image: Nature Play

VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 12  
PERRY BEACH SCHEMATIC DESIGN



- 1 Removable Shade Structure/  
Performance Space
- 2 Dock for Paddler Parking
- 3 Accessible Boat Launch
- 4 Swimming and Lounging
- 5 Sitting Steps
- 6 Floating Deck
- 7 Benches
- 8 Life Guard Chair
- 9 3x7' Lounging Benches
- 10 Seating/Lawn
- 11 Nature Play Area
- 12 Patio with Barbecue
- 13 Pavilion with Picnic Tables
- 14 Concessions, storage, rest rooms  
and changing rooms.
- 15 Rain Gardens
- 16 Bike Parking
- 17 2 ADA Parking Spaces
- 18 27 Parking Spaces

Providing swimming access at Perry Beach would require compliance with NYS Bathing Beach Code, including regular testing of water quality for turbidity, blue-green algae, and bacteria. Historically turbidity has been the primary concern at Perry Beach. Wyoming County Health Department was contacted to discuss swimming concerns as part of this study.

The dock area could also be used for fishing during times when swimming is not allowed due to water quality, or during spring and fall.

Other improvements were considered for the Perry Beach Site, including a motor boat launch and new village owned building, but were ultimately rejected due to the size of the site.

See **Figure 12** for details.

*Silver Lake is a Class A lake; this means that the best intended use for the lake is for potable water intake—drinking—as well as contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used by lake residents and visitors for power boating and swimming, through residential shoreline access to the lake and a state launch on the east side of the lake.*

*(New York State Department of  
Environmental Conservation, 2015)*

### ***Creekside Parking Lot Green Infrastructure Improvements***

The publicly owned parking lot off South Main Street between Dolbeer Street and Borden Avenue has been identified as another potential opportunity for site improvements. As part of this project, the existing parking lot on village land would be replaced with a new sustainable parking lot. This lot would include rain gardens and an infiltration strip which would infiltrate storm water and reduce the pollutants entering Silver Lake Outlet. Additional green infrastructure and aesthetic improvements, including new tree plantings, a new riparian buffer planting, striping the parking lot for greater convenience and clarity and facade improvements to existing buildings, would revive this area and create a memorable new destination in downtown Perry.

In addition, a new ADA accessible ramp and stair which could connect the parking lot to Memorial Park on the corner of South Main Street and Dolbeer Street.

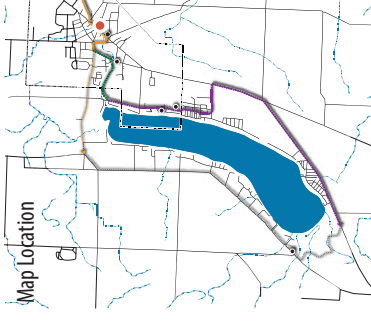
This project is a good candidate for public funding, including the Green Infrastructure Grant Program and the Water Quality Improvement Projects program.

See **Figure 13** for more information.

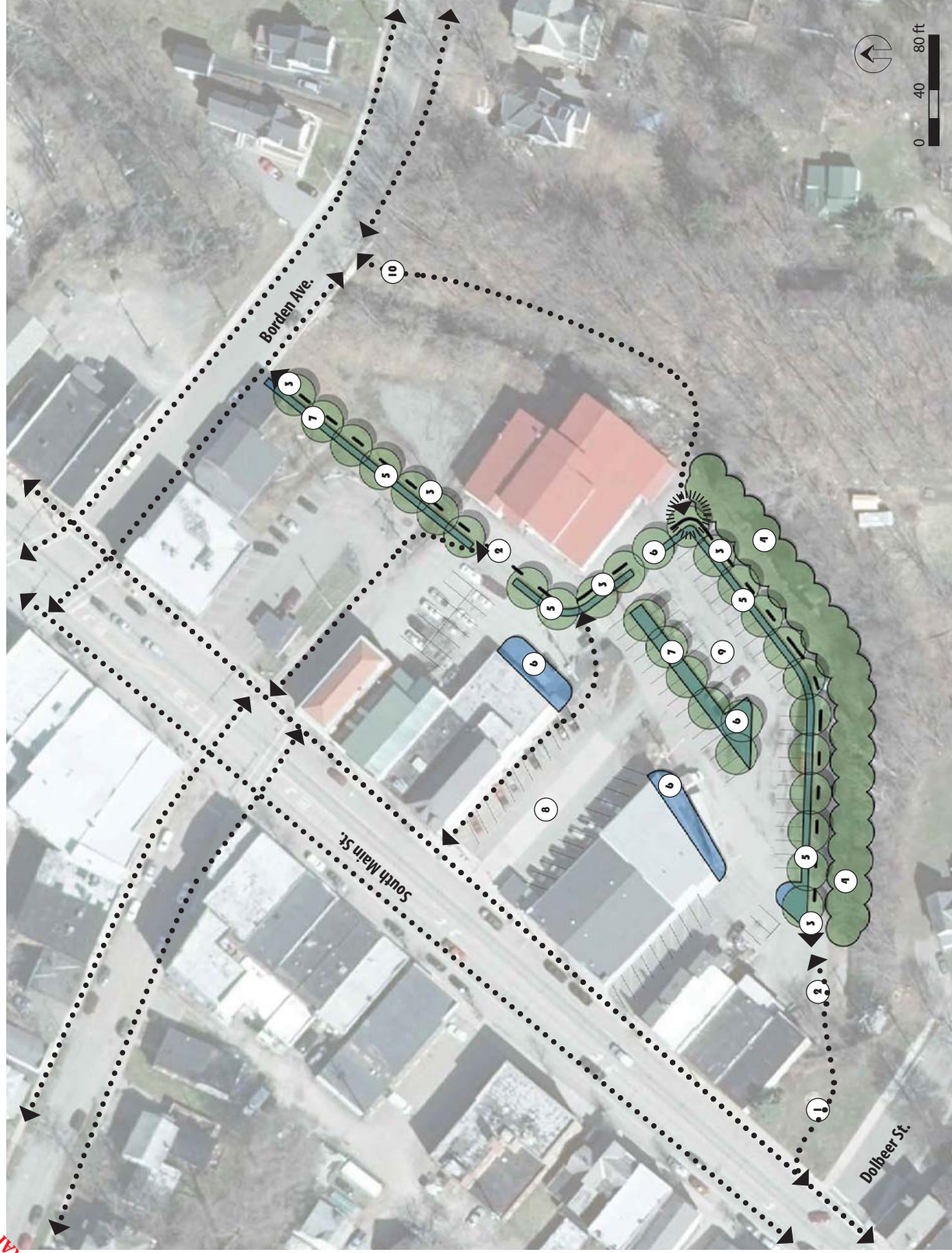


# VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

FIGURE 13  
CREEKSIDE GREEN  
INFRASTRUCTURE IMPROVEMENTS  
SHEET 1 of 2



- 1 Memorial Park
- 2 Study ADA Compliant Path
- 3 Silver Lake Trail Secondary Route
- 4 Creekside Buffer Planting
- 5 Infiltration Strip
- 6 Rain Garden
- 7 Trees
- 8 Existing Farmers Market Location
- 9 Parking Spaces
- 10 Possible Alternate Silver Lake Trail Route
- Pedestrian Access
- Potential Bridge Location
- Potential Funding Opportunities through existing NYS Grants





### 8.3 SECONDARY TRAIL OPPORTUNITIES

A number of secondary trails have been considered as potential additions to the Silver Lake Trail system. These secondary trails would connect to the primary trail, offering trail users additional choices. While some of these trail opportunities are for small loops or trail spurs, others would make large scale connections between the Silver Lake Trail network and other trail systems or State Parks.

These trails may be implemented along with the primary trail system, or added later, based on land owner interest and project budget. Phasing recommendations for these opportunities are included in [Section 8.4, Phasing](#).

***Segment 1 Extension - Wetland Boardwalk in Silver Lake State Park.*** There is currently no entrance to Silver Lake State Park along East Lake Road, on the eastern side of the Park. The segment 1 extension would create a new trail entrance to Silver Lake State Park along East Lake Road, and connect with the western entrance and facilities. The trail would have a low impact design, such as a floating boardwalk or helical piers, and would pass through the Silver Lake Park wetlands. This trail would complete the connection between the Village of Perry and Silver Lake State Park. See [Figure 14](#).

***Segment 2 Extension - Fitness Loop*** would pass through the large open parcels just south of the existing Silver Lake Outlet Trail. This area has steep terrain, and so the trail would probably not be ADA accessible. This trail would pass through privately owned property.

***Segment 3 Extension*** would follow Lake Street west from the intersection of S Federal Street and Lake Street, and end at the intersection with Oatka Road. This trail would be primarily composed of shared roadway, and would require relatively little additional infrastructure and design.

***Silver Lake Loop*** would begin at the intersection of Lake Street and Oatka, and then continue south along West Lake Road, until it connected with the Segment 1 Extension Wetland Boardwalk. The Silver Lake Loop, along with the Segment 3 Extension and Segment 1 Extension, would create an unbroken trail system around Silver Lake. The Silver Lake Loop would also be primarily composed of shared roadways.

***Downtown Silver Lake Outlet Loops.*** A series of potential downtown loops have been identified, which would follow the Silver Lake Outlet and connect to the primary trail. These could potentially serve as short cuts within the trail system, allowing trail users more options to access downtown destinations. They would also allow trail users to ride along Silver Lake Outlet within the Village.

One potential Silver Lake Outlet Loop between Dolbeer Street and Borden Avenue is also part of the proposed Creekside Parking Lot Green Infrastructure Improvements project. Some alignment details for this loop require further study during design development, including whether the loop would exit out onto South Main Street, or cross the Silver Lake Outlet and exit onto Borden Ave. The

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"WATERFRONT IN THE VILLAGE"



## VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

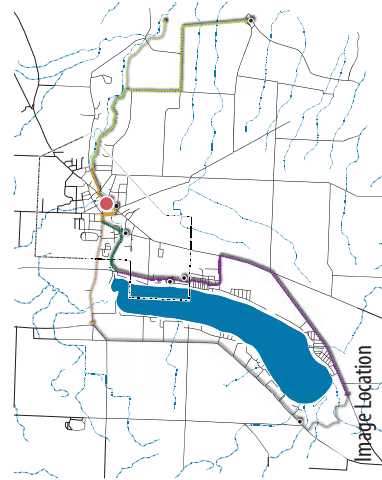
FIGURE 13  
CREEKSIDE GREEN  
INFRASTRUCTURE IMPROVEMENTS  
SHEET 2 of 2

- 1 Reconstruction of existing parking lot at corner of South Main Street and Borden Ave, utilizing pervious asphalt pavement. Reduced salt requirements will decrease pollutant loads and maintenance costs
- 2 Drive lanes and parking spaces are striped to maximize parking efficiency. Provide ADA spaces for improved accessibility.
- 3 "Low-mow" grass filter strip intercepts pollutants.
- 4 Salt-tolerant native shade trees. Provide storm water intercept, improved air quality, and mitigation of heat island effect.
- 5 Pervious concrete shared-use pathway. ADA and AASHTO compliant. To be contiguous with proposed Perry Silver Lake Trail system (currently in planning stages)

6 Trail markers

7 Stream buffer enhancement plantings. Mix of woody and herbaceous native species to provide bank stabilization, improved riparian habitat, and 4-season visual interest.

Potential Funding Opportunities through existing NYS Grants



south bank of Silver Lake Outlet has steep topography in this area that could present challenges to trail development.

Two more opportunities for potential secondary loops exist between Borden Street and Gardeau Street, and between Gardeau Street and Walnut Street. These loops also require further study during design development.

See **Figure 15**.

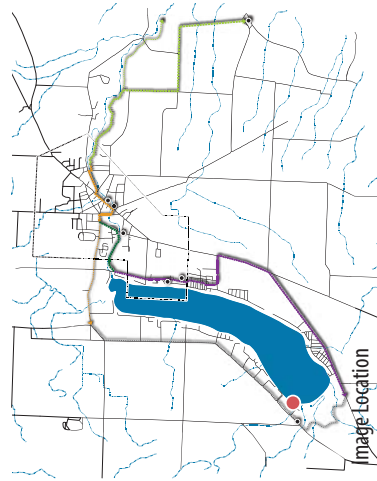
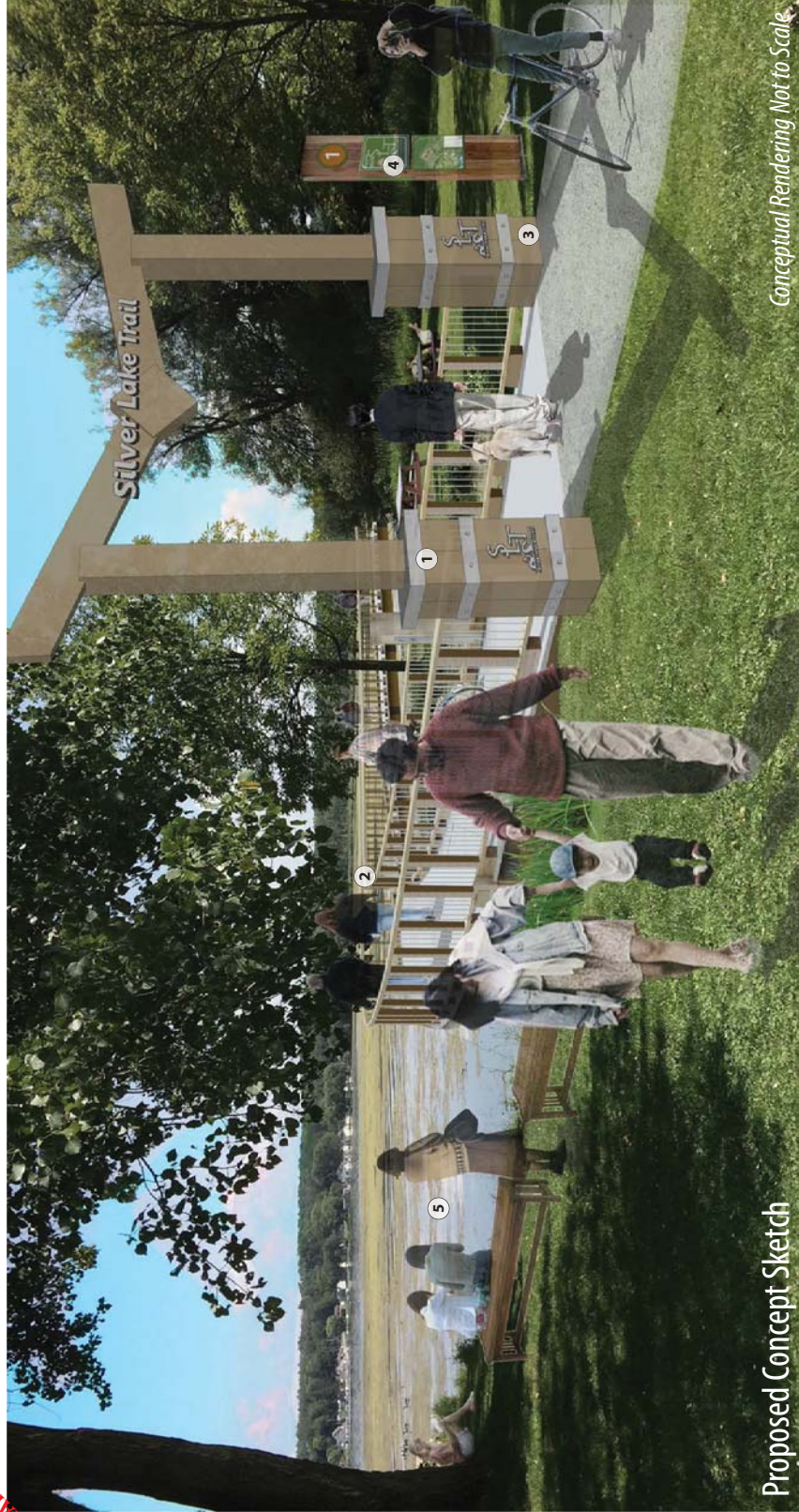
**Segment 4 Extension - Silver Lake Outlet** would continue along Silver Lake Outlet when the primary trail switches on to Slocum Road. The Segment 4 Extension would be primarily on privately owned property and would require land owner support.

**Park Road Improvements.** Possible improved shoulder or sharrows on Park Road, in Letchworth State Park, would connect the Silver Lake Trail system to the Finger Lakes Trail and the Genesee Greenway.



VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 14  
POTENTIAL BOARDWALK ENTRANCE  
SILVER LAKE STATE PARK



## 8.4 PHASING

The projects range from those that can be implemented quickly and at very low costs to those that would be more costly and long-term because of the need for further study prior to design and implementation.

Identification of the facilities in this Plan represents a significant enhancement to the likelihood of their implementation as targets of opportunity arise. The established prioritization serves as a general guide to the Village of Perry in phasing implementation, but does not suggest a specific order in which projects will ultimately be constructed. Recommended improvements, regardless of their established priority, may be tied to capital improvement schedules and specific opportunities.

Each project varies in priority based on the number of people served by the project and the feasibility of construction and funding. Each project was ranked according to the following phasing options:

- **Priority** – Highly beneficial projects that are immediately feasible, or will have the most impact and should therefore be addressed first.
- **Recommended** – Very beneficial projects that will have a significant impact and should be addressed next.
- **Possible** – Beneficial projects that have a less critical time frame, or cannot begin until other projects are completed or issues are addressed.

*Table 4: Trail Segment Phasing*

<b>Project</b>	<b>What</b>	<b>Phase</b>
Trail Segment 1	On road bicycle improvements and wayfinding	Priority
Trail Segment 2	Improvements to existing Silver Lake Outlet Trail	Priority
Trail Segment 3	On road bicycle improvements and wayfinding	Priority
Trail Segment 4	On road bicycle improvements and new trail along Silver Lake Outlet	Recommended



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Village of Perry Trail Alignment Alternatives

- 1 Memorial Park - Connection to Green Parking Lot Site Via Ramp/Stair
- 2 Proposed Green Parking Lot and Creek Trail Improvements
- 3 Possible Site of Bridge to Connect to Village Parcel Across Creek - Steep Topography
- 4 Connection from Borden to Walnut via Creek - Check Feasibility



Site 3 - Topography Challenges

## VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

FIGURE 15  
DOWNTOWN SILVER LAKE OUTLET  
TRAIL LOOPS & PARTNERSHIP  
OPPORTUNITIES



- Village of Perry
- Town of Perry
- Italian American Club
- Perry Silver Lake Trail
- Primary Route
- Along Existing Roadways
- Possible Secondary Routes



*Table 5: Site Improvement Opportunity Phasing*

<b>Project</b>	<b>What</b>	<b>Phase</b>
Perry Beach	Site improvements including new decking, paddle boat launch, shade structure, bathrooms, storage, and parking lot improvements	Priority
Creekside Parking Lot Green Infrastructure Improvements	Improvements to downtown parking lot including striping, rain gardens, infiltration strip, tree planting, and facade improvements	Priority

*Table 6: Secondary Trail Opportunity Phasing*

<b>Project</b>	<b>What</b>	<b>Phase</b>
Segment 1 Extension	Wetland Boardwalk in Silver Lake State Park	Recommended
Segment 2 Extension	Fitness Loop on private property	Possible
Segment 3 Extension	On road bicycle improvements and wayfinding	Recommended
Silver Lake Loop	On road bicycle improvements around Silver Lake	Recommended
Downtown Silver Lake Outlet Loops	Loop 1 - Between Dolbeer and Borden on Village property	Priority
Downtown Silver Lake Outlet Loops	Loop 2 - Between Borden and Gardeau on private property	Possible
Downtown Silver Lake Outlet Loops	Loop 3 - Between Gardeau and Walnut on private property	Possible
Segment 4 Extension	Creekside trail extension on private property	Possible
Park Road Improvements	On road bicycle improvements in Letchworth State Park	Possible

## 8.5 DESIGN DETAILS

The Silver Lake Trail study was primarily focused on assessing the feasibility of the trail. However, preliminary design decisions were made to allow for estimating the cost of trail development. The following design elements are recommended.

