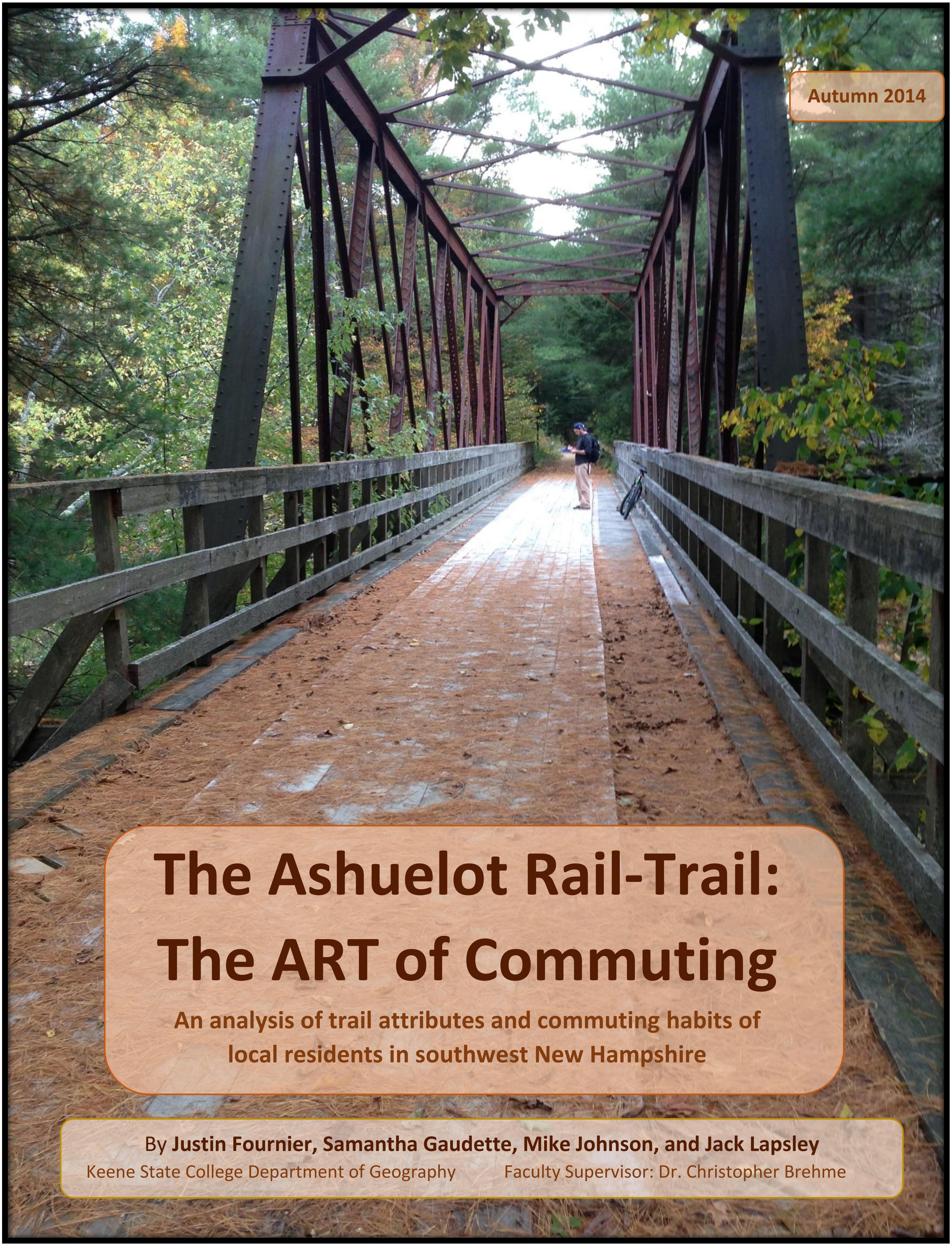

Autumn 2014

The Ashuelot Rail-Trail: The ART of Commuting

An analysis of trail attributes and commuting habits of local residents in southwest New Hampshire