### 1. SHARED ROADWAYS

Placing signs and pavement markings along shared roadways will serve to advise motorists that bicycles are present. In most places, these roads have existing shoulders that can accommodate bicycle use. In some areas, additional striping may be necessary. Striped shoulders are not necessary for a shared roadway, but will provide additional room for cyclists and motorists to share space.

**Signage.** The 2009 Manual on Uniform Traffic Control Devices (MUTCD) recommends using a Share the Road with Bicyclists sign assembly (W11-1 and W16-1). A Share the Road plaque is mounted below a bicycle warning sign, creating a sign assembly that advises drivers to watch for bicycle travel on the roadway. Section 9B.20 in the MUTCD states that guide signing for shared roadways should be similar to that described for Bike Route Guide signage. Signs may be provided along designated bicycle routes to inform cyclists of bicycle route direction changes, and to confirm route direction, distance, and destination. If used, signs may be repeated at regular intervals. See [Figure 8](#) for Signage Details.

**Shoulder Improvements.** Some shoulders along proposed shared roadways are unpaved, narrow, or in poor condition. According to the Federal Highway Administration:

Paved shoulders are provided on rural highways for a variety of safety, operational, and maintenance reasons:

- Space is provided for motorists to stop out of traffic in case of mechanical difficulty, a flat tire, or other emergency.
- Space is provided to escape potential crashes.
- Sight distance is improved in cut sections.
- Highway capacity is improved.
- Space is provided for maintenance operations, such as snow removal and storage.
- Lateral clearance is provided for signs and guardrail.
- Storm water can be discharged farther from the pavement.
- Structural support is given to the pavement.
- Paved shoulders provide an excellent place for bicyclists to operate if they are adequately maintained.

When providing shoulders for bicycle use, a width of 6 feet is recommended, however even 2 feet of shoulder width will benefit more experienced riders. A 6-foot wide shoulder allows a cyclist to ride far enough from the edge of the pavement to avoid debris, yet far enough from passing vehicles to avoid conflict. If there are physical width limitations, a minimum width of 4 feet from the longitudinal joint between a monolithic curb and gutter and the edge of travel lane may be adequate. However, on steep grades a minimum width of 5 feet is recommended.

## 2. BICYCLE BOULEVARDS

According to the Federal Highway Administration the bicycle boulevard is a refinement of the shared roadway concept—the operation of a local street is modified to function as a through-street exclusively for bicycles, while maintaining local access for automobiles. Traffic-calming devices reduce traffic speeds and through trips. Traffic controls limit conflicts between motorists and bicyclists, and give priority to through-bicycle movement.

Converting roads for exclusive bicycle use is not recommended by this feasibility study, however, the bicycle boulevard can serve as a model for the downtown portions of the Silver Lake Trail.

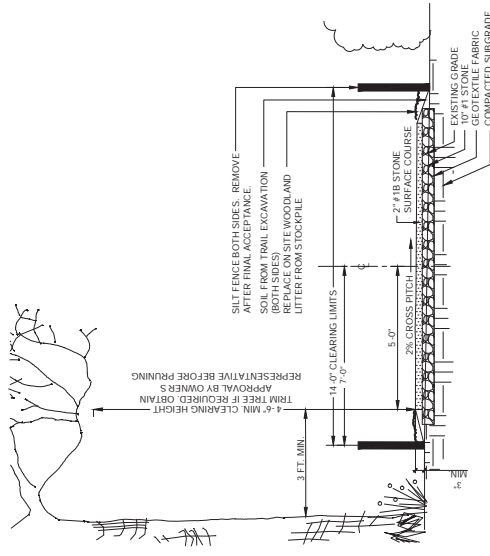
### *Elements of a Bicycle Boulevard*

- Selection of a direct and continuous street, rather than a circuitous route that winds through neighborhoods. Bike boulevards work best on a street grid system.
- Turn stop signs toward intersecting streets so bicyclists can ride with few interruptions.
- Place motor vehicle traffic diverters at key intersections to reduce traffic volumes (the diverters must be designed to allow through bicycle movement).
- Place traffic-calming devices on streets to lower traffic speeds.
- Place directional signs to route cyclists to key destinations, to guide cyclists through difficult situations, and to alert motorists of the presence of bicyclists.
- Provide protection where the boulevard crosses high-volume arterials, pedestrian infrastructure, off-road multi-use trail development, boardwalks and wetland areas.





**DRAFT** CONSTRUCTION DETAIL FOR REFERENCE ONLY

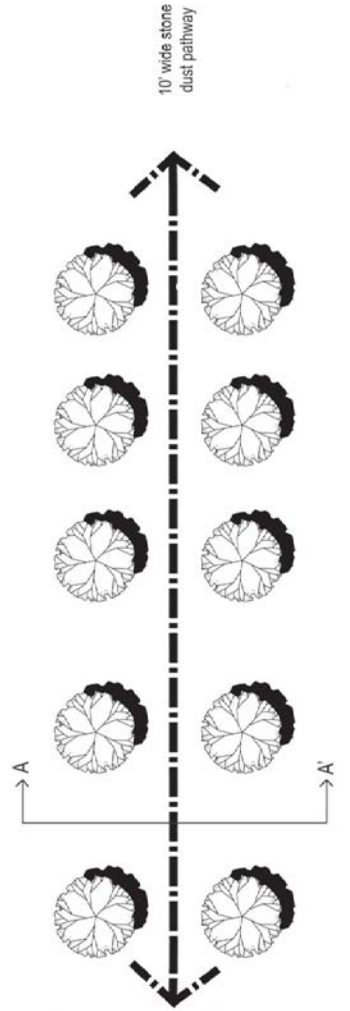


NOTE: RESTORE AND SEED ALL DISTURBED AREAS WITH RESTORATION SEED MIX

10' WIDE STONEDUST TRAIL

Scale: NOT TO SCALE

PLAN



REFERENCE IMAGES



Corbett's Glen, Brighton



Erie Canalway Trail, Brighton

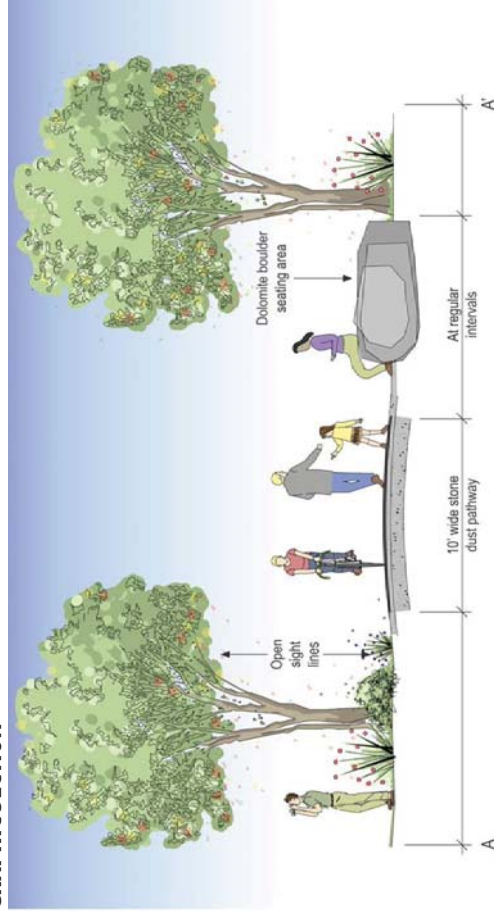


El Camino Trail, Rochester



Channing Park, Portland

GRAPHIC SECTION



# VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

FIGURE 16  
TYPICAL TRAIL CONCEPT DETAILS  
TRAIL SEGMENT 2 - EXISTING  
OUTLET TRAIL ENHANCEMENT

## TRAIL SURFACE BENEFITS

- ASHTO compliant stonedust trails are ADA compliant allowing for users of all mobility levels.
- Acts as a speed reducer for bicyclists, creating a safer environment for all users.
- Installation cost is lower up front.
- Limestone is a locally available material.
- Allow access for maintenance and emergency vehicles.
- Accommodate snowmobile use in appropriate areas.
- Sustainable and maintainable

### ***Advantages of Bicycle Boulevards***

- Opportunity — Traditional street grids offer many miles of local streets that can be converted to bicycle boulevards.
- Low cost — Major costs are for traffic control and traffic-calming devices.
- Traffic-calming techniques are increasingly favored by residents who want slower traffic on neighborhood streets.
- Bicycle travel on local streets is usually compatible with local land uses.
- Bicycle boulevards may attract new or inexperienced cyclists who do not feel comfortable on arterials and prefer to ride on lower traffic volume streets.
- Bicycle boulevards can improve conditions for pedestrians, with reduced traffic and improved crossings.

### ***Disadvantages of Bicycle Boulevards***

- They are often located on streets that do not provide direct access to commercial land uses and other destinations; some cyclists may have to negotiate a hostile street environment to complete a portion of their trip.
- If improperly implemented, they can cause traffic diversion onto other streets.
- Failure to provide arterial crossings can result in unsafe conditions for bicyclists.
- Traffic signals may be expensive or unacceptable for the traffic conditions.

The TEP Downtown Perry Streetscape and Traffic Calming Initiative provides an excellent opportunity to put some of these strategies in use. If bicycle lanes or additional striping are considered, the work should be done in accordance with standards outlined by AASHTO and the FHWA. In some places, it may be necessary to route the trail along existing sidewalks. In these cases, widening the sidewalk to 10' to create a multi-use path is recommended, however, this practice should be avoided where possible.

***Bicycle parking.***

Bicycle parking is an important complement to on-street bicycle improvements. Bicycle racks and/or bicycle shelters are recommended along the Silver Lake Trail.

Bicycle racks are intended for short-term storage periods between two and four hours, and are generally uncovered and unsupervised. Bicycle racks are appropriate outside a store, or for visitors to an office, building, park or government building.

Bicycle shelters are intended for long-term storage periods between four and ten hours, and are desirable in pedestrian oriented areas. Covered bicycle shelters can be attractive streetscape features, and can provide informational signage, messages or maps. Bicycle shelters typically have a bicycle rack with a roof that is tall enough to accommodate an adult rider but low enough to keep rain and snow off the bicycles.

A detailed inventory of bicycle parking facilities is outside the scope of this study. However, bicycle parking is generally recommended in parking areas and at trailheads.



*Covered Bicycle Parking Shelters at RIT*



### 3. PEDESTRIAN IMPROVEMENTS

Pedestrian improvements are recommended for the Village of Perry downtown area. Some basic improvements were identified and suggested in the cost estimate. These include basic piano key striping for east-west and north-south crosswalks at all major intersections along the route for segment 3; new and expanded sidewalks along the route for segment 3, as well as benches and street trees.

In addition to understanding the opportunities and constraints specific to the study area, we can look to the complete streets concept for solutions. According to the National Complete Streets Coalition (NCSC), complete streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users (NCSC, 2008). Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a complete street. Complete streets also create a sense of place, improve social interaction, and generally increase land values of adjacent property.

Complete streets look different in different places. They must fit with their context and to the transportation modes expected (Laplante & McCann, 2008). Although no singular formula exists for a complete street, an effective one includes at least some of the following features (NCSC, 2009):

- sidewalks
- bus pullouts
- bike lanes
- special bus lanes
- wide shoulders
- raised crosswalks
- plenty of crosswalks
- audible pedestrian signals
- refuge medians
- sidewalk bump-outs (bulb-outs)



*National Association of City Transportation Officials (NACTO)*



*City of Rochester, New York*

These features make a street safer and more pleasant for pedestrians and vehicles. A Federal Highway Administration safety review found that designing a street for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28% (NCSC, 2009). The practice of complete streets is not only about allocation of street space, but also about selecting a design speed that is appropriate to the street typology and location, and that allows for safe movements by all road users (Laplane & McCann, 2008).

#### **4. OFF ROAD MULTIUSE TRAILS**

Two potential surface materials were considered for off-road portions of the trail throughout segments 2 and 3, asphalt and stone dust. Asphalt is the preferred surface of many cyclists because it enables them to move more quickly, however pedestrians tend to prefer stone dust, because it is an easier surface for walking and running, and because it slows down cyclists.

Stone dust is recommended for this project, because it is pedestrian friendly, ADA accessible, and inexpensive to repair.

Natural surface trails are recommended for trail segment 4. More details about natural surface trails are included in the trail construction standards section of this report, and in [Appendix E](#).

Source: National Trails Training Partnership

***Trailheads and Interpretive Signage.*** Trailheads include site amenities to define the trail character and provide information. At least 7 new trailheads are proposed along the length of the trail. Alternate secondary routes will require additional trailheads. Each trailhead should have parking, as well as an informational kiosk with trail maps.

## GUIDE RAILS, SITE FURNITURE AND ACCESS CONTROLS

Guide rails, site furniture and access control features should be included to increase trail safety and comfort for trail users.

**Guide rails.** In select areas of the trail near existing culverts and bridges, or in areas with steep topography, pedestrian guide-rails may be necessary to keep trail users safe. Low guide-rails are also recommended along new parking areas at each trailhead to protect trail users from vehicles entering the trail corridor. Timber guide rails are recommended.

**Site Furniture.** Locally sourced limestone slabs provide attractive, inexpensive, maintenance-free seating. Clusters of two or three boulders provide seating areas, which are recommended at regular intervals along the trail and at trailheads.

**Access Control.** Trail access control gates are recommended at primary trail entrances. Access to the trail needs to be limited to bicycles, pedestrians, and emergency vehicles. Other motorized vehicles will be restricted through the use of these access gates and signage.



## DRAFT BICYCLE LANES

- One-way on-street lanes that are striped, signed and marked to designate exclusive space for bicyclists on the roadway.
- Striped bicycle lanes make the movements of both motorists and bicyclists more predictable.
- Bicycle lanes should typically be one-way, carrying bicyclists in the same direction as the adjacent travel lane.



## SHARED LANE MARKINGS

- Used in locations where, due to narrow width, a bicycle lane may not be practical.
- A shared lane marking, or “sharrow” is used to help bicyclists with lateral positioning in the lane.
- A sharrow is used to alert motorists to the position bicyclists are likely to occupy within the lane, encourage safe passing by motorists, and reduce incidence of wrong-way bicycling.
- Research suggests that sharrows reduce the incidence of sidewalk riding.



## MULTI-USE PAVED SHOULDERS

- Roads with paved shoulders where no other active transportation facilities exist are shared by more than one type of user (bicyclists, pedestrians, in-line skaters and vehicles for emergency use).
- Design of new or retrofit of existing paved shoulders should comply with AASHTO standards; “on uncurbed cross sections with no vertical obstructions immediately adjacent to the roadway, paved shoulder should be at least 4 ft wide to accommodate bicycle traffic. Shoulder width of 5 ft is recommended from the face of a guardrail, curb, or other roadside barrier to provide additional operating width...”
- Areas with expected higher bicycle use should have increased shoulder widths as necessary in addition to areas where motor vehicle speeds exceed 50 mph or are used by trucks and buses.



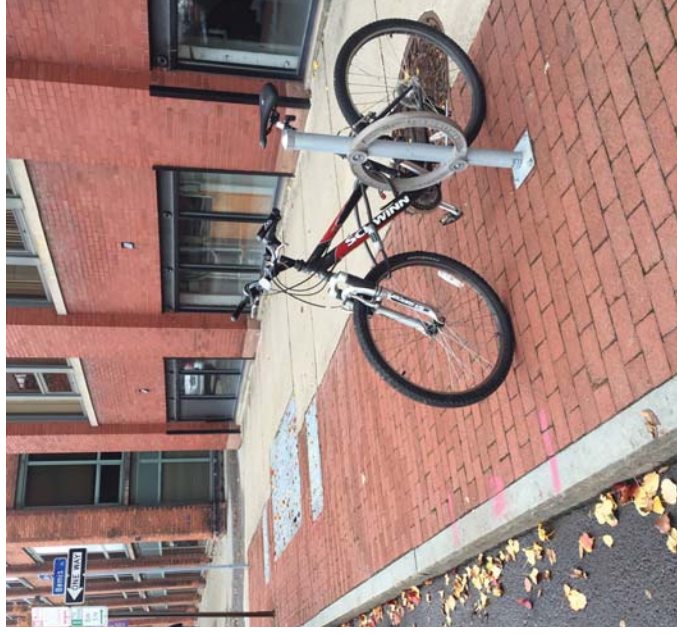
VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY

FIGURE 17  
ON ROAD BIKE IMPROVEMENTS  
TRAIL SEGMENTS 1, 3 & 4



## BIKE PARKING

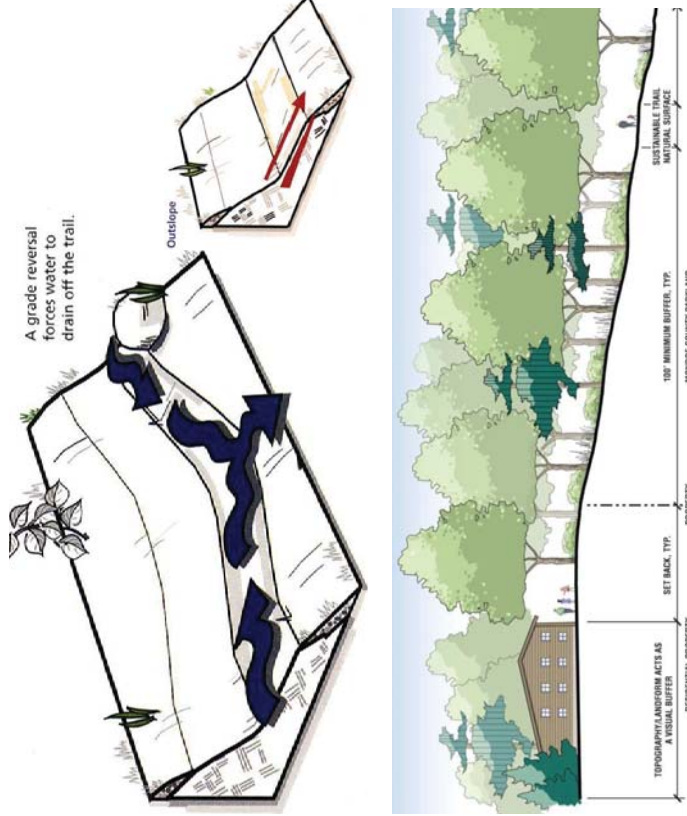
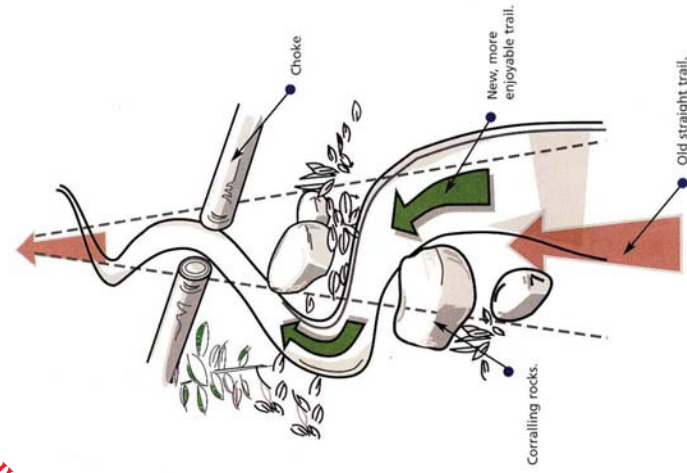
- The availability of safe and convenient parking is as critical for bicyclists as it is for motorists.
- However, it is frequently overlooked in the design and operation of shops, offices, schools and other buildings.



Prepared by Barton & Loguidice, DPC







WAYFINDING SYSTEMS



TRAIL HEAD EDUCATIONAL SIGNAGE



BIKE HELMET REQUIRED SIGNAGE



Sustainable trails are defined by the US Forest Service as trails having a tread that will not be easily eroded by water and use, will not affect water quality or the natural ecosystem, meet the needs of the intended users and provide a positive user experience, and that do no harm to the natural environment.

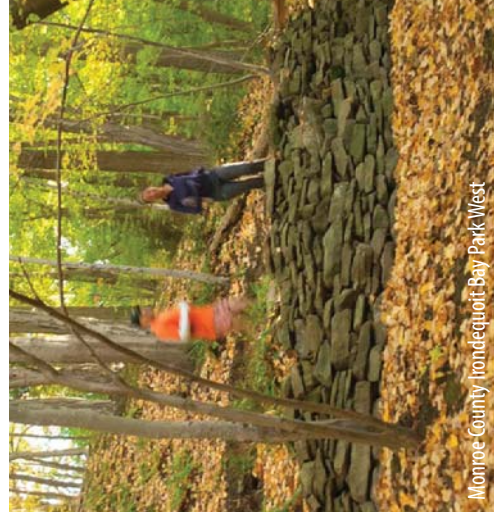
TRAIL SURFACE BENEFITS

- Construction and restoration of shared use trails conserves and enhances existing natural systems
- Supports passive recreation, environmental education, stewardship and tourism
- Carefully graded to minimize erosion, protecting Silver Lake Outlet
- Utilizes found materials including rocks, logs, and plant material to direct trail users and control user speed
- Signage system educates trail users and increases safety.

REFERENCE IMAGES



Monroe County Irondequoit Bay Park West



Monroe County Irondequoit Bay Park West



Monroe County Irondequoit Bay Park West

FIGURE 18  
SUSTAINABLE OFF-ROAD TRAILS  
TRAIL SEGMENT 4

VILLAGE OF PERRY  
SILVER LAKE TRAIL  
FEASIBILITY STUDY



## 9. IMPLEMENTATION



### 9.1 FUNDING SOURCES

#### SILVER LAKE TRAIL CFA FUNDING OPTIONS

- Perry Beach – The project in its entirety is eligible for EPF funding. If segregated into different components to maximize funding opportunities and minimize local matching requirements, the following scenario could apply:
  - GIGP program - Parking lot and rain gardens with planted buffer
  - EPF program - Removable shade structure, performance space and deck; dock for paddling boats; sitting steps; floating deck; benches; nature play area
  - SAM program - Restrooms/storage/pavilion
  - TAP program in concert with a trail segment development project - Entry plaza with signage, benches and bike parking
2. Creekside Trail and Parking Lot – eligible for EPF, GIGP, WQIP, RTP, TAP and SAM programs
  3. Trail Segment #2 – Existing Outlet Trail eligible for EPF, RTP, TAP and SAM programs

## GRANT PROGRAM DESCRIPTIONS

***The NYS Environmental Protection Program (EPF)*** provides grant reimbursement for the acquisition, planning, development and improvement of parks, historic properties and heritage areas within New York State. Grant recipients are expected to fund all projects costs up front and then submit for reimbursement. The EPF program will fund up to 50 percent of the total project cost and up to 75 percent if the project is located in a high poverty district (where 10 percent or more of the population is below the poverty level). Acceptable local funding matches include cash (as long as it is not other EPF funds), force account, professional services (a 3 year retro-activity on the value of services provided by technical and professional personnel, as long as the services were properly procured), three year retro-activity on warehoused supplies and materials, volunteer labor, equipment usage and the value of real property.

The entirety of the Silver Lake Trail project area is located in Census Tracts 9706 and 9707. Both census tracts have poverty levels in excess of 10 percent. Consequently the Silver Lake Trail project is eligible for a 75 percent grant reimbursement award. Individual grant awards are generally capped at \$500,000.

***The Green Innovation Grant Program (GIGP)*** provides grants for projects that improve water quality and demonstrate the use of green infrastructure in New York State. Eligible projects include bioretention (rain gardens and bioswales); construction or restoration of wetlands, floodplains or riparian buffers; downspout disconnections; green roofs and green walls; permeable pavement; stormwater harvesting and reuse; stormwater street trees/urban forestry programs; and stream daylighting. Competitive projects maximize opportunities to leverage multiple benefits of green infrastructure applications including habitat restoration, flood mitigation, cleaner air and economic and community revitalization. There is a 10 percent local match requirement and no ceiling on the amount of funding requested.

***The DEC Water Quality Improvement Program (WQIP)*** provides grants for projects that directly address documented water quality impairments. Elements of the Silver Lake Trail project may be eligible for the WQIP Non-Point Source Abatement and Control funding program. Highest priorities are given to projects explicitly identified in the DEC Priorities Waterbody List (PWL) sheet as “precluded” or “impaired”. According to the DEC PWL, Silver Lake is classified as an impaired waterbody. Grants are available for up to 75 percent of the total project cost. Acceptable local matches include cash and in-kind services. State and federal funds cannot be used as a match for this program. Eligible activities include stream stabilization and riparian buffers. Planning and design costs can be reimbursed only if they are associated with project implementation and they do not exceed 20 percent of the total project cost.

***NYS OPRHP Recreational Trails Program (RTP)*** – This program was last available in the 2015 CFA funding round. Funds are allocated to the state from the Federal Highway program and administered by OPRHP. Eligible activities include the acquisition, development, rehabilitation and maintenance of trails and trail-related projects. Funded projects must be identified in, or further a specific goal of, the Statewide Comprehensive Outdoor Recreation Plan (SCORP) and must be available to the general public. A 20 percent local match is required and 2015 awards were capped at \$200,000 each. Acceptable local funding matches include cash, force account, professional services (as long as the services were properly procured), warehoused supplies and materials, volunteer labor, equipment usage/donation and the value of acquired or donated real property.

***NYS DOT Transportation Alternatives Program (TAP)*** provides grants for projects related to surface transportation. Projects must benefit the public interest through the provision of public access and use and fit into one of six program areas. The Silver Lake Trail project is consistent with the following program areas:

- Construction, planning and design of on-road and off road facilities for bicyclists, pedestrians and other non-motorized forms of transportation
- Construction of turnouts, overlooks and viewing areas

The proposed project must also have an eligible sponsor and demonstrate community support. If funded, the project must be completed within five years. A 20 percent local match is required, which can take the form of cash or in-kind services. Eligible local matching funds can also come from CHIPS; certain other state funds except Multi-modal grants, state member item funds, and other federal funds except US DOT funds and certain non-cash sources such as donations of land, materials and labor. The minimum project cost is \$250,000 (\$200,000 federal, \$50,000 local match) and the maximum is \$2 million (\$1.6 million federal, \$400,000 local match).

***NYS State and Municipal Facilities Program (SAM)*** funds a wide range of capital projects relating to economic development, environmental related initiatives, public safety, highway and parks projects. Eligible expenditures are also broadly defined to include the acquisition of capital assets with a useful life of not less than 10 years purchased for the sole purpose of protecting infrastructure that is owned, controlled or appurtenant to the Village. The Dormitory Authority of the State of New York (DASNY) has been provided authority to issue bonds to fund project costs associated with the SAM program. SAM grant funds are administered by DASNY. Grants are generally in the range of \$50,000 to \$150,000. There is no local matching requirement. This program can be accessed by contacting the NYS Senator that serves the Village of Perry early each year prior to the adoption of the NYS Budget.



## **9.2 TRAIL CONSTRUCTION STANDARDS**

(Derived from AASHTO “Development of Bicycle Facilities”)

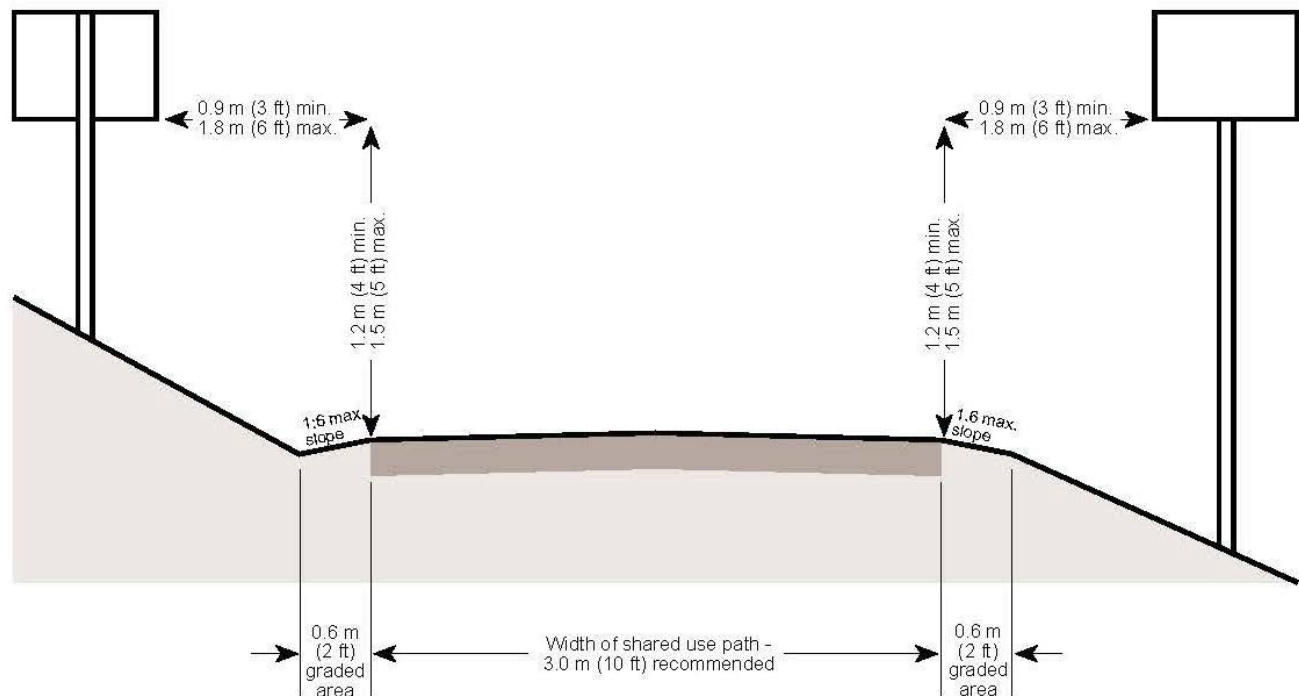
Class I bikeways (bike paths) are facilities with exclusive right of way, with cross flows by motorists minimized. Class I bikeways are typically described as serving “the exclusive use of bicycles and pedestrians.” However, experience has shown that if significant pedestrian use is anticipated, separate facilities for pedestrians are one way to minimize conflicts. Motorized bicycles are prohibited on bike paths unless authorized by ordinance or approval of the agency having jurisdiction over the path. Likewise, all motor vehicles are prohibited from bike paths. Signing can strengthen these prohibitions.

### **1. WIDTHS**

Under most conditions, a recommended paved width for a two-way shared use path is 10'. In sensitive ecological areas, however, an 8' trail width is allowed where sight distance and trail alignment are good, expected trail use is low, and access by the occasional trail maintenance vehicle will not cause trail surface damage. Where heavy bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the pavement width of a two-way path should be greater than 10', preferably 12' or more. Another important factor in determining the appropriate trail width is that bicyclists will tend to ride side by side on bike paths, necessitating more width for safe use. A minimum 2' graded area with a maximum 1:6 slope shall be provided adjacent to both sides of the path. A 3' graded area is recommended to provide clearance from poles, trees, walls, fences, guardrails, or other lateral obstructions. Where the paved width is wider than the minimum required, the graded area may be reduced accordingly. However, the graded area is a desirable feature regardless of the pavement width.

### **2. CLEARANCE TO OBSTRUCTIONS**

A minimum 8' horizontal clearance to obstructions shall be provided adjacent to the pavement. A 10' clearance is recommended. Where the pavement width is wider than the minimum required, the clearance may be reduced accordingly; however, an adequate clearance is desirable regardless of the paved width. If a wide path has pavement that is contiguous with a continuous fixed object (i.e. a block wall), a 4" white edge stripe, 12" from the fixed object, is recommended to minimize the likelihood of a bicyclist hitting it. On structures, the clear width between railings shall be the same as the approaching paved path plus the minimum 2' clear areas. The vertical clearance to obstructions across a bridge or structure shall be 10'.



*Cross Section of Two-Way Shared Use Path on Separated Right-of-Way - AASHTO Development of Bicycle Facilities*

### 3. INTERSECTIONS WITH HIGHWAYS

Intersections are a prime consideration in bike path design. If alternate locations for a bike path are available, the one with the most favorable intersection conditions should be selected. Where motor vehicle cross traffic and bicycle traffic is heavy, grade separations are desirable to eliminate intersection conflicts. Where grade separations are not feasible, assignment of right of way by traffic signals should be considered. Where traffic is not heavy, stop or yield signs for bicyclists may suffice. Bicycle path intersections and approaches should be on relatively flat grades. Stopping sight distances at intersections should be checked and adequate warning should be given to permit bicyclists to stop before reaching the intersection, especially on downgrades. When crossing an arterial street, the crossing should either occur at the pedestrian crossing, where motorists can be expected to stop, or at a location completely out of the influence of any intersection to permit adequate opportunity for bicyclists to see turning vehicles. When crossing at mid-block locations, right of way should be assigned by devices such as yield signs, stop signs, or traffic signals that can be activated by bicyclists. Even when crossing within or adjacent to the pedestrian crossing, stop or yield signs for bicyclists should be placed to minimize potential for conflict resulting from turning autos. Where bike path stop or yield signs are visible to approaching motor vehicle traffic, they should be shielded to avoid confusion. In some cases, "Bike X-ing" signs may be placed in advance of the crossing to alert motorists. Ramps should be installed in the curbs, to preserve the utility of the bike path. Ramps should be the same width as the bicycle paths. Curb cuts and ramps should provide a smooth transition between the bicycle path and the roadway.

#### **4. DESIGN SPEED**

The proper design speed for a trail is dependent on the expected type of use and on the terrain. The minimum design speed for a shared use path should be 20 mph. On unpaved paths, a lower design speed of 15 mph can be used. Similarly, where the grades or prevailing winds dictate, a higher design speed of 25 mph can be used. Installation of “speed bumps” or other similar surface obstructions, intended to cause bicyclists to slow down in advance of intersections or other geometric constraints, shall not be used. These devices cannot compensate for improper design.

#### **5. HORIZONTAL ALIGNMENT AND SUPER-ELEVATION**

The minimum radius of curvature negotiable by a bicycle is a function of the super-elevation rate of the pathway surface, the coefficient of friction between the bicycle tires and the surface, and the speed of the bicycle. For most bicycle path applications, the maximum super-elevation rate will be 3%. A straight 2% cross slope is recommended on tangent sections, and ADA guidelines require that cross slopes not exceed 2-3 percent. The minimum super-elevation rate of 2% will be adequate for most conditions and will simplify construction. When transitioning a 3% super-elevation, a minimum 25-foot transition distance should be provided between the end and beginning of consecutive and reversing horizontal curves.

#### **6. STOPPING SIGHT DISTANCE**

To provide bicyclists with an opportunity to see and react to the unexpected, a bicycle path should be designed with adequate stopping sight distances. The distance required to bring a bicycle to a full controlled stop is a function of the bicyclist's perception and brake reaction time, the initial speed of the bicycle, the coefficient of friction between the tires and the pavement, and the braking ability of the bicycle.

#### **7. LATERAL CLEARANCE ON HORIZONTAL CURVES**

Bicyclists frequently ride abreast of each other on bicycle paths, and on narrow bicycle paths, bicyclists have a tendency to ride near the middle of the path. For these reasons, and because of the serious consequences of a head-on bicycle accident, lateral clearances on horizontal curves should be calculated based on the sum of the stopping sight distances for bicyclists traveling in opposite directions around a curve. Where this is not possible or feasible, consideration should be given to widening the path through the curve, installing a yellow center stripe, installing a curve ahead warning sign, or some combination of these alternatives.



## **8. GRADES**

Bike paths generally attract less skilled bicyclists, so it is important to avoid steep grades in their design. Bicyclists not physically conditioned will be unable to negotiate long, steep uphill grades. Since novice bicyclists often ride poorly maintained bicycles, long downgrades can cause problems. For these reasons, bike paths with long, steep grades will generally receive very little use. The maximum grade recommended for bike paths is 5%. It is desirable that sustained grades be limited to 2% if a wide range of riders is to be accommodated. Steeper grades can be tolerated for short segments (i.e. up to about 500 feet). Where steeper grades are necessitated, the design speed should be increased and additional width should be provided for maneuverability.

## **10. STRUCTURAL SECTION**

The structural section of a bike path should be designed in the same manner as a highway, with consideration given to the quality of the base soil and the anticipated loads the bikeway will experience. It is important to construct and maintain a smooth riding surface with skid resistant qualities. Principal loads will normally be from trail maintenance and emergency vehicles. Expansive soil should be given special consideration and will probably require a special structural section.

## **11. DRAINAGE**

For proper drainage, the surface of a bike path should have a cross slope of 2%. Sloping in one direction usually simplifies longitudinal drainage design and surface construction, and accordingly is the preferred practice. Ordinarily, surface drainage from the path will be adequately dissipated as it flows down the gently sloping shoulder. However, when a bike path is constructed on the side of a hill, a drainage ditch of suitable dimensions may be necessary on the uphill side to intercept the hillside drainage. Where necessary, catch basins with drains should be provided to carry intercepted water across the path. Such ditches should be designed in such a way that no undue obstacle is presented to bicyclists. Culverts or bridges are necessary where a bike path crosses a drainage channel.