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Abstract

Bicycle commuting is a popular form of non-motorized transportation in many communities worldwide. In light of health risks, environmental degradation, traffic congestion, and expenses associated with operating a personal vehicle, many commuters ride their bicycles to get where they are going in a faster, more efficient, and ecologically responsible way. Rail-trails are former railroad beds converted to pedestrian/bicycle trails that may prove to be viable routes for bicycle commuters. Working in collaboration with Southwest Region Planning Commission (SWRPC), the purpose of this project is to assess baseline characteristics of the Ashuelot Rail-Trail (ART) in southern New Hampshire and collect information about the potential of the ART as a commuter pathway. Data were collected using several methods. Trail attribute data were obtained using GPS receivers and trail assessment forms and were later entered into an ArcGIS 10 Geodatabase. Trail user data were collected using comment cards distributed to pedestrians and cyclists. Additional user data were obtained through surveys administered to local residents and Keene State College students via paper and online forms. We also interviewed community stakeholders who provided valuable historical and contextual information about the ART. Trail user data were analyzed using statistical methods to determine the use of the trail by season, user age, and activity. We synthesized the results of our trail assessments, surveys, and interview data to gain a greater understanding about the commuting viability of the ART. Our group discovered that the ART is widely underutilized as a commuter pathway, despite its relatively good physical condition.

Chapter 1: Introduction

Introduction

The unique topography and setting of the Monadnock region has inspired beautiful arts, bustling industry, distinct heritage, and significant recreational resources, complete with expansive walking and biking trails. Located in southwestern New Hampshire in the heart of Cheshire County, the area is characterized by a rolling topography and is pinnacled by Mount Monadnock- a lone, isolated mountain amongst mixed forests and farmlands. Between the valleys sit countless ponds and lakes such as Goose Pond and Swanzey Lake. Running through the region are many rivers and streams such as the Ashuelot River, California Brook, and Broad Brook, each tributaries of the Connecticut River, which delineates the border between New Hampshire and Vermont. Many of the towns nestled within the region reflect the typical quaint and historic development associated with New England. Visitors can find remnants of former textile mills, logging industries, maple syrup manufacturing, and even the headquarters for Yankee Magazine, located in Dublin, New Hampshire. The proximity of the Monadnock region to Southern Vermont and Western Massachusetts, areas that see significant tourism and second home ownership from urban residents of Boston and New York City, has allowed a diverse influence of values, tradition, and population to shape the cultural landscape.

Above all, transportation has played a major role in the development of Keene and the Monadnock region as an important economic, social, and emerging sustainable center. As communities like those of southwestern New Hampshire begin seeking alternative measures to combat the use of fossil-fuels in the transportation industry, a popular option is to redevelop existing infrastructure, including unused railroad corridors that can serve as alternative transportation routes.

The Ashuelot Rail-Trail (ART) is a 20.6 mile bicycle and pedestrian corridor that follows the bends and curves of the Ashuelot River between Keene and Hinsdale, New Hampshire (Figure 1). Formerly the Ashuelot Railroad corridor, the converted Ashuelot Rail-Trail offers visitors more than just biking and walking. Horseback riders, snowmobilers, and cross-country skiers are also frequent users of the pathway. Further, recreation is just one reason to find people on the ART. The trail also serves as a potential thoroughfare for citizens in the region to commute. Commuters may use the trail to get between work and home, to shopping centers, and to conduct other errands. Historically, there has been minimal research on many features of the rail-trails in New Hampshire, and as a result, this has left the bulk of maintenance, conservation, and project funding to be based on often outdated information. Thus, the assessment of the ART and other regional trails as a means to commute has considerable value.