## **12. LIGHTING**

Fixed source lighting reduces conflicts along paths and at intersections. In addition, lighting allows the bicyclist to see the bicycle path direction, surface conditions, and obstacles. Lighting for bicycle paths is important and should be considered where riding at night is expected, such as bicycle paths serving college students or commuters, and at highway intersections. Lighting should also be considered through underpasses or tunnels, and where nighttime security could be a problem. Depending on the location, horizontal illumination levels of 5 lux to 22 lux should be maintained. Light poles should meet the recommended horizontal and vertical clearances. Luminaires and poles should be at a scale appropriate for a pedestrian or bicycle path.

### 13. SUSTAINABLE TRAIL PRACTICES

Sustainable trails are defined by the US Forest Service as trails having a tread that will not be easily eroded by water and use, will not affect water quality or the natural ecosystem, meets the needs of the intended users and provides a positive user experience, and that does not harm the environment.

Slope, alignment, angle, topographic position and the physical properties of the soils are all important factors in determining sustainability. The trail surfaces (treads) are constantly being changed by a complex set of human caused and natural forces. Compaction, displacement and soil erosion from wind and water are constantly interacting with the trail materials. Some trails are significantly impacted by deer hooves. Natural surface trails are dynamic systems that are constantly being reshaped.

See [Appendix E, Sustainable Trail Practices](#), for sustainable trail construction and maintenance details.

## 9.3 USER GUIDELINES

Non-motorized trails are very popular, which results in congestion and potentially hazardous situations. Regardless of whether you are bicycling, walking, jogging or skiing, if you follow the same rules as everyone else, your trip will be safer and more enjoyable. Help make the multi-use trails safe for everyone by using the following guidelines:

**BE COURTEOUS.** All trail users, including bicyclists, joggers, walkers, wheelchairs, and skiers, should be respectful of other users regardless of their mode, speed, or level of skill.

**BE PREDICTABLE.** Travel in a consistent and predictable manner. Always look behind you before changing positions on the trail.

**DON'T BLOCK THE TRAIL.** When traveling in a group with other trail users or your pets, use no more than half the trail so as not to block the flow of other users.

**KEEP RIGHT.** Stay as near to the right side of the trail as is safe, except when passing another user.

**PASS ON THE LEFT.** Pass others, going your direction, on their left. Yield to slower and on-coming traffic. Use hand signals to alert those behind you of your moves. Look ahead and back to make sure the lane is clear before you pull out and pass. Pass with ample separation and do not move back to the right until safely past. Remember: children and pets can be unpredictable.

**STOPPING.** When stopping, move off of the trail. Beware of others approaching you from behind and make sure they know you are pulling over.

**GIVE AUDIBLE WARNING BEFORE PASSING.** Give a clear signal by using voice, bell or horn before passing. Give the person you are passing time to respond. Watch for their reaction. So that you can hear signals, don't wear headphones on the trail.

**OBEY ALL TRAFFIC SIGNS AND SIGNALS.** Use extra caution where trails cross streets. Stop at all signs and intersections and be cautious when crossing driveways. When entering or crossing a trail, yield to traffic on the trail.

**USE LIGHTS AT NIGHT.** Be equipped with lights when using a trail at any time from dusk to dawn. Bicyclists should have a white light visible from five hundred feet to the front and a red or amber light visible from five hundred feet to the rear. Other trail users should have white lights visible from two hundred fifty feet to the front, and a red or amber light visible from two hundred fifty feet to the rear.

**DON'T USE A TRAIL UNDER THE INFLUENCE OF ALCOHOL OR DRUGS.** Don't overestimate the safety of any trail. You may need all of your reflexes quickly, so it is important that they are not impaired.

**BE RESPECTFUL OF PRIVATE PROPERTY.** Trails are open to the public, but often the land on the side of the trail is private property. Please respect all property rights.

**CLEAN UP LITTER.** Do not leave glass, paper, cans, plastic, or any other debris on or near a trail. If you drop something, please remove it immediately.

**RECOGNIZE WHEN YOU HAVE OUTGROWN TRAILS.** Trails have engineering and design limits. If your speed or style endangers other users, check for alternative routes better suited to your needs. Selecting the right location is safer and more enjoyable for all concerned.



## **9.4 OPERATIONS AND MAINTENANCE**

Guidelines for the operation and maintenance of the Silver Lake Trail will help establish this pathway as a multi-use trail destination that can be managed and maintained safely and efficiently over the long term.

### **OPERATIONS**

The operation of a trail consists of the day-to-day management of trail use. This includes law enforcement, marketing, special events, map and brochure updates, and other functional considerations. The policies regarding the operation of a trail will most likely be decided prior to construction. After construction, a large part of trail operation consists of the execution of those policies.

### **MAINTENANCE**

The maintenance of a trail includes the various activities involved in keeping the trail in a safe, usable condition. This includes efforts ranging from mowing and brush removal to replacement of damaged signs or benches to reconstruction of the trail. Lifetime trail maintenance will place ongoing costs on the operating agency, and this should be considered during the trail planning and funding process. In most cases, funding granted for trail construction cannot be applied to ongoing operations and maintenance. In order to maintain the quality of a newly constructed trail, local trail operators must plan for the continued maintenance of the facility.

### **RECOMMENDATIONS**

These recommendations are designed to assist trail operators in the operation and maintenance of trail facilities, and should be viewed as guidelines. As guidelines, they have no legal requirement, and should be altered based on conditions specific to a particular operating entity or trail. Establish an Operations and Maintenance Policy. Before the trail opens, the implementing group should set forth a policy document outlining specific rules pertaining to the trail and specific tasks that will be performed for its operation and maintenance. This policy will be the guide for the ongoing administration of the trail. The document should be unique to the particular community or trail to which it applies. The Operations and Maintenance Policy may cover a wide range of issues. The following items should be major considerations in the policy.

- Permitted uses on the trail.
- Whether user fees will be collected, and in what manner (e.g. pay-as-you-go, trail passes).
- Marketing of the trail. Some communities may desire to reap the economic benefits of trails by actively marketing their facilities. The costs associated with marketing can vary greatly, depending on the intended audience and the intensity of the campaign.
- Policing and security on the trail. This may include the creation of an emergency response plan; provision for trail patrols through existing law enforcement or with special community bike patrols; or a plan for other safety measures such as emergency phones or call boxes.
- Liability. In many cases, existing laws will determine liability. The operating agency should fully understand the liability associated with the trail and verify that insurance is adequate.
- Encroachment. Some local agencies may take ownership of a corridor that is being encroached upon by adjacent landowners. This is particularly true of railroad corridors bounded by agricultural uses. The implementing agency should set forth definitive policies relating to existing and future encroachments.
- Snow removal. In mild winters, some users will expect hard-surfaced trails to be plowed for use throughout the season. The operating agency should determine whether or not it will perform this maintenance.
- Seasonal maintenance. The operating agency should determine who will perform this maintenance. In many cases, volunteers or existing clubs can groom trails.
- Cooperative maintenance agreements. In some cases, trail owners may wish to explore the possibility of partnering with other government entities or private organizations in the operation and maintenance of a trail. Any operations or maintenance agreements should be articulated in the operations and maintenance policy.
- Use of volunteers. Volunteers can be a cost-saving benefit for trail operators. They do, however, need to be supervised, and liability prevents their use in certain situations.
- Evaluation of trail conditions. Every trail should be evaluated on a regular schedule to identify the need for major and minor repairs. The operations and maintenance policy should delineate how often trail evaluations take place, preferably once a year.
- Short- and long-term maintenance program. See Recommended Maintenance.

## RECOMMENDED MAINTENANCE

Different types of trails will differ greatly in their maintenance requirements. All trails however, will require a variety of maintenance activities at different points in their lives. [Table 7](#) outlines some general guidelines for maintenance activities and the frequency at which they should be performed.

- “Frequency” refers to how often each maintenance item should be performed.
- “Maintenance” refers to the specific maintenance activity to be performed.
- “Performed by” refers to who may undertake the particular maintenance activity.

## MAINTENANCE COSTS

Maintenance costs will vary greatly depending on the type of trail, amount of volunteer labor, construction quality, and available services. These costs, however, must be considered during the trail planning process, to ensure that trail owners can pay for the ongoing maintenance of the trails they develop. Maintenance costs are rarely broken down into specific tasks such as those listed in [Table 7](#). Most trails are maintained by an existing agency, such as a local or state park, public works, or maintenance department.

Estimated costs, therefore, are broken down by the type of maintenance performed. There are three basic types of maintenance. Routine maintenance includes all the general activities, such as brush clearing, trash collection, and sweeping, that may take place on a regular basis throughout a season. Minor repairs refer to activities that can be expected every five years or so, such as amenity replacement, repainting, or re-striping. Major reconstruction refers to significant expenditures involving resurfacing or reconstruction. These activities are the most costly trail maintenance activities and should be planned for in advance.

Table 7: Maintenance

<b><i>Frequency</i></b>	<b><i>Maintenance</i></b>	<b><i>Performed By</i></b>
As needed	Tree/brush clearing and mowing Sign replacement Map/signage updates Trash removal/litter clean-up Replace/repair trail support amenities (parking lots, benches, restrooms, etc.) Repair flood damage: silt clean-up, culvert clean-up, etc. Patching/minor regrading/stone dust replacement	Volunteers, trail operator
Seasonal	Planting/pruning/beautification Culvert Cleanup Installation/removal of seasonal signage	Volunteers, trail operator
Yearly	"Surface evaluation to determine need for patching or regrading Evaluate support services to determine need for repair or replacement"	Trail operator
5-year	Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary	Hired contractor, trail operator, volunteers
10-year	Resurface/regrade/restripe	Hired contractor, trail operator, volunteers
20-year	Replace/reconstruct trail	Hired contractor, trail operator, volunteers



### ***Routine Maintenance.***

Typically, most of the routine maintenance of a trail facility will be performed by an existing agency or volunteer group. Local trail owners should be well equipped to include trail maintenance into their parks or public works maintenance budgets and activities. Activities considered routine maintenance include:

- Yearly facility evaluation to determine the need for minor repairs
- Tree and brush clearing
- Mowing
- Map/signage updates
- Trash removal and litter clean-up
- Repair of flood damage: silt clean-up, culvert clean-out, etc.
- Patching, minor regrading, or stone dust replacement
- Planting, pruning, and general beautification

The yearly cost for routine maintenance depends on the maintenance capabilities already in place with the trail owner and the amount of volunteer labor used. According to the Rails-to-Trails Conservancy, the estimated maintenance cost for a stone dust trail is \$1,006 per mile (Rails-to-Trails Conservancy, 2014). This figure does not include snow removal.

### ***Minor Repairs.***

The need for minor repairs should be determined by a yearly facility evaluation (see Routine Maintenance, above). Minor repairs may include the following activities:

- Replacement, repair, or repainting of trail support amenities, such as signage, benches, trash receptacles
- Replacement of a portion of the trail
- Re-striping of trails

The cost for replacement, repair, or repainting of trail amenities is based on the initial cost of those amenities. Trail operators should maintain records of the general costs of trail amenities as a means of estimating future repair and replacement costs. If custom elements, such as lighting or benches are used in trail design, the trail owner should consider ordering extra elements at the time of construction and storing them for future use, thereby defraying the cost of single-runs later.

***Major Reconstruction.***

There is one activity considered to be major reconstruction, the complete replacement, regrading, and resurfacing of all trails. Complete replacement of a trail involves removing the existing trail, regrading the trail base, and resurfacing the facility. This kind of comprehensive maintenance will be necessary every 20 years, regardless of trail type. Even natural surface trails may need to be fully regraded after 20 years of use. Trail costs for reconstruction are the same as the cost of a new trail plus the cost of demolishing the existing trail. As with any major trail project, however, a detailed cost estimate should be performed during the project planning stages. The best guide for estimating the replacement cost of a trail is to consider the original construction cost.

A major cost such as trail replacement should be considered well in advance. It may be more difficult to secure large state or federal grants for trail reconstruction. Therefore, a trail owner should consider the eventual cost of trail replacement and financially prepare for that significant maintenance activity.

## 9.5 SEQRA DOCUMENTATION AND PERMITTING PROCESS

Project implementation may involve potentially significant impacts to the environment from construction activities. The following is a framework to comply with applicable State and Federal permitting requirements.

### 1. SEQRA DOCUMENTATION

The Silver Lake Trail System is subject to State Environmental Quality Review Act (SEQRA) review because the actions proposed may potentially impact the environment. The Feasibility Study is a Type I Action because the construction of the trail is an action that will involve the physical alteration of 10 acres or more. The SEQRA process for this project will involve a coordinated review as follows:

- The Project Sponsor will complete Part I of a Full Environmental Assessment Form (FEAF), identify all other involved agencies and transmit the FEAF to the involved agencies along with a notice that a lead agency must be agreed upon within 30 calendar days of the date the FEAF was transmitted to them.
- The lead agency will complete Part 2 and if needed, Part 3 of the FEAF.
- The lead agency will determine the significance of the environmental impact within 20 calendar days of its establishment as lead agency, or within 20 calendar days of its receipt of all information it may reasonably need to make a determination of significance, whichever is later.
- The lead agency must immediately prepare, file, publish and distribute the determination of significance in accordance with 6 CRR-NY Part 617.12.

Detailed instructions for each step of the SEQRA review process can be found on the New York State Department of Environmental Conservation website: <http://www.dec.ny.gov/permits/357.html>

## **9.6 FOLLOW ON ACTIVITIES**

In the course of preparing the Silver Lake Trail Feasibility Study, there were a few issues that were not addressed or resolved. These issues should be considered as the proposed improvements move into the next phase of development. The following issues need to be considered:

1. Environmental permitting is outlined in this report, and will be a critical undertaking in the next phase of trail development. An archaeological investigation may be necessary, but was not part of this study.

2. To get the trail constructed, the following steps will be necessary:

- a. Secure funding for design and construction
- b. SEQRA and permitting
- c. Environmental testing as required along the railroad corridor
- d. Design development
- e. Construction documents
- f. Bidding
- g. Construction
- h. Acceptance by client
- i. Management and maintenance plan
- j. Programming and community involvement
- k. Identify possible community partners, such as the Genesee Land Trust



3. Further coordination with nearby state parks could strengthen the Perry Silver Lake Trail system. Potential coordination activities include:

- a. Silver Lake State Park Boardwalk - see Section 8.3 for details
- b. ADA accessible boat launch in Silver Lake State Park would allow Blue Trail users multiple trail access points. Silver Lake State Park does not have the same topographic constraints as Perry Beach, so there would be potential for a fully accessible trail entry at Silver Lake State Park, accessible from parking.
- c. Identification of Park Road in Letchworth State Park as a bike trail with possible bicycle improvements.

## **APPENDIX A**

### **PUBLIC INPUT SUMMARY**

VILLAGE OF PERRY  
SILVER LAKE TRAIL FEASIBILITY STUDY

Committee Meeting  
Village of Perry Board Room  
October 26, 2016  
7:00pm

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**MEETING NOTES**

1. General Comments
  - a. Focus on under-utilized municipal properties for main trail alignment.
  - b. Capitalize on water quality improvements – embrace Blue/Green Trail concept.
  - c. Remove names of land owners for public meeting. Mention disclaimers regarding property rights concerns.
  - d. Include a polling system at the public meeting to get an idea on types of users. Note that some user groups are restricted in State Parks.
  - e. Coordinate with Roland on connections to the State Parks.
  - f. What about adding loop trail systems throughout Silver Lake State Park?
  - g. Reference connection near south end of Silver Lake State Park (RTI 2004 document).
  - h. Consider possible equestrian and snowmobile use of some trail segments.
  - i. Consider access controls and education for ATV's
2. Figure Revisions
  - a. General revisions, typical for most figures.
    - i. Include precedent images of concept recommendations.
    - ii. Develop additional figures: one page showing image examples of on-street bicycle facility improvements and one page showing image examples of sustainable trail design.
    - iii. Include existing SLT designed signage for project branding.
  - b. Potential Boardwalk Entrance: Revise location map to show correct photo location
  - c. Lake Road Bicycle Improvements: Show enhances shoulder on both sides of the road (desired ideal condition)
  - d. Perry Beach Schematic Design: Embrace “water’s edge experience.” What about view areas to provide tower experience – Serpent Spine?
  - e. Existing Outlet Trail Enhancement: Dredging to be done for Blue Trail.
    - i. Show trailheads and recommended improvements.
    - ii. Include Paddler Parking for Village access.
  - f. Creekside Parking Lot Green Infrastructure Improvements
    - i. Revise access points. Remove specific references at two private owned lots.
    - ii. Show possible sustainable trail south/east of lot.

- iii. Remove black border around plan graphics. Show more conceptual. Highlight the network/grid system.
    - iv. Snow removal considerations from Main Street.
    - v. "Waterfront in the Village"
  - g. Downtown Silver Lake Outlet Trail Loops & Partnership Opportunities: Remove duplicate figure.
  - h. Preliminary Signage Schedule: Revise to include SLT designed signage.
3. Next Steps
- a. B&L provide revised graphics: 11/09/2016
  - b. Committee meet to review: 11/16/2016
  - c. Public meeting #1 tentative date: 12/6/2016





VILLAGE OF PERRY  
SILVER LAKE TRAIL FEASIBILITY STUDY

COMMENT FORM

OPEN HOUSE  
DECEMBER 06, 2016  
Arts Council for Wyoming County  
6:00pm

Written comments are invited from anyone interested in the project, and may be submitted at the end of the meeting, or mailed to Village of Perry, 46 North Main Street, Perry, NY 14530.

I walk & bike around Perry very frequently.  
I am thrilled with the prospect of a Silver Lake Trail.  
Safety is an issue in deeply wooded areas but overall  
I think this is a comprehensive idea & plan outline.  
I wish you success.  
If I can help my phone number is: 585 237 6289

Name: Maureen Dally  
Address: 9 N. Federal St.  
Perry NY. 14530  
Representing: Perry Bed and Breakfast

This form may be mailed back to the Village of Perry by folding the form as shown on the reverse side and affixing the proper postage. Please use tape to seal the form shut – do not use staples.

This form, or any project related comments, may be emailed to Rick Hauser, Mayor, at:  
[rhauser@villageofperry.com](mailto:rhauser@villageofperry.com)

(Attach additional sheets as required)

(Do not use staples)





VILLAGE OF PERRY  
SILVER LAKE TRAIL FEASIBILITY STUDY

COMMENT FORM

OPEN HOUSE  
DECEMBER 06, 2016  
Arts Council for Wyoming County  
6:00pm

Written comments are invited from anyone interested in the project, and may be submitted at the end of the meeting, or mailed to Village of Perry, 46 North Main Street, Perry, NY 14530.

Each piece of the project looks wonderful! It promotes health & fitness in our community and ~~really~~ ~~also~~ highlights the great features the area has. The idea of the trail reminds me of the best part of vacation. Thank you for all of the thought and planning thus far.

Lights on the outlet trail?

Name:  
Address:

Meggan Quartz  
45 Stanton Pl.  
Perry, NY 14530

Representing:

This form may be mailed back to the Village of Perry by folding the form as shown on the reverse side and affixing the proper postage. Please use tape to seal the form shut – do not use staples.

This form, or any project related comments, may be emailed to Rick Hauser, Mayor, at:  
[rhauser@villageofperry.com](mailto:rhauser@villageofperry.com)

(Attach additional sheets as required)

(Do not use staples)





# VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

OPEN HOUSE  
DECEMBER 06, 2016  
Arts Council for Wyoming County  
6:00pm

Comments below were transcribed from sticky notes placed on project display boards at the open house meeting.





Will dredging negatively affect the SLT?  
Example: blocking access



Avoid truck traffic on Slocum Rd  
Avoid camper traffic on Schenck Rd  
Consider Sanford Rd as a connector into  
Letchworth Park





No one will sit here or leave bikes

Concealed fire pit? For nighttime attraction perhaps?  
Or open fire pit?

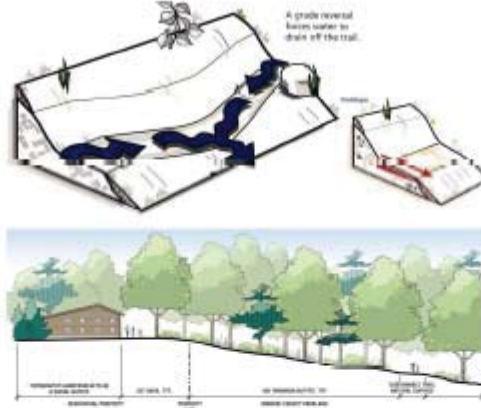
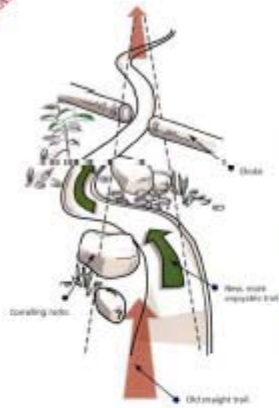
Binoculars

Meeting room (50 people)  
Stove. Fridge. Rest room. SLA museum  
Giant Adirondack chair

Docks would be a  
great addition

Kayak rentals

DRAFT



#### WAYFINDING SYSTEMS



#### TRAIL & PRIVATE PROPERTY/PERSONAL RESPONSIBILITY



#### RICK HELMUT REQUIRED SIGNAGE



#### VILLAGE OF PERRY SILVER LAKE TRAIL FEASIBILITY STUDY

#### FIGURE SUSTAINABLE OFF-ROAD TRAILS TRAIL SEGMENT 4

Sustainable trails are defined by the US Forest Service as trails having a tread that will not be easily eroded by water and use, will not affect water quality or the natural ecosystem, meet the needs of the intended users and provide a positive user experience, and that do no harm to the natural environment.

#### TRAIL SURFACE BENEFITS

- Construction and restoration of shared use trails conserves and enhances existing natural systems.
- Supports passive recreation, environmental education, stewardship and tourism.
- Carefully graded to minimize erosion, protecting Silver Lake Outlet.
- Utilizes found materials including rocks, logs, and plant material to direct trail users and control user speed.
- Signage system educates trail users and increases safety.

#### REFERENCE IMAGES



Isle Royale County Inland Forest Park West

Prepared by Barton & Logsdon, LLC



Isle Royale County Inland Forest Park West



Isle Royale County Inland Forest Park West

3/20/21 (7/21/21)

Native plants to mitigate erosion to Lake?

If you are looking for natural materials, perhaps use fallen trees and cut them into segments for sides of trails?

## VILLAGE OF PERRY

### SILVER LAKE TRAIL FEASIBILITY STUDY

Project Committee Meeting Village of Perry Board Room Thursday March 2, 2017 7:00pm

### MEETING AGENDA

1. Project status update

PDF next week of the draft will be sent.

Wayfinding and signage: There are specific grants for this

Turning Point boardwalk in the city of Rochester—Similar to the SL wetland boardwalk

How many hours with Rene? And SOTL?

Public Beach—EPF Grants...very competitive...50/50 match. Distressed economic zone = 75/25

Health Department

Hasn't been used for over 15 years

Requires water clarity testing. 4 ft of visibility

What contributes to the turbidity

Bacterial and blue green algae are not as big as problems.

Could be used, but may be days that could not be used due to conditions.

NYS Bathing Beach Code would have to be complied with

None of these are show stoppers

SOTL—

need upgrades to the power, functional restroom, they like the idea of being able to be viewed both on land and from the water

Rene Koziel—

Liked the plan as shown

Would like to have a rentable pavilion

Currently shown as an extension of the restrooms toward the lake.

Most concerned about water quality and swimming

“Illustrated catalog of how you would like to see the space laid out.”

Public park ADA access is a real challenge here. Can be achieved at the restroom, pavilion cluster. Perhaps at the water’s edge too. E.g. ADA compliant kayak ramp. Water base would that require another bathroom?

Question about whether there should be any improvements to the SL State Park —e.g. kayak, beach facilities, ADA compliant point there too.

Permanent Docks with the exception of the floating docks. Rich Eliaz voiced concerns about the permanent docks.

What about terraced levels/seating graded into the slope? Rick Hauser

Answer: SOTL recommended it could be smoothed out.

Rick asked about topo surveys. Rick thinks we have it. He will check and send it along.



Would it be more fundable if there were “Repairing gardens” Kelly P.

Answer: They are there by the parking lot. Kelly, they aren't on the slope though. Tom, water quality issues come off the pavement. It uses up your usable waterfront.

“Waterfront in the Village”

Identified as one of the more fundable projects.

Review the prioritization to see if it matches the Villages priorities

## 2. Presentation of draft Silver Lake Trail Feasibility Study

### 3. Discussion items

#### a. Silver Lake Outlet dredging project

Is there a connection between the dredging and the bridge? (Kelly)

Need language to support the need for dredging—to support the blue way trail, the health of the lake, funding sources etc,?

#### b. Walker Road bridge construction project

Will have language identifying the need to improve it that way.

Currently there is about 4 feet, Silver Lake Marine said you need 8 feet with your roof folded down.

Tom—our interest would be in non-motorized boats. Which would require less clearance.

other bridge in the middle, has a higher clearance with a sewer pipe under it.

Tom—the report can include different clearances for different size boats.

Kayakers can get through with 4 feet.

What about the width of the bridge for two lanes of traffic, fishing, biking,

c. Perry Beach concept plan

Discussion above.

d. Perry Beach: water quality and swimming

Discussion above

e. Preliminary cost estimates

f. Project funding opportunities

g. Other items

pdf up in one week

#### 4. Next Steps

a. Public meeting #2

Tentative April 5, 2017, 6:30—8:30, 7pm presentation at the Firemen's Building

Inform landowners again

Will be available for review 2 days prior.

Comments—how do they get dealt with? Included in appendix.

- b. Revisions to draft report
- c. Final report and deliverables

## **APPENDIX B**

### **POTENTIAL AREAS OF CONFLICT BETWEEN USERS**



## POTENTIAL AREAS OF CONFLICT BETWEEN USERS

(Derived from “Conflicts on Multiple Use Trails” by FHWA and the National Recreational Trails Advisory Committee)

Multi-use trails, when they are well designed, carefully maintained, and effectively managed, are a significant community resource. However, trails can have a number of conflicts and challenges, which can be addressed by physical design and management responses. Potential conflicts on the possible future Hojack Trail include conflicts between different types of trail users, conflicts between motorists and trail users at road crossings, and conflicts between trail users and property owners. The following sections discuss ways to manage conflict.

### **1. Managing Conflict on Multi-Use Trails**

The challenges faced by multiple use trail managers can be broadly summarized as maintaining user safety, protecting natural resources, and providing high quality user experiences. These challenges are interrelated and cannot be effectively addressed in isolation. To address these challenges, managers can employ a wide array of physical and management options such as trail design, information and education, user involvement, and regulations and enforcement.

The existing literature and practice were synthesized into the following 12 principles for minimizing conflict on multi-use trails. Adherence to these principles should help improve sharing and cooperation on multi-use trails.

*Recognize Conflict as Goal Interference.* Trail conflict is typically related to human behavior rather than inherent incompatibility among different trail uses.

*Provide Adequate Trail Opportunities.* Offer adequate trail mileage and provide opportunities for a variety of trail experiences. This will help reduce congestion and allow users to choose the conditions that are best suited to the experiences they desire.

*Minimize Number of Contacts in Problem Areas.* Each contact among trail users (as well as contact with the evidence of others) has the potential to result in conflict. So, as a general rule, reduce the number of user contacts whenever possible. This is especially true in congested areas and at trailheads. Disperse use and provide separate trails where necessary after careful consideration of the additional environmental impact and lost opportunities for positive interactions this may cause.

*Involve Users as Early as Possible.* Identify the present and likely future users of each trail and involve them in the process of avoiding and resolving conflicts as early as possible, preferably before conflicts occur. For proposed trails, possible conflicts and their solutions should be addressed during the planning and design stage with the involvement of prospective users. Likewise, existing and developing conflicts on present trails need to be faced quickly and addressed with the participation of those affected.

*Understand User Needs.* Determine the motivations, desired experiences, norms, setting preferences, and other needs of the present and likely future users of each trail. This “customer” information is critical for anticipating and managing conflicts.

*Identify the Actual Sources of Conflict.* Help users to identify the specific tangible causes of any conflicts they are experiencing. In other words, get beyond emotions and stereotypes as quickly as possible, and get to the roots of any problems that exist.

*Work with Affected Users.* Work with all parties involved to reach mutually agreeable solutions to these specific issues. Users who are not involved as part of the solution are more likely to be part of the problem, both now and in the future.

*Promote Trail Etiquette.* Minimize the possibility that any particular trail contact will result in conflict by actively and aggressively promoting responsible trail behavior. Use existing educational materials or modify them to better meet local needs. Target these educational efforts, get the information into users' hands as early as possible, and present it in interesting and understandable ways.

*Encourage Positive Interaction Among Different Users.* Trail users are usually not as different from one another as they believe. Providing positive interactions both on and off the trail will help break down barriers and stereotypes, and build understanding, good will, and cooperation. This can be accomplished through a variety of strategies such as sponsoring "user swaps," joint trail-building or maintenance projects, filming trail-sharing videos, and forming Trail Advisory Councils.

*Favor "Light-Handed Management".* Use the most light-handed approaches that will achieve area objectives. This is essential in order to provide the freedom of choice and natural environments that are so important to trail-based recreation. Intrusive design and coercive management are not compatible with high-quality trail experiences.

*Plan and Act Locally.* Whenever possible, address issues regarding multi-use trails at the local level. This allows greater sensitivity to local needs and provides better flexibility for addressing difficult issues on a case-by-case basis. Local action also facilitates involvement of the people who will be most affected by the decisions and most able to assist in their successful implementation.

*Monitor Progress.* Monitor the ongoing effectiveness of the decisions made and programs implemented. Conscious, deliberate monitoring is the only way to determine if conflicts are indeed being reduced and what changes in programs might be needed. This is only possible within the context of clearly understood and agreed upon objectives for each trail area.

Trail managers recognize trail conflicts as a potentially serious threat. Many are optimistic, however, and feel that when trail conflict situations are tackled head on and openly they can become an opportunity to build and strengthen trail constituencies and enhance outdoor recreation opportunities for all users.

## **2. Challenges Faced by Multiple-Use Trail Managers**

The manager of any trail faces many challenges, usually within the context of too few staff and too little money. The underlying challenges faced by trail managers, however, remain the same regardless of the type of trail and whether it serves a single group or many different ones. As described previously, trail managers attempt to: maintain user safety, protect natural resources, and provide high-quality user experiences. These issues can become more complex and more difficult to manage as the number and diversity of trail uses increase, but the challenges and the tools available to address them remain basically the same.

*Maintaining User Safety.* Unsafe situations or conditions caused by other trail users can keep visitors from achieving their desired trail experience. This goal interference due to safety concerns is a common source of conflicts on trails. There are a number of threats to user safety that can occur on trails. Some of these include:

- Collisions and near misses among users and/or their vehicles
- Reckless and irresponsible behavior
- Poor user preparation or judgment
- Unsafe conditions related to trail use (i.e. deep ruts, tracks on snow trail)
- Unsafe conditions not related to trail use (i.e. obstacles, terrain, weather, river crossings)
- Poor trail design, construction, maintenance or management
- Other hazards (i.e. bears, lightning, cliffs, crime)

To help maintain user safety on trails, planners and managers can attempt to control or influence many factors, including the following:

- User speed (often has more to do with speed differential than speed itself)
- Mass of user and vehicle (if any)
- Sight distances
- Trail width
- Trail surface
- Congestion (i.e. number of users per mile)
- Users overtaking one another silently or without warning
- Trail difficulty (i.e. obstacles, terrain, condition)
- User skill level and experience
- User expectations and preparedness (i.e. walkers who understand they may see bicycles on a particular trail can better prepare themselves for possible encounters)
- Emergency procedures
- On-site management presence

*Protecting Natural Resources.* Resource impacts such as soil erosion, damaged vegetation, polluted water supplies, litter, vandalism, and many other indications of the presence of others can lead to feelings of crowding and conflict. These feelings can occur even when there is no actual contact among different trail users. A hiker's enjoyment might be reduced by seeing all-terrain vehicle (ATV) tracks near a wilderness boundary, for example, or an equestrian user might be upset to see many cars with bike racks at the trailhead before beginning a ride.

Minimizing environmental impacts is a high priority for resource and recreation managers. Natural resources include soils, wildlife, vegetation, water, and air quality. Historic, cultural, and archaeological resources are also vulnerable to impacts caused by trail use. A considerable amount of trail manager time and resources is spent attempting to minimize impacts affecting each of these resources. All trail use, regardless of travel mode, impacts natural resources. Research indicates that the following factors influence the amount of resource damage caused by trail use:

- Soil characteristics: type, texture, organic content, consistency, depth, moisture (i.e. muddy versus dry), temperature levels (i.e. frozen terrain versus thawed)
- Topography and slope of trail surface
- Position in land form (i.e. northern versus southern exposure)
- Elevation
- Type of ecosystem
- Type of vegetation and terrain beside trail (influencing widening)
- Quality of trail design and construction (especially regarding drainage)
- Level of maintenance (i.e. effectiveness of drainage)
- Use: type, frequency, season, concentration/dispersal
- Type of vehicle
- Difficulty of terrain
- Up or down hill traffic direction
- Style of use or technique (i.e. skidding tires versus controlled riding)

*Providing High-Quality User Experiences.* Researchers believe that people who participate in outdoor recreation activities do so because they hope to gain certain rewards or outcomes. These outcomes consist of a wide variety of experiences such as solitude, challenge, being with friends and family, testing skills, experiencing nature, and others. The trail experience that is desired varies a great deal across activities, among people participating in the same

activity, and even within the same individual on different outings. In fact, recreational enthusiasts are often seeking to satisfy multiple desires in a single outing. Recreational behavior is understood to be goal-directed and undertaken to satisfy desires for particular experiences. The quality of these experiences is often measured in terms of user satisfaction.

In a perfect world, land managers could provide nearby, high-quality opportunities for every type of experience trail users might possibly seek. This is rarely possible, of course. Limited budgets, limited amounts of land, and the sheer number of users with different preferences make it impossible to perfectly satisfy all people all the time. Flexibility, compromise, and common courtesy on the part of all users are necessary to maximize the opportunities for high-quality experiences for everyone.

### **3. Physical Responses**

Proper trail design, layout, and maintenance (or redesign and reconstruction when necessary) are essential for user safety and resource protection, and are important contributors to user satisfaction as well. Proper design addresses more than aesthetics and minimized resource impacts. Design can be used to encourage trail users to behave in appropriate ways. Influencing proper behavior through the subtleties of design is preferable and often more effective than attempting to do so, after the fact, through educational programs or regulations. For example, it is easier and more effective to prevent shortcutting of switchbacks by designing climbing turns in rugged, well-screened areas than by posting educational signs at poorly designed switchbacks.

Different users often have different needs and desires regarding physical trail attributes such as surface, slope, length, sight distances, and amenities. Various standards and recommendations are available for different user groups. These needs and preferences are far from universal even within one user group, however. Walkers, joggers, runners, hikers, people walking dogs, and people pushing strollers are all pedestrians, for example, but they do not have the same needs and desires in terms of physical trail attributes or trail settings. The best physical responses will always be dictated by specific local conditions. Managers and planners should identify the present and likely future trail users and determine the needs and desires of those users. Users of different ages, motivations, activity preferences, etc., will have different physical trail needs and preferences. Ryan (1993), for example, suggests hosting a community design workshop for proposed rail-trails to identify these needs and preferences.

Providing separate trails for different users groups has many drawbacks. They point out that it can be expensive, cause resentment, be difficult to enforce, and limit opportunities for communication and cooperation among users. When separate trails are necessary, they suggest encouraging rather than requiring single use and explaining the reasons for this strategy at trailheads. This approach combines physical design with information and education efforts. Advocates of multi-use trails see providing separate trails as a last resort. They feel positive interaction among users on the trail is best way to foster communication, understanding, and a strong, cooperative trail community.

Physical design solutions include:

- Paint the centerline on heavily used multi-purpose trails and greenways. This can help communicate that users should expect traffic in both directions and encourage users to travel on the right and pass on the left.
- Screen trails for sight, sound, and smells (i.e. exhaust fumes from motorized vehicles). Include physical and visual buffers in the design by using natural features such as topography, vegetation, or the sound of water to insulate users from one another when possible. Add buffers as needed on existing trails.
- Provide separate trailheads for different users.
- Separate uses at trailheads and for the first (most crowded) stretches of the trail. These separate segregated trails could then converge, perhaps a mile from the trailhead, after users are more spread out. On the other hand, Attila Bality of the National Park Service advocates forcing all trail users to share the same trail for some distance (i.e. one mile) before having single use or restricted-use trails diverge from the



main trail if necessary. He believes that users will only learn to understand one another and share trails if encouraged to do so. Some may not share unless forced to do so.

- Consider adequate sight distances in the design process.
- Build trails wide enough to accommodate the expected use. Many sources and recommended standards are available for various user groups.
- Build trails wide enough for safe passing, and/or provide pullout areas.
- Design and construct trails to minimize erosion.