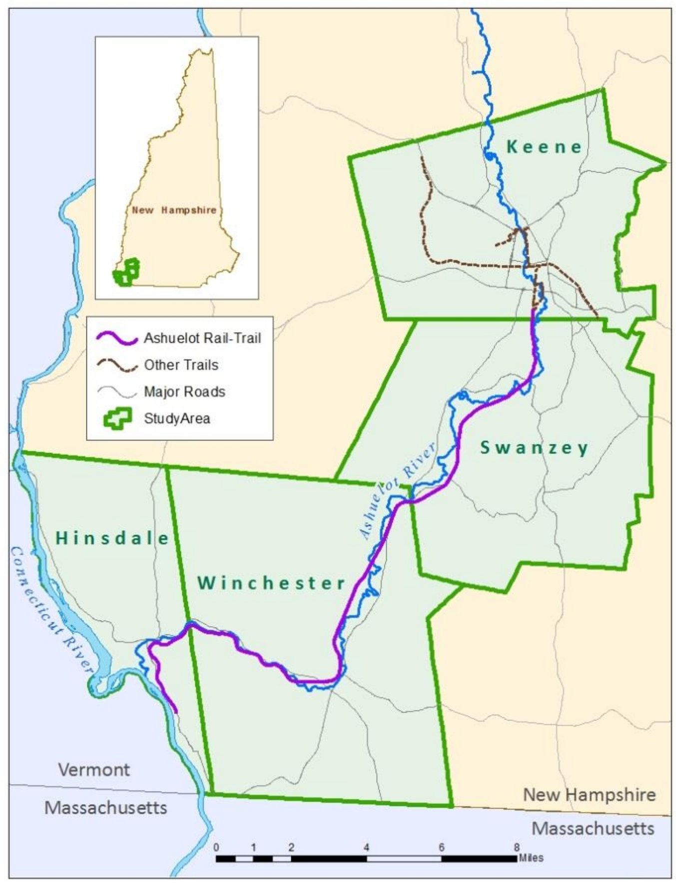


Figure 1: Regional map of the Ashuelot Rail-Trail. Source: NH GRANIT and authors.

In collaboration with Southwest Region Planning Commission (SWRPC) and the Keene State College Geography Department, our research focuses on assessing the Ashuelot Rail-Trail and examining the potential for the trail as a viable commuter pathway. In order to understand the Ashuelot Rail-Trail today, we will review the history of railroads and transportation in the Monadnock region.

History of the Ashuelot Rail-Trail

The origin of rail-trails can be traced back to the Golden Age of railroads. People used trains to travel to most parts of the country, near and far. In 1848, the Boston and Maine Railroad expanded its tracks from Fitchburg, Massachusetts to include parts of New Hampshire and Vermont. The extension that connected Keene to Ashburnham, Massachusetts was called the Cheshire Railroad. With this extension, Keene was connected to the commercial hub of Boston, and the first train arrived from the city in 1848. The addition of the railroad in Keene revolutionized transportation for the area. The railroad gave people the ability to comfortably travel to places outside the region, and brought tourists into the city, which spurred the economy and led to population growth. The Ashuelot Railroad was not as prominent as the Cheshire Railroad, as it served as a spur line that brought passengers and freight from Keene to Northfield, Massachusetts (Miller 2003).

The railroad extension into Keene arguably had the biggest effect on the Faulkner and Colony Mill, one of the most prominent industries in the area. The railroad allowed the mill to ship its goods to places further away and in less time. During the Civil War, World War I, and World War II, the mill enjoyed great financial success and employed as many as 500 people. When the war ended, the Faulkner and Colony Mill, like many other mills, saw commercial decline and closed its doors in the mid-1950s (Foster 1968). It was reopened in the 1980s as an indoor shopping mall, named the Colony Mill Marketplace, with many parts of the original mill still intact today.

As technology advanced in the mid-20th century, people took to traveling by cars and planes instead of trains. With the advent of the interstate system, the shipping industry shifted from railcars to tractor trailers. Because of this, many United States railroad companies went out of business and the passageways originally cut to make way for railroads were abandoned. Despite being overgrown, the majority of the corridors in the United States remained intact and did not deteriorate. The railroad ties were eventually removed and the corridors remained untouched and unused for many years. Within the last twenty five years, however, organizations such as the Rails-to-Trails Conservancy noticed the potential role the empty railroad corridors could serve as trail systems in the country. Slowly, some of these abandoned corridors were cleared and made into recreational trails, allowing people to bike, hike, cross-country ski, and commute without concern for car traffic (Figure 2).

Figure 2: Research group members biking on the Ashuelot Rail-Trail.

The Monadnock region contains many trails, including the Cheshire Rail-Trail, Jonathan Daniels Trail, Appel Way Trail, Monadnock Rail-Trail, Ashuelot Rail-Trail, and numerous others, which together offer visitors and residents the convenience of a region-wide trail network. While the length and number of trails vary by town, each trail is considered an asset to the Monadnock region and the state of New Hampshire for its potential as an alternative transportation route. SWRPC has identified a particular trail, the Ashuelot Rail-Trail, as holding the potential for an alternative route for commuting residents.

Town Profiles

The Ashuelot Rail-Trail connects the city of Keene to three other towns: Swanzey, Winchester, and Hinsdale. The northern part of the Ashuelot Rail-Trail begins in Keene, the region's centrally located city and largest urban area. Keene's population is around 23,400, and the city spans across 37.3 square miles of land in the Monadnock region. Keene's median age of 34.6 years is influenced by Keene State College, the liberal-arts college serving both undergraduate and graduate students and Antioch University of New England, the local graduate institution offering masters and doctoral degrees. Keene's public school system consists of five elementary schools, one middle school, one high school, and numerous private schools serving various age groups.

There are many employers in Keene, but the largest are Keene State College, Cheshire Medical Center, and C & S Wholesale Grocers, which together provide 3, 179 jobs in the region. 72.4% of Keene residents work in Keene, and have an average commuting time of sixteen minutes (New Hampshire Employment Security 2014). Public transportation in Keene includes two local bus services, including the City Bus, the Friendly Bus, and one regional service- Greyhound Bus Lines, with connections to Vermont, New York City, Boston, Hartford, and points beyond. The limited availability and lack of connection of these bus services to other areas forces most residents to rely on personal vehicles, hired taxis, bicycles, and walking. 73.7% of employed residents in Keene commute to work by driving alone in a car, 8.5% commute by carpooling, 11.6% commute by walking, 0.2% commute by public transit, and 1.4% commute by other means, like bicycling or taxis (ibid). The City of Keene is working to address some of its transportation issues by providing better accommodations to bicyclists, such as designating bike lanes as well as supporting various sustainable initiatives including:

- Green Bikes program- a collection of bicycles owned and maintained by Keene State College that are available for use by anyone with a library card
- Rack It Up! program- an initiative to install locally-owned bicycle racks in the city
- Complete Streets program- a concept implemented in planning to include infrastructure for bicycles and pedestrians, as well as motorists
- Bike to Work initiative- an under-utilized program that offers discounts to bicyclists at local establishments.

Due south of Keene lies the town of Swanzey. The town is slightly larger in size than the city of Keene, but it has a much smaller population. With a population of 7,250 and a median age of 43.4 years, Swanzey has a densely settled village and many rural areas. The largest local employers in Swanzey are Market Basket and the Monadnock Regional School District, which covers grades K-12. Only 13.7% of local residents are employed within the town, and most flock to Keene's economic center and other towns to work. 85.3% of employed residents in Swanzey commute to work by driving alone in a personal vehicle, 7.8% commute by carpooling, 0.8% commute by walking, 2% commute by other means with an average commuting time of twenty minutes (ibid). Swanzey's business district is not as centrally located as Keene's, however the town is making efforts to encourage business opportunities by pre-installing internet, water, and electrical services to areas along NH Route 12, one of the many arteries that leads into Keene (Swanzey Master Plan Sub-Committee 2003). While there are no designated bus services in Swanzey, the town is home to the region's only airport, Keene-Dillant-Hopkins, which services private aircrafts but lacks commercial service.

The town of Winchester is situated southwest of Swanzey and has a population of 4,300, which remains somewhat clustered within two villages. The community's age structure is similar to Swanzey's, with a median age of 43.1 years. Though smaller in population than Keene and Swanzey, Winchester has maintained much of its rural character, with a quaint Main Street area surrounded by farmland, forests, and Pisgah State Park. Employment opportunities in the town are limited; however, the local grocer, Kulick's, and a local nursing home, Harborside Applewood, provide 127 jobs to the region (Winchester Master Plan Sub-Committee 2008). Consequently, 72.8% of residents commute out of Winchester for better employment prospects. Many of these residents find jobs in Keene, which remains the largest economic center within the region (New Hampshire Employment Security 2014). 84.5% of employed residents in Winchester commute to work by driving alone in a personal vehicle, 7.2% commute by carpooling, 4% commute by walking, 0.4% commute by other means with an average commuting time of twenty-four minutes (ibid). Additionally, the Winchester school district supports grades K-8, and local high school students attend Keene High School.