## **APPENDIX C**

### **COMMUNITY IMPACT OF TRAILS**



*Irondequoit Bay Park West, Irondequoit NY*



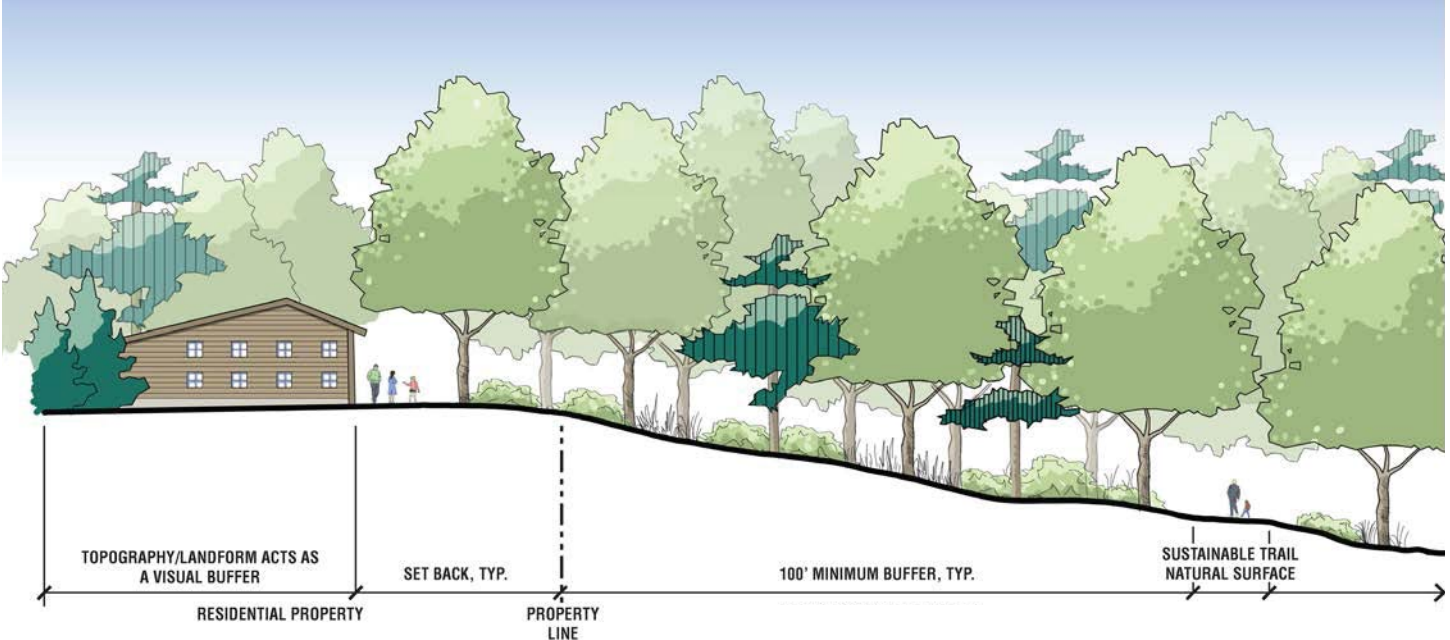
*Erie Canalway Trail, Brighton NY*



*El Camino Trail, Rochester NY*



*Corbetts Glen, Brighton NY*



# COMMUNITY IMPACT OF TRAILS

Understanding the impact of public trails

Prepared by Barton & Loguidice, DPC

## STUDIES OF EXISTING TRAILS AND SHARED USE PATHS

<https://linkingtheloop.files.wordpress.com/2014/08/studies-of-existing-trails-crime-and-properties-value.pdf>

**Source:** Multiple

**Subject:** Trail Safety and Real Estate Values

**Findings:** "There are many misconceptions about the safety of bicycle paths/trails and their relationship to property values/the real estate market. Below is a collection of excerpts from various resources that provide information on the often-misunderstood nature of bicycle paths/trails and their effect on the community."

**Figure 1: Comparison of Major Crime Rates between Rail Trails and the Nation (rates per 100,000 population, Source: Rails to Trails Conservancy)**

CRIME	URBAN		SUBURBAN		RURAL	
	1995 National <sup>1</sup>	Rail-Trails <sup>2</sup>	1995 National <sup>1</sup>	Rail-Trails <sup>2</sup>	1995 National <sup>1</sup>	Rail-Trails <sup>2</sup>
Mugging	335	0.53	102	0.00	19	0.00
Assault	531	0.58	293	0.02	203	0.01
Forcible Rape	43	0.04	29	0.00	26	0.01
Murder	11	0.04	4	0.01	5	9.01

1. Rates per 100,000 Population. FBI Uniform Crime Reports for 1995.

2. Rates per 100,000 users, RTC survey results.

## THE CORRELATION OF NATURE TRAILS AND CRIME

<http://www.parkpride.org/get-involved/community-programs/park-visioning/content/correlationbetweennaturetrailsandcrime.pdf>

**Source:** Multiple

**Subject:** Trail Safety and Real Estate Values

**Findings:**

- "The results showed that in most incidences the trails were perceived to be positive to both quality of life and property value.
- Single family home residents adjacent to a trail: 29% believed that the location of the trail would increase selling price, 7% felt that the trail would make the home easier to sell, 57% of these residents lived in their homes prior to construction of the trail, 29% of those surveyed were positively influenced by the trail in their decision to buy the home
- Town homes, apartments, and condominium residents: 0% thought the trail would decrease selling price, 42% thought it would increase the selling price.

## NEIGHBORHOODS AND TRAILS: WHY TRAILS?

<http://www.sfct.org/trails/neighborhoods>

**Source:** Santa Fe Conservation Trust

**Subject:** Crime, Privacy and Noise, Property Values, Ecological Destruction, Habitat Degradation, Land Acquisition and Property Rights

**Findings:**

- "Burglary near trails was extremely rare, more so than other crimes. Only 4 burglaries were reported in homes adjacent to 7,000 miles of rail trails in 1996 and 3 of those 4 were reported in rural areas. There's no evidence that these 4 crimes were a result of the nearby trail."
- "In Santa Rosa (California), a similar survey found that 64% of the residents near a trail felt their quality of life had improved; 33% said their home would be easier to sell while the remainder felt the trail had no effect on values." [Webel, 2007 using data collected in 1992]
- "A careful count of bird species along urban and rural rail trails showed no significant difference. Generally, there were more birds in woody urban and rural areas in spring and summer and more birds near urban trails in the fall and winter. [Poague, 2000]
- "For example, a release from liability can be useful, but homeowners and agency administrators may be reluctant to sign anything. Municipal "umbrella" policies are helpful and claims virtually unknown." [Eyler, 2008, p. 423]



## RAIL-TRAILS AND SAFE COMMUNITIES

[http://safety.fhwa.dot.gov/ped\\_bike/docs/rt\\_safecomm.pdf](http://safety.fhwa.dot.gov/ped_bike/docs/rt_safecomm.pdf)

**Source:** Rails-to-Trails Conservancy

**Subject:** Economic Impacts of Trails

**Findings:** *"The trail has not caused any increase in the amount of crimes reported and the few reported incidents are minor in nature...We have found that the trail brings in so many people that it has actually led to a decrease in problems we formerly encountered such as underage drinking along the river banks. The increased presence of people on the trail has contributed to this problem being reduced."* [Charles R. Tennant, Chief of Police, Elizabeth Township, Buena Vista, PA]

**Figure 2: Comparison of Incidence Rate of Minor Crimes on Rail-Trails to U.S. Crime Rates & Percentages of Trails Reporting Types of Crime in 1995**

CRIME	URBAN		SUBURBAN		RURAL	
	National <sup>1</sup>	Rail-Trails <sup>2</sup>	National <sup>1</sup>	Rail-Trails <sup>2</sup>	National <sup>1</sup>	Rail-Trails <sup>2</sup>
Burglary	1,117	0.00%	820	0.01%	687	0.01%
Trespassing	N/A	5%	N/A	3%	N/A	4%
Graffiti	N/A	26%	N/A	17%	N/A	12%
Littering	N/A	24%	N/A	24%	N/A	25%
Sign Damage	N/A	22%	N/A	22%	N/A	23%
Motorized Use	N/A	18%	N/A	14%	N/A	23%

1. Rates per 100,000 Population. FBI Uniform Crime Reports for 1995 for burglary.

2. Rates per 100,000 users, RTC survey results for burglary. Results for other crime types reported as percentage of trails experiencing that type of crime.

## ECONOMIC IMPACTS OF TRAILS

<http://www.americantrails.org/resources/economics/GreenwaySumEcon.html>

**Source:** American Trails

**Subject:** Economic Impacts of Trails

**Findings:** *"In the vicinity of Philadelphia's 1,300 acre Pennypack Park, property values correlate significantly with proximity to the park. In 1974, the park accounted for 33 percent of the value of land 40 feet away from the park, nine percent when located 1,000 feet away, and 4.2 percent at a distance of 2,500 feet."* Hammer, Coughlin and Horn, 1974]

## IMPACTS OF TRAILS AND TRAIL USE

<http://www.americantrails.org/resources/adjacent/sumadjacent.html>

**Source:** American Trails

**Subject:** Impacts of Trails and Trail Use

**Findings:** *"A 1978 study of property values in Boulder, Colorado, noted that housing prices declined an average of \$4.20 for each foot of distance from a greenbelt up to 3,200 feet. In one neighborhood, this figure was \$10.20 for each foot of distance. The same study determined that, other variables being equal, the average value of property adjacent to the greenbelt would be 32% higher than those 3,200 feet away."*

## PROPERTY VALUE/DESIRABILITY EFFECTS OF BIKE PATHS ADJACENT TO RESIDENTIAL AREAS

<http://128.175.63.72/projects/DOCUMENTS/bikepathfinal.pdf>

**Source:** University of Delaware

**Subject:** Property Value Near Bike Paths

**Findings:** *"The analysis indicates that the impact of proximity to a bike path on property prices is positive, controlling for the number of bedrooms, years since sale, acres, land, buildings, total number of rooms, total assessment. The properties within 50m of the bike paths show a positive significance of at least \$8,800 and even higher when controlled for specific variables."*

## BICYCLE PATHS: SAFETY CONCERNS AND PROPERTY VALUES

[http://www.greenway.org/pdf/la\\_bikepath\\_safety.pdf](http://www.greenway.org/pdf/la_bikepath_safety.pdf)

**Source:** Los Angeles County, Metropolitan Transportation Authority

**Subject:** Home sales near trails

**Findings:**

- “Home sales were examined in the seven Massachusetts towns through which the Minuteman Bike way and Nashua River Rail Trail run. Statistics on list and selling prices and on days on the market were analyzed. The analysis shows that homes near these rail trails sold at 99.3% of the list price as compared to 98.1% of the list price for other homes sold in these towns. The most significant feature of home sales near rail trails is that these homes sold in an average of 29.3 days as compared to 50.4 days for other homes.” [Home Sales Near Two Massachusetts Trails, Jan. 25, 2006. Craig Della Penna]

**TABLE 1: HOME SALES NEAR RAIL TRAILS**

TOWN	NO. OF PROPERTIES SOLD	AVERAGE LIST PRICE	AVERAGE SALE PRICE	RATIO OF SALE TO LIST	DAYS ON MARKET
Arlington	10	\$513,750	\$509,690	99.2%	27.1
Lexington	10	\$906,090	\$907,040	100.1%	18.5
Bedford	3	\$511,600	\$500,833	97.9%	55.3
Ayer	1	\$329,900	\$317,500	96.2%	47.0
Groton	2	\$689,900	\$675,000	97.8%	22.0
Dunstable	1	\$695,000	\$685,000	98.6%	20.0
Pepperell	3	\$385,833	\$376,333	97.5%	48.3
AVERAGE		\$643,180	\$638,377	99.3%	29.3

**TABLE 2: HOME SALES NEAR RAIL TRAILS**

TOWN	NO. OF PROPERTIES SOLD	AVERAGE LIST PRICE	AVERAGE SALE PRICE	RATIO OF SALE TO LIST	DAYS ON MARKET
Arlington	119	\$558,775	\$556,327	99.6%	28.3
Lexington	166	\$871,533	\$849,470	97.5%	54.4
Bedford	38	\$633,912	\$624,289	98.5%	42.4
Ayer	30	\$344,677	\$340,155	98.7%	73.0
Groton	53	\$605,198	\$584,689	96.6%	80.4
Dunstable	12	\$587,946	\$578,965	98.5%	83.2
Pepperell	57	\$384,818	\$379,482	98.6%	80.2
AVERAGE		\$645,607	\$633,072	8.1%	50.4

- “Realizing the selling power of greenways, developers of the Sheperd’s Vineyard housing development in Apex, North Carolina added \$5,000 to the price of 40 homes adjacent to the regional greenway, those homes were still the first to sell.” [Economic Benefits of Trails and Greenways, Rails-to-Trails Conservancy, 2004]
- “The average price for all homes sold in greenway corridors was nearly 10 percent higher than the average price for all homes. Similarly, the average sale price was 11 percent higher than for all homes that sold in 1999,” [Public Choices and Property Values: Evidence from Greenways Indianapolis, Center for Urban Policy and the Environment, December 2003]
- “A study of property values near greenbelts in Boulder, Colorado, noted that...other variables being equal, the average value of property adjacent to the greenbelt would be 32 percent higher than those 3,200 feet away.” [Economic Impacts of Rivers, Trails and Greenways: Property Values. Resource Guide published by the National Parks Service, 1995]
- “A study completed by the Office of Planning in Seattle, Washington, for the 12 mile Burke-Gilman trail was based upon surveys of homeowners and real estate agents. The survey of real estate agents revealed that property near, but not immediately adjacent to

the trail, sells for an average of 6 percent more.” [Economic Impacts of Rivers, Trails and Greenways: Property Values. Resource Guide published by the National Parks Service, 1995]

- “In a survey of adjacent landowners along the Luce Line rail-trail in Minnesota, 61 percent of the suburban residential owners noted an increase in their property value as a result of the trail. New owners felt the trail had a more positive effect on adjacent property values than did continuing owners. Appraisers and real estate agents claimed that trails were a positive selling point for suburban residential property.” [Economic Impacts of Rivers, Trails and Greenways: Property Values. Resource Guide published by the National Parks Service, 1995]
- “A survey of Denver residential neighborhoods by the Rocky Mountain Research Institute shows the public’s increasing interest in greenways and trails. From 1980 to 1990, those who said they would pay extra for greenbelts and parks in their neighborhoods rose from 16 percent to 48 percent.” [Economic Impacts of Rivers, Trails and Greenways: Property Values. Resource Guide published by the National Parks Service, 1995]
- “Recognizing what had happened, the realty companies decided to restructure the pricing of future lots located along the Mountain-Bay Trail. Thus, in the addition of Highridge Estates, the average lot located along the rail was priced 26 percent higher than slightly larger lots not located along the trail.” [Perceptions of How the Presence of Greenway Trails Affects the Value of Proximate Properties. Journal of Park and Recreation Administration, Fall 2001. John L. Crompton.]

## **APPENDIX D**

### **SCHEMATIC COST ESTIMATES**





**Perry Silver Lake Trail Feasibility Study**  
DRAFT Preliminary Cost Estimate  
Prepared for: Village of Perry  
January 24 2016

<u><b>SEGMENT 1: Silver Lake State Park to Existing Silver Lake Outlet Trail</b></u> <b>4.1 Miles</b>	<i>Estimated Cost</i>	<b>\$145,300</b>
<u><b>SEGMENT 2: Existing Silver Lake Outlet Trail</b></u> <b>.6 Miles</b>	<i>Estimated Cost</i>	<b>\$69,300</b>
<u><b>SEGMENT 3: South Federal Street to Park Place</b></u> <b>1.3 Miles</b>	<i>Estimated Cost</i>	<b>\$27,200</b>
<u><b>SEGMENT 4: Park Place to Park Road</b></u> <b>3.5 Miles</b>	<i>Estimated Cost</i>	<b>\$271,600</b>
<u><b>Boardwalk Improvements (Silver Lake State Park)</b></u> <b>0.75 Miles</b>	<i>Estimated Cost</i>	<b>\$1,015,900</b>
<u><b>Perry Beach</b></u>	<i>Estimated Cost</i>	<b>\$853,600</b>
<u><b>Creekside Trail &amp; GI Parking Lot Improvements</b></u>	<i>Estimated Cost</i>	<b>\$604,400</b>
<hr/>		
9.5 (MILES)	Segments 1-4 <b>TOTAL PROJECT COST</b>	<b>\$513,400</b> <b>\$2,987,300</b>



**Perry Silver Lake Trail Feasibility Study**

DRAFT Preliminary Cost Estimate

Prepared for: Village of Perry

July 20, 2016

**SEGMENT 1: Silver Lake State Park to Existing Silver Lake Outlet Trail**

**On Road - Improvements to Existing Shoulder and Signage**

Item	Description	Estimated Cost
<b>1</b>	<b>SITE PREPARATION, DEMOLITION &amp; EROSION CONTROL</b>	<b>\$5,000</b>
<b>2</b>	<b>EXPANDED SHOULDER</b>	<b>\$76,312</b>
2.1	Stone Subbase	\$29,040
2.2	Binder Course	\$29,543
2.3	Top Course	\$17,729
<b>3</b>	<b>ASPHALT @ TRAILHEAD PARKING AREA (1,600 SF)</b>	<b>\$7,078</b>
3.1	Stone Subbase	\$2,700
3.2	Binder Course	\$2,750
3.3	Top Course	\$1,628
<b>4</b>	<b>SITE FURNITURE</b>	<b>\$4,900</b>
4.1	Bike Racks	\$800
4.2	Signage Kiosks, Posts, Footings	\$2,500
4.3	Trail Marking Signs, Posts, Footings	\$1,600
<b>5</b>	<b>PAVEMENT MARKINGS</b>	<b>\$11,200</b>
5.1	Shared Lane Pavement Markings	\$8,000
5.2	Share the Road Signage	\$3,200
	<b>Subtotal</b>	<b>\$104,490</b>
	Mobilization (4%)	\$4,200
	Contingency (15%)	\$15,700
	Estimated Survey, Design & Permitting (20%)	\$20,900
	<b>ESTIMATED COST</b>	<b>\$145,300</b>

*Note: Quantity numbers are based off fieldwork, GIS aerial basemaps, and LiDAR contours. Conceptual estimate for*



**Perry Silver Lake Trail Feasibility Study**

DRAFT Preliminary Cost Estimate

Prepared for: Village of Perry

July 20, 2016

**SEGMENT 2: Existing Silver Lake Outlet Trail**

**Off Road - Improvements to Existing Trail**

Item	Description	Estimated Cost
<b>1</b>	<b>SITE PREPARATION, DEMOLITION &amp; EROSION CONTROL</b>	<b>\$5,000</b>
<b>1</b>	<b>RESTORATION OF EXISTING TRAIL SURFACE</b>	<b>\$15,000</b>
	Spot repair, top dress, grooming	
<b>2</b>	<b>ASPHALT @ TRAILHEAD PARKING AREAS (1,600 SF)</b>	<b>\$7,078</b>
2.1	Stone Subbase	\$2,700
2.2	Binder Course	\$2,750
2.3	Top Course	\$1,628
<b>3</b>	<b>SITE FURNITURE</b>	<b>\$21,600</b>
3.1	Rest Areas with Seating	\$6,000
3.2	Bike Racks	\$1,600
3.3	Signage Kiosks, Posts, Footings	\$5,000
3.4	Trail Marking Signs, Posts, Footings	\$3,600
3.5	Access Control 1/2 Gate & Signage	\$5,400
<b>4</b>	<b>PLANTINGS</b>	<b>\$1,080</b>
4.1	Restoration seeding	\$1,080
	<b>Subtotal</b>	<b>\$49,758</b>
	Mobilization (4%)	\$2,000
	Contingency (15%)	\$7,500
	Estimated Survey, Design & Permitting (20%)	\$10,000
	<b>ESTIMATED COST</b>	<b>\$69,300</b>

*Note: Quantity numbers are based off fieldwork, GIS aerial basemaps, and LiDAR contours. Conceptual estimate.*



**Perry Silver Lake Trail Feasibility Study**

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**SEGMENT 3: South Federal Street to Park Place**

**On Road - Bicycle Boulevard Creation**

Item	Description	Estimated Cost
<b>1</b>	<b>PAVEMENT MARKINGS</b>	<b>\$3,640</b>
1.1	Shared Lane Pavement Markings	\$2,600
1.2	Share the Road Signage	\$1,040
<b>2</b>	<b>SITE FURNITURE</b>	<b>\$16,000</b>
2.1	Rest Areas with Seating	\$8,000
2.2	Bike Racks	\$3,200
2.3	Trail Marking Signs, Posts, Footings	\$4,800
	<b>Subtotal</b>	<b>\$19,640</b>
	Mobilization (4%)	\$800
	Contingency (15%)	\$2,900
	Estimated Survey, Design & Permitting (20%)	\$3,900
	<b>ESTIMATED COST</b>	<b>\$27,200</b>

*Note: Quantity numbers are based off fieldwork, GIS aerial basemaps, and LiDAR contours.*

*Conceptual estimate for budgeting purposes only.*

*Segment 3 Improvements to be coordinated with necessary sidewalk repairs and crosswalk improvements*





## Perry Silver Lake Trail Feasibility Study

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### SEGMENT 4: Park Place to Park Road

#### Off Road - Development of Existing Informal Trails

#### On Road - Improvements to Existing Shoulder

#### Off Road - Development of Existing Informal Trails

Item	Description	Estimated Cost
<b>1</b>	<b>NATURAL SURFACE SUSTAINABLE TRAIL</b>	<b>\$21,300</b>
<b>3</b>	<b>EXPANDED SHOULDER</b>	<b>\$141,362</b>
3.1	Stone Subbase	\$41,087
3.2	Binder Course	\$62,668
3.3	Top Course	\$37,607
<b>5</b>	<b>SITE FURNITURE</b>	<b>\$31,700</b>
5.1	Rest Areas with Seating	\$8,000
5.2	Bike Racks	\$2,400
5.3	Signage Kiosks, Posts, Footings	\$7,500
5.4	Trail Marking Signs, Posts, Footings	\$8,400
5.5	Access Control 1/2 Gate & Signage	\$5,400
<b>6</b>	<b>PLANTINGS</b>	<b>\$1,076</b>
6.1	Stream Buffer Enhancement Plantings	\$1,076
	<b>Subtotal</b>	<b>\$195,438</b>
	Mobilization (4%)	\$7,800
	Contingency (15%)	\$29,300
	Estimated Survey, Design & Permitting	\$39,100
	<b>ESTIMATED COST</b>	<b>\$271,600</b>

*Note: Quantity numbers are based off fieldwork, GIS aerial basemaps, and LiDAR contours. Conceptual estimate for budgeting purposes. Sustainable trail segments constructed by skilled, supervised volunteers*



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**Boardwalk Improvements**

**Boardwalk through Wetlands Silver Lake State Park**

Item	Description	Estimated Cost
1	SITE PREPARATION, DEMOLITION & EROSION CONTROL	\$5,000
2	ELEVATED BOARDWALK	\$712,800
3	SITE FURNITURE	\$13,100
3.1	Bike Racks	\$800
3.2	Signage Kiosks, Posts, Footings	\$2,500
3.3	Trail Marking Signs, Posts, Footings	\$400
3.4	Rest Areas with Seating	\$4,000
3.5	Access Control 1/2 Gate & Signage	\$5,400
	<b>Subtotal</b>	<b>\$730,900</b>
	Mobilization (4%)	\$29,200
	Contingency (15%)	\$109,600
	Estimated Survey, Design & Permitting (20%)	\$146,200
	<b>ESTIMATED COST</b>	<b>\$1,015,900</b>



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**Perry Beach Improvements**

Item	Description	Estimated Cost
<b>1</b>	<b>SITE PREPARATION, DEMOLITION &amp; EROSION CONTROL</b>	<b>\$5,000</b>
<b>2</b>	<b>PARKING LOT IMPROVEMENTS (28 Spaces)</b>	<b>\$54,199</b>
2.1	Stone Subbase	\$20,625
2.2	Binder Course	\$20,983
2.3	Top Course	\$12,592
<b>3</b>	<b>SITE FURNITURE</b>	<b>\$13,200</b>
3.1	Bike Racks	\$800
3.2	Signage Kiosks, Posts, Footings	\$2,500
3.3	Trail Marking Signs, Posts, Footings	\$1,200
3.4	Benches	\$4,900
3.5	Picnic Tables	\$2,800
3.6	Lifeguard Chair	\$1,000
3.7	Barbecues	\$300
<b>4</b>	<b>PLANTINGS</b>	<b>\$14,950</b>
4.1	Establish Turf	\$800
4.2	Rain Garden Buffer Planting	\$7,150
4.3	Trees	\$7,000
<b>5</b>	<b>DOCK AND DECKING SYSTEM</b>	<b>\$165,800</b>
5.1	PERMANENT PILING DOCKS	\$78,000
5.2	ON LAND DECKING	\$78,000
5.3	FLOATING DOCKS	\$9,800
5.4	KAYAK RAMP	\$2,500
<b>6</b>	<b>PERFORMANCE SHADE SAIL</b>	<b>\$15,000</b>
<b>7</b>	<b>PERMANENT STRUCTURE WITH PAVILION</b>	<b>\$336,000</b>
<b>8</b>	<b>PATIO</b>	<b>\$6,260</b>
<b>9</b>	<b>CHILDREN'S PLAY GARDEN</b>	<b>\$10,000</b>
	<b>Subtotal</b>	<b>\$614,149</b>
	Mobilization (4%) \$	24,600
	Contingency (15%) \$	92,100
	Estimated Survey, Design & Permitting (20%) \$	122,800
	<b>ESTIMATED COST \$</b>	<b>853,600</b>
	<b>ADD ALTERNATIVE</b>	
	REPLACE PERFORMANCE SHADE SAIL WITH PERMANENT PARK PAVILION	<b>\$40,000</b>

*Note: Quantity numbers are based off fieldwork, GIS aerial basemaps, and LiDAR contours.  
 Conceptual estimate for budgeting purposes only.*



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**Creekside Trail & Green Parking Lot**

Item	Description	Estimated Cost
<b>1</b>	<b>SITE PREPARATION, DEMOLITION &amp; EROSION CONTROL</b>	<b>\$15,000</b>
<b>2</b>	<b>TRAIL SURFACE</b>	<b>\$23,941</b>
2.1	Stone Subbase	\$14,320
2.2	Stonedust Top Course	\$3,986
2.3	Topsoil	\$5,635
<b>3</b>	<b>PARKING LOT</b>	<b>\$322,793</b>
3.1	Stone Subbase	\$106,667
3.2	Binder Course	\$108,516
3.3	Top Course	\$65,120
3.4	Curbing	\$42,490
<b>4</b>	<b>SITE FURNITURE</b>	<b>\$10,500</b>
4.1	Rest Areas with Seating	\$4,000
4.2	Bike Racks	\$1,600
4.3	Signage Kiosks, Posts, Footings	\$2,500
4.4	Trail Marking Signs, Posts, Footings	\$2,400
<b>5</b>	<b>PLANTINGS</b>	<b>\$62,587</b>
5.1	Trees	\$15,500
5.2	Stream Buffer Enhancement Plantings	\$387
5.3	Rain Garden	\$46,700
	<b>Subtotal</b>	<b>\$434,821</b>
	Mobilization (4%)	\$17,400
	Contingency (15%)	\$65,200
	Estimated Survey, Design & Permitting (20%)	\$87,000
	<b>ESTIMATED COST</b>	<b>\$604,400</b>



**ADD ALTERNATIVES**

<b>RAMP STAIR STRUCTURE</b>			
A.1	ADA Access Ramp and Stair		\$117,250
A.2	<b>SILVER LAKE OUTLET BRIDGE</b>	\$	300,000

## **APPENDIX E**

### **SUSTAINABLE TRAIL CONSTRUCTION**

## Sustainable Trail Construction

Sustainable trails are defined by the US Forest Service as trails having a tread that will not be easily eroded by water and use, will not affect water quality or the natural ecosystem, meet the needs of the intended users and provide a positive user experience, and that do no harm to the natural environment.

Sustainable trails can be used by a variety of non-motorized users including hikers, trail runners, equestrians, off-road cyclists, and cross-country skiers. Motorized vehicles are normally prohibited unless operated by trail crews or a land manager.

Prior to constructing a new trail, need for the trail should be determined based on condition and routes of existing trails. Surveys should be conducted of trail users to determine user expectations and rudimentary design guidelines.

Natural surface trails are dynamic systems that are constantly being re-shaped by a complex set of human-caused and natural forces. To be sustainable, trails must strike a balance between multiple elements. Type of use, amount of use and user behavior combine with natural factors to determine trails impacts and long-term sustainability.

The following design guidelines can be adapted to specific site conditions including soil texture, slope, topographic position, existing vegetation, etc.

The guidelines are most useful for the planning and construction of new trails, but can also be useful for restoration and reconstruction of existing trails.

### A. Width

Natural surface trails are usually a “singletrack” trail, with a tread width is typically 12”-36” . Trails are designed for users to travel single file. Overall clearing limits will be roughly three times the width of the tread, and the trail way will be roughly twice the width of the tread. Singletrack clearing limits are typically 6 feet wide and 8 feet high.

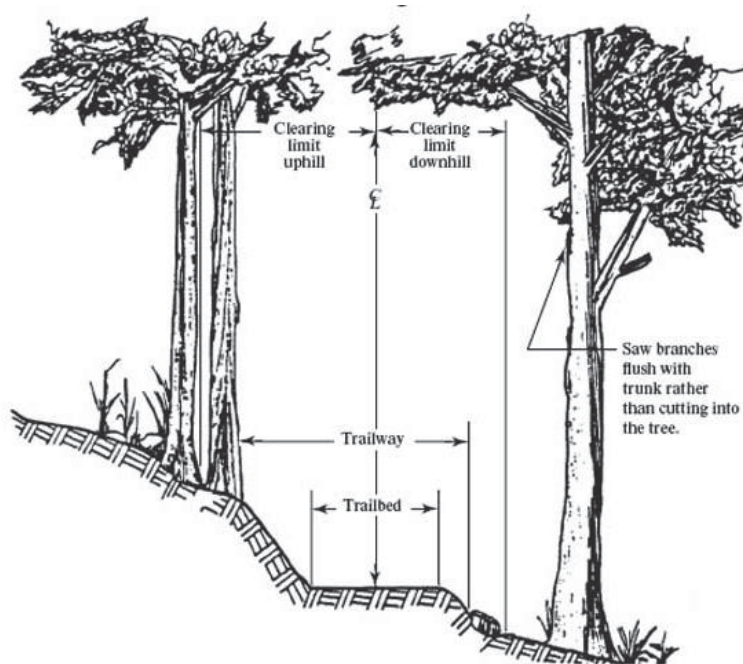
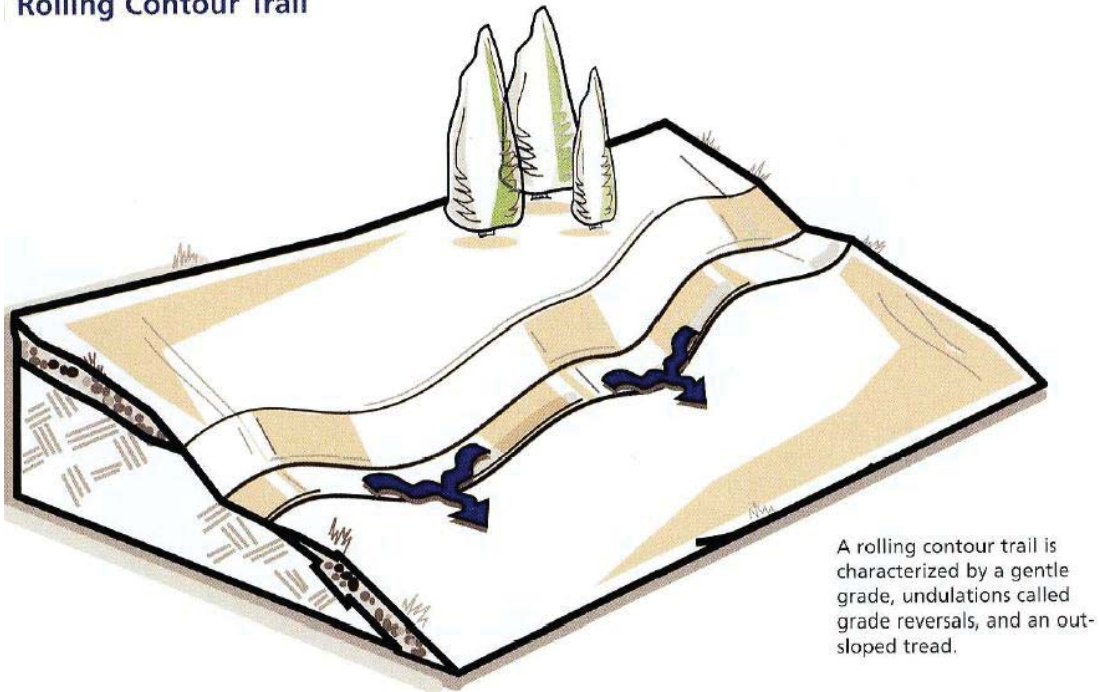


Image from "Trail Construction and Maintenance Notebook: 2007 Edition"

## B. Rolling Contour Trails

Build paths to traverse hills cross-slope, characterized by a gentle grade and utilizing grade reversals and an outsloped tread. Trails should avoid following fall lines at all costs, and should always be constructed on at least a slight slope to allow for drainage.

### Rolling Contour Trail



## C. Elements of Sustainable Trails

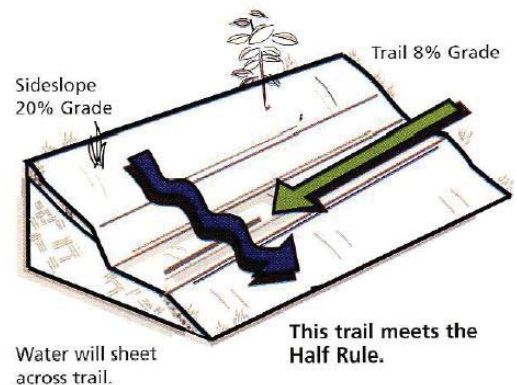
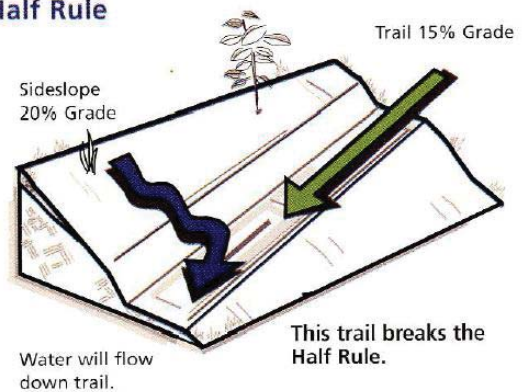
### 1. The Half Rule

Trail grade should never exceed half the grade of the hillside the trail traverses. Trails that exceed half the sideslope are considered fall line trails and funnel water, destroying the trail and causing greatly increased erosion.

### 2. The Ten Percent Average Guideline

Trail grade should average 10 percent or less for the length of the trail. Average grade should be calculated by dividing total elevation gain by total length, multiplied by 100. For trail conditions without sustained

### Half Rule





elevation gain, average trail-segment grades should be calculated in areas where the trail climbs. An average 10 percent slope will allow for a stable, erosion free slope for most soil types caused by both water and users.

### 3. Maximum Sustainable Trail Grades

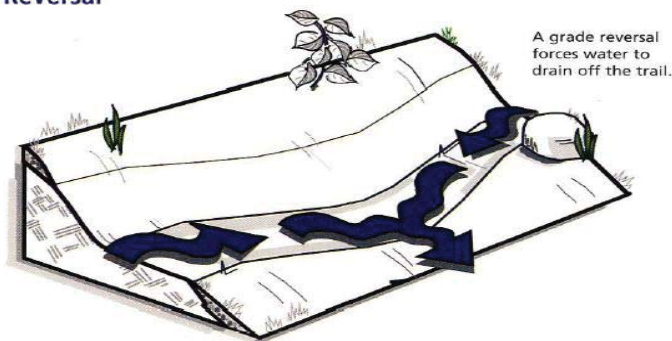
Maximum grades are considered to be the steepest section trail 10 feet or more in length. Maximum grades varies depending on the following factors:

- The grade of the existing sideslope
- Existing soil type
- Existing solid rock
- Annual rainfall amount
- Liberal use of grade reversals
- User groups / numbers
- Designed difficulty

### 4. Grade Reversals

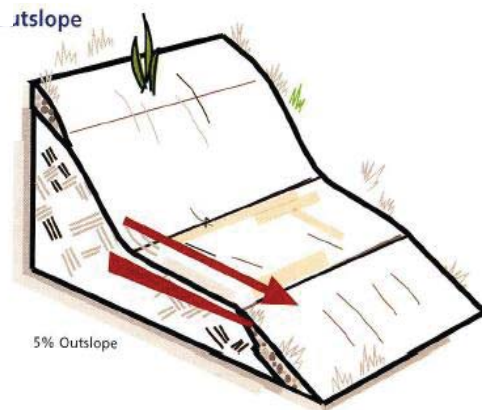
Grades reversals are areas of a climbing trail levels, changes directions, drops slightly down slope for 10-50 linear feet, and rises again. Grade reversals should be used on any trail climbing or traversing a sideslope, and should occur on average every 20-50 feet.

#### Grade Reversal

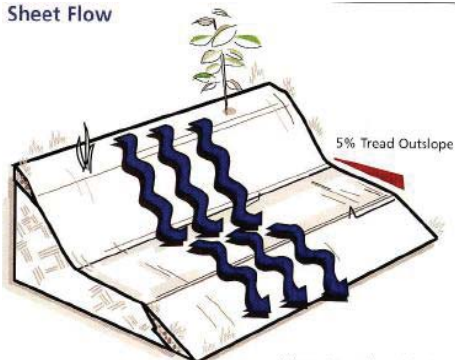


### 5.Outslope

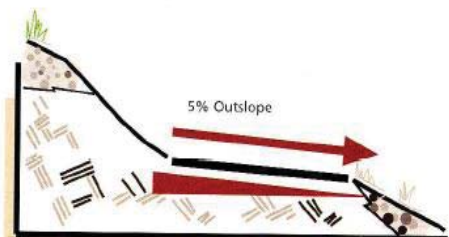
Trails that traverse or climb a sideslope should always be graded so that the tread slopes slightly down and away from the high side of the slope. Creating an outslope will allow water to sheet flow across the trail and down the slope rather than funneling and creating ruts. A 5-percent cross slope is considered best when grading an outslope. If the soil type is loose where the trail is constructed, numerous grade reversals will be necessary to avoid erosion and maintain the tread and outslope.