The town of Hinsdale lies just west of Winchester, bordering the Connecticut River and the city of Brattleboro, Vermont. It supports a population of about 4,000. Similar to Swanzey and Winchester, the median age of Hinsdale residents is 45.5 years; however the town is much smaller in size. Just 25.4% of working residents are employed within Hinsdale. The two largest employers are the elementary and middle/high school districts and Wal-Mart. Like Swanzey and Winchester, many residents find employment elsewhere. Hinsdale is the only New Hampshire town bordering both Vermont and Massachusetts, and Brattleboro, Vermont and Greenfield, Massachusetts provide Hinsdale residents with additional employment options, as 52.4% of residents work out-of-state. Public transportation is insufficient in Hinsdale, with little infrastructure to provide alternate transit to residents. Therefore, 85.4% of employed residents drive alone to work, 8.6% commute by carpooling, 0.6% commute by public transit, and 2.7% commute by walking with an average commuting time of twenty minutes (New Hampshire Employment Security 2014). A local bus service, "The Current Bus", operates out of Brattleboro, and extends a single "Blue Line" commuter bus into Hinsdale, bringing workers from New Hampshire to Vermont (Hinsdale Planning Board and Southwest Region Planning Commission 2003).

Regional Stakeholders

There are many individuals and organizations invested in the Ashuelot Rail-Trail. These stakeholders are comprised of non-profit organizations, volunteer-based groups, local, regional, and state planning organizations, and transportation departments. The Bicycle/Pedestrian Pathway Advisory Committee (BPPAC) is an organization that developed from a Keene City Planning Department meeting addressing the creation of a system of public pathways throughout the city. Members of the BPPAC, which include residents, city planners, and local business owners, were chosen to represent the health, safety, environmental, and recreational needs of the residents and city at large (C. Redfern, member of the BPPAC, October 2014). Similar to

BPPAC, the Monadnock Region Transportation Management Association (MRTMA) is a group of volunteer residents, city planners, and local business owners who came together to address better transportation planning in the region (J. Mack, Principal Planner at Southwest Region Planning Commission, September 2014). Pathways for Keene (PFK) is a non-profit group organized by volunteers and an elected Board of Directors that promotes the development, maintenance, and use of alternative transportation in the city of Keene through education, financial assistance for projects, and other supportive services. Additionally, the snowmobiling clubs previously mentioned are prominent players in the upkeep of the ART. These clubs, which are composed of avid snowmobilers, cross-country skiers, and other winter activity enthusiasts, utilize the Ashuelot Rail-Trail in the snowy months for commuting and recreation. Members often make special trips into town centers to share a meal at a local restaurant, go shopping, and do other errands. Primarily through volunteer labor, they help ensure the safety of bridges, clear brush along the corridor, and make sure road crossings are clearly marked.

Funding for the Trail

Financial support for maintenance and funding for trail projects generally comes from a variety of sources. The State of New Hampshire allocates funds to give the appropriate amount of money to organizations and towns for their projects. One of the ways these funds are distributed is through the State Recreational Trails Grant, which contributes funds to collaborative projects, such as the $2.3 million North Bridge Project in Keene (a pedestrian and bicycling corridor which safely carries the Cheshire Rail-Trail up and over NH Route 9, 10, and 12). Additionally, the New Hampshire Charitable Foundation, a statewide foundation that accepts donations to distribute as grants and scholarships for educational, recreational, and economic projects, gives up to $50,000 per award in their Recreational Trails Grant. Pathways for Keene supports a private and public match grant for projects. In addition, there are private sponsors, such as Ted's Shoe & Sport and Markem Imaje, two locally owned companies interested in supporting their economy and community, both of which have made multiple donations to Pathways (C. Redfern, member of the BPPAC, October 2014).

Our Research

We collected baseline data through a variety of means and methods. Two categories of data were collected: rail-trail attribute data and trail-user data. The former were incorporated into a Geodatabase in ArcGIS 10.2 and the latter were statistically analyzed to assess the current commuting habits of trail-users. These two aspects of the Ashuelot Rail-Trail provided our group with a holistic view of the trail including its conditions, users, and its significance as a viable commuting alternative to driving personal vehicles.

The baseline attribute data of the Ashuelot Rail-Trail were collected over several "ART Rides", as we traveled the length of the trail on bicycle. As detailed in our methodology, we divided the length of the trail into eight sections, each approximately three miles in length, which allowed us to drive to and from each section to save time. As we gathered GPS waypoints and trail condition data, we also distributed comment card surveys to groups and individuals we encountered on the trail

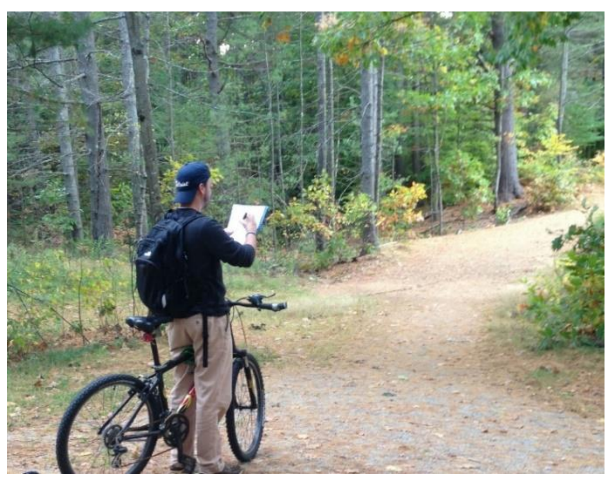
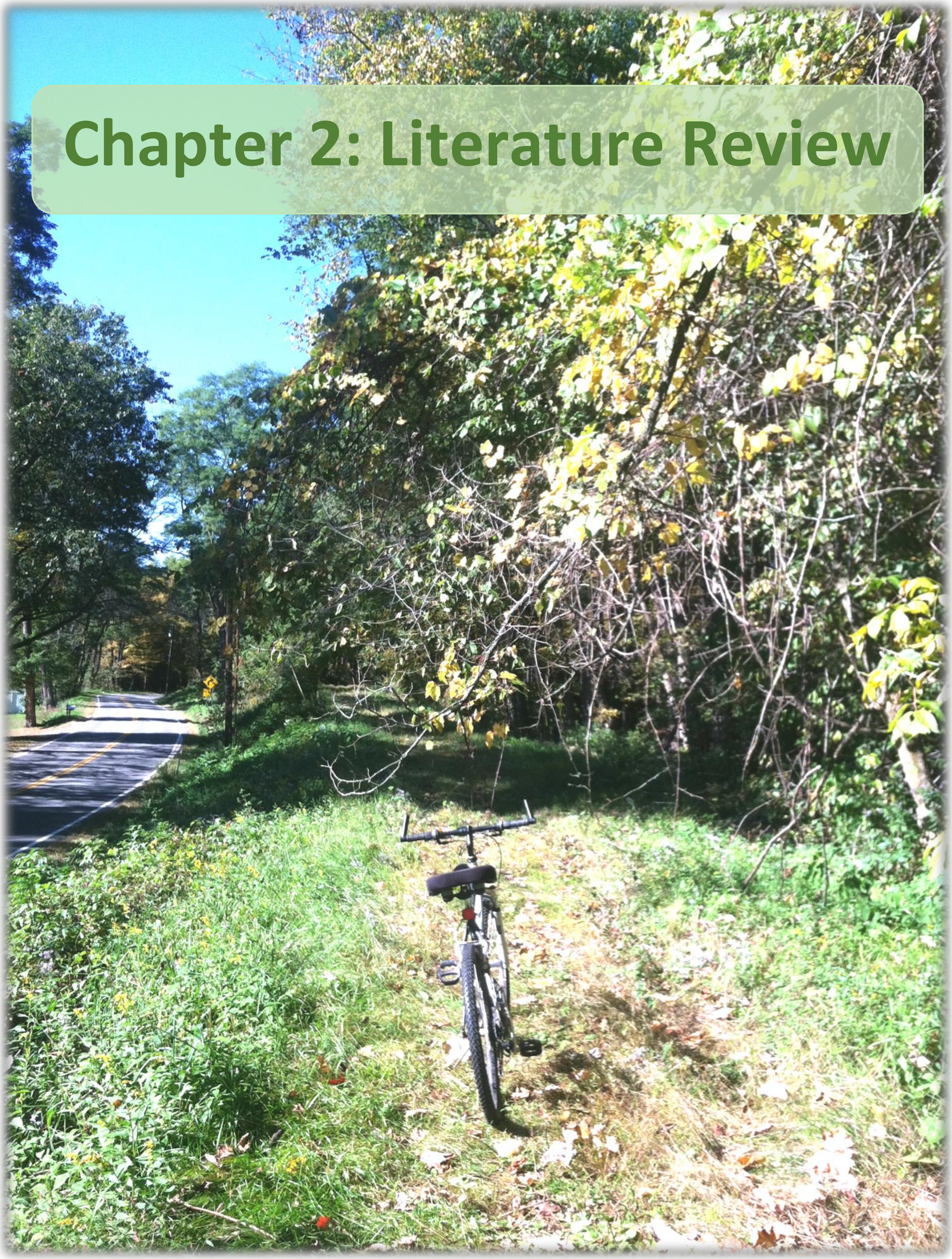


Figure 3: A group member takes note of visual attribute data.

(Appendix A). Our group also developed a general community survey which we distributed to various individuals and organizations via paper and online versions (Figure 3).

The results from our Ashuelot Rail-Trail assessment will provide valuable information for SWRPC staff, members of MRTMA, BPPAC, Pathways for Keene, New Hampshire Department of Transportation, the New Hampshire Department of Resources and Economic Development, and surrounding communities to ensure proper trail management, planning, and use. Local residents of Keene, Swanzey, Winchester, and Hinsdale will benefit from the rail-trail assessment by gaining a better understanding of commuting potential between towns. Through field data collection, interviews, and survey analysis, our group evaluated where and what improvements need to be made, as well as how to manage these improvements, in order to fulfill the needs of trail-users. The ArcGIS 10.2 geodatabase that we design will provide the foundation for an attractive, informative map of the Ashuelot Rail-Trail. The inclusion of points of interests such as viewsheds, historic rail depots, bridges, rivers, and other elements that may encourage exploration of the ART will enable both new and regular visitors to find something that interests them on the trail. This map of the Ashuelot Rail-Trail may be used by local bicycling shops, business owners, and organizations that already promote the use of the trail to support an active lifestyle. The mapping of surface changes and areas that need maintenance will assist towns and planners with the information they need to improve the trail. With well- informed improvements and continued maintenance, the Ashuelot Rail-Trail should gain popularity, inspiring residents to ditch their cars and use the ART for commuting within the Monadnock region.

Chapter 2: Literature Review



Literature Review

In this chapter, we outline several themes related to our research, including: history of rail-trails, bike commuting in relation to health, planning, data collection techniques, and analytical methods. We draw on literature from the fields of geography, planning, health, and conservation as we explore these themes. Each theme included in this review focuses on a topic, method of data collection, and the results of each research method. By reviewing current literature on rail-trails, commuting, and data analysis, we may better understand strengths and weaknesses in our own research methods.

Rail-Trail History

DeRita and Dropkin (2006) address the importance of rail-trails for preserving the past, serving the present, and planning for future needs. Trains were once the fastest and most cost-effective way to transport both goods and people. The New York Central System was once the longest railroad system in the United States, boasting over 10,000 miles of track. However, as technology advanced, people took to traveling by cars and planes instead of trains. Many of the rights of way that were kept clear for railroads were then abandoned. Though they became overgrown, the integrity of the corridors did not deteriorate. The railroad tracks were eventually removed and the corridors remained untouched and unused for many years. Within the last twenty-five years, organizations such as the Rails-to-Trails Conservancy realized the positive impact the empty railroad corridors could have on trail systems in the United States. Over time, some of these abandoned corridors were cleared and made into recreational trails