#### Sheet Flow



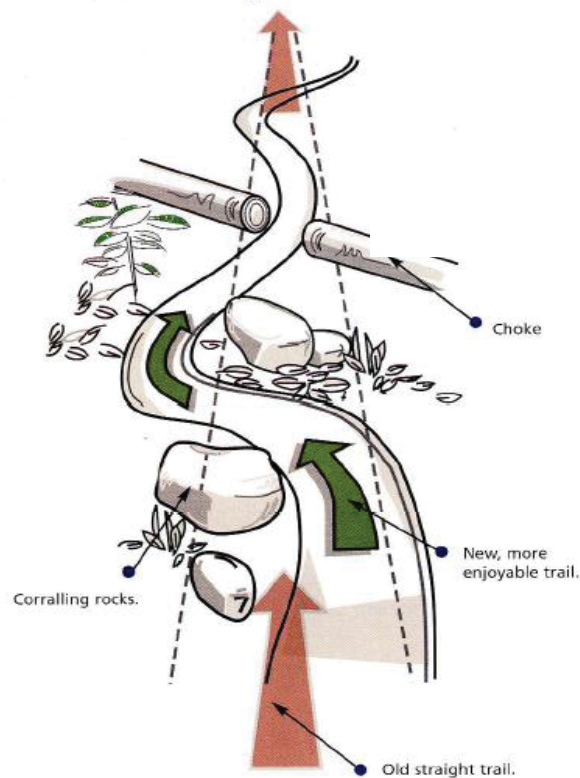
Above: An outsloped trail tread allows water to drain in a gentle, non-erosive manner called "sheet flow."



## D. Design Speed

Managing user speed on trails designed for mountain bikers is best done with design elements. Trails which are constructed with many turns and grade changes will allow users to feel that they are moving faster than they are. Large, concrete objects should be used to define trail edges and turns; often boulders, logs, and plants work best. Objects should serve as both physical and visual barriers. Chokes should be created when the trail is approaching a point where users will need to slow down; examples include intersections, stream crossings, or merging trails. Chokes are points in the trail where the tread narrows to force reductions in speed. These areas should appear to be natural and well defined to avoid users defining their own paths.

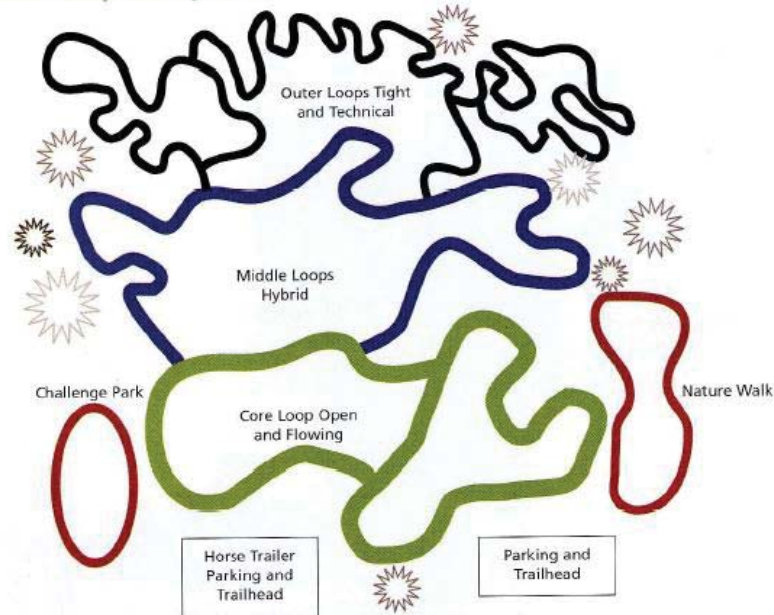
### Chokes and Corraling



## E. Trail System

Unless designing a single-user trail system, a system of looped trails should be designed to accommodate a variety of users. Main entry trails should be smooth and wide to appeal to all users, and provide either a standalone loop for beginners or a jump-off point for more advanced users. These primary trails may have a gravel surface to provide for accessibility and wet-weather use. Designing a trail system with multiple trailheads also allows for better control of user-conflicts and spreads traffic more evenly over a trail system. Restricting challenging trails to secluded and more difficult terrain will please all site users. Maintaining turns and choke points along all trails will continue to control speed and cut down further on potential user-conflicts.

### Stacked Loop Trail System



### F. Bench Cut Trails

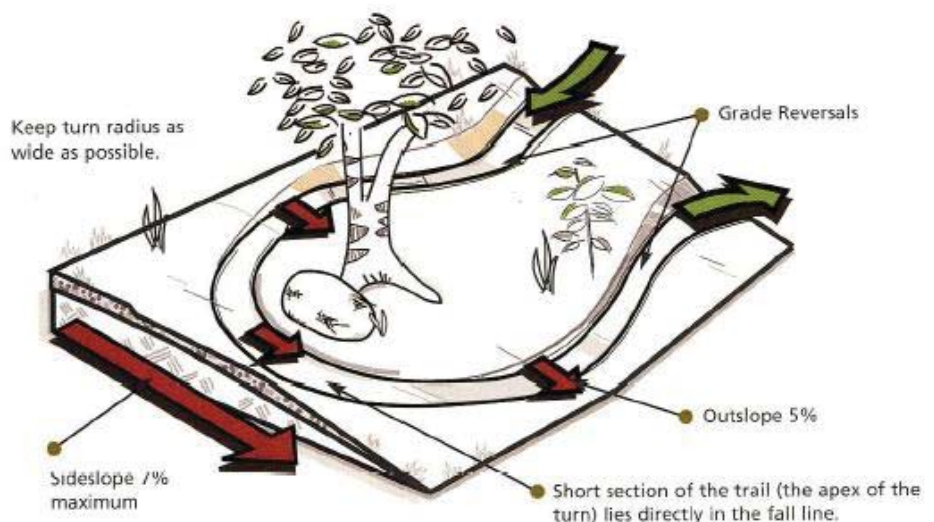
To create a durable and sustainable tread, creating a full bench trail is the most recommended option. The entire trail surface is compacted, native mineral soil with rounded and compacted backslope and downslope fill. Partial bench cut treads are a second option but should only be constructed as a last resort, as half of the tread is compacted fill, which does erode easily over time and often fails to compact. Partial bench treads are not considered to be a form of sustainable trail construction.

### G. Turns

#### 1. Climbing Turns

To be used on sideslopes of 7 percent or less as the trail will briefly follow the fall line, increasing the chance for erosion. Design the turning radius with a minimum width of 20 feet with natural barriers placed on the inside of the trail curve to control users speed and keep them on trail. Construct grade reversals above and below the curve to minimize water flow on the fall line. Construction of a choke point on the high side of the curve will also lessen user-wear erosion by reducing user speed on the curve.

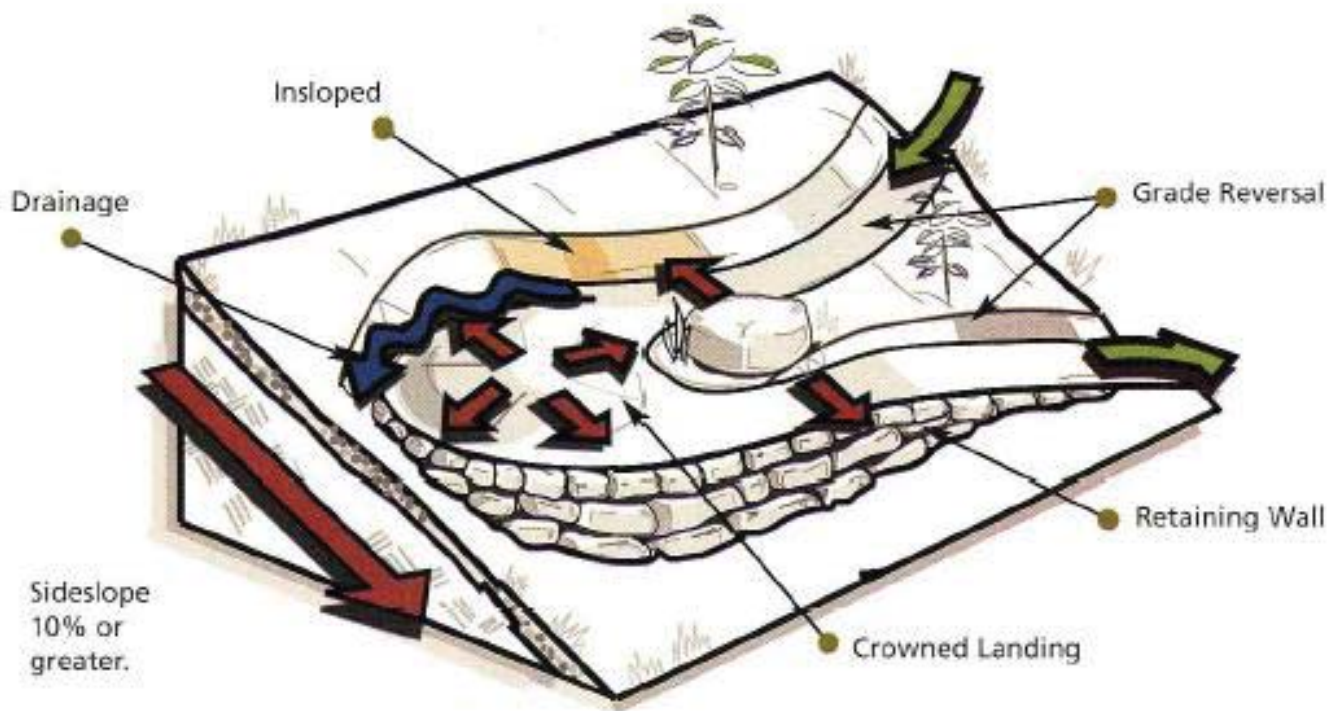
#### Climbing Turn



## 2. Switchbacks

A rolling crown switchback is similar to a climbing turn but is used on steep slopes and involves construction of a retaining wall to create a mounded, level platform at the apex of the curve. Construct the upper trail tread insloped toward the high side of the slope to drain water across the top of the curve and prevent it from sheeting to the lower trail. The lower tread should be outsloped as in usual construction. Fill from excavating the upper tread is used to construct the turning platform, and is compacted and mounded for even drainage. A retaining wall should be constructed of stone found on site or large timbers, preferably treated or found on site. Grade reversals should be used above and below the curve to minimize water flow on the switchback itself. Switchbacks should be staggered as a trail ascends a slope to prevent users from creating shortcuts and disperse water flow more evenly along the hill.

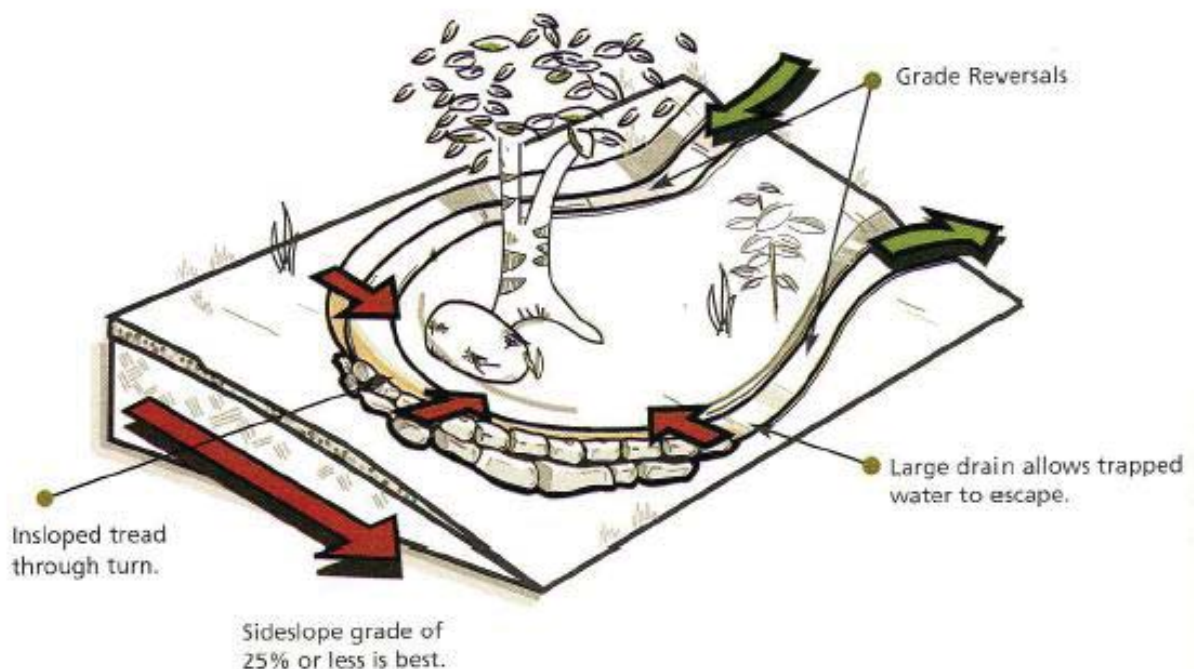
### Rolling Crown Switchback





### 3. Insloped Turns

In situations where users are or are predicated to cause lateral displacement of tread material, construction of an insloped turn is recommended. Properly designed and constructed insloped turns will improve tread life by reducing skidding and soil displacement by improving user flow along the trail. Curve banks of an insloped turn should be very well compacted and constructed in layers to prolong tread life and minimize soil displacement. A well designed grade reversal above the curve is necessary to reduce water flowing down slope. Construct a choke point above the turn as users can traverse an insloped turn with greater speed than switchbacks or climbing turns. Vegetation should be kept low in the center of the curve to maintain sightlines from the upper trail to lower trail.

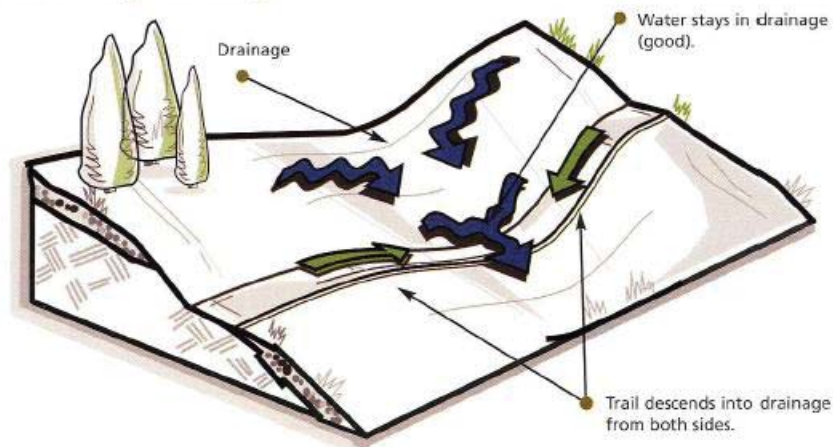


Insloped Turn

## H. Water Crossings

If at all possible, water crossings should be avoided or minimized due to water quality issues, impact to stream or river ecosystems, increased chance of erosion, cost, and safety of users and trail crews. If a water crossing is necessary, it should be carefully sited at a riffle point and where banks slope gently to the water. Sideslopes where water crossings are located should be a maximum of 8 percent. Trails entering a water crossing should always descend into the crossing and include well designed and constructed grade reversals to prevent sediment from washing down the trail into the watercourse.

### Proper Drainage Crossing



### 1. Fords

Well-constructed fords in streams that have a depth of less than 3 feet during high water will last for decades with minimal maintenance and will have little impact on the surrounding ecosystem if properly constructed. Fords should be built in wide, shallow portions of the watercourse and mimic the bed and width of the stream. The constructed tread should be level and made of rock found on site. The US Forest Service recommends placing rocks a minimum of 130 lbs downstream of the crossing to keep the tread in place. Rocks of a similar size should be placed in the tread 12 inches apart, upstream, to provide a stepping-stone crossing. The tread should be constructed of gravel and rock smaller than 3 inches in diameter. Armoring the approaches to the crossing with rock for a minimum of 12 inches past the high water line will further minimize erosion.

## 2. Culverts

Culverts can be successfully used in trail construction when properly sized and designed. Culverts must be sized to match or exceed the channel width, match existing slope, and should be sunk into the stream bed to allow a natural bed surface to form. It is imperative that a culvert's width matches or exceeds the channel width to prevent flow constriction, increased stream velocity, and blockage. Culverts can be constructed of pipe or of rock found on site. Culverts are among the most often failing water crossing, and should be carefully designed and maintained annually to prevent debris accumulation and blockage. A minimum of 12 inches of fill above the crossing is desired, and large boulders should be placed upstream to armour the edges of the crossing to prevent undercutting of the tread and water flow around the pipe.

## 3. Bridges

In areas where the watercourse is too deep or wide to allow for safe construction of a ford or culvert, bridges may be necessary. Bridges may range from log foot bridges to complex suspended or truss structures. Use of handrails is always recommended no matter a bridge's length, and an engineer should inspect all bridge plans prior to construction and use.

### I. Reassurance Markers

#### 1. Trail Blazes

Trail blazes should be used if the correct trail path is not obvious or if it may be covered with snow at any point of the year. Blazes should be placed as often as necessary, and should be clearly visible from any point where the trail could be lost.

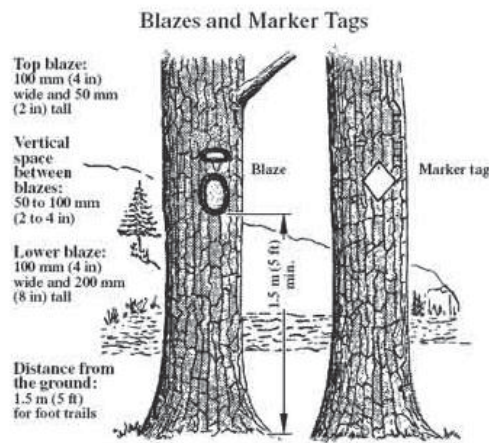


Image from "Trail Construction and Maintenance Notebook: 2007 Edition"

## 2. Cairns

Cairns are carefully constructed pyramids of rock that should be a minimum of 35 inches tall. They used be used in open areas where low visibility or snow cover may cause the tread to become difficult to follow or lost.

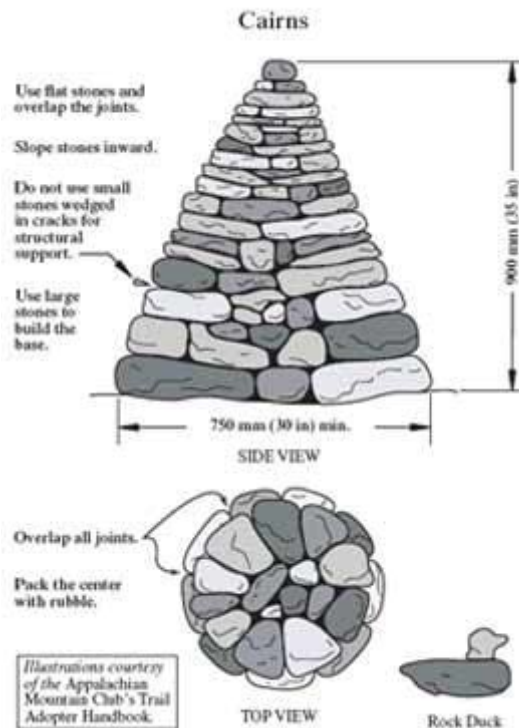


Image from "Trail Construction and Maintenance Notebook: 2007 Edition"

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Hesselbarth, Woody. Trail Construction and Maintenance Notebook: 2007 Edition. July 2007. <http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm>

International Mountain Bicycling Association. 2004. Trail solutions: IMBA's guide to building sweet singletrack. ISBN: 0-9755023-0-1. Boulder, CO: International Mountain Bicycling Association. 272 p.

All images from Trail Solutions unless otherwise noted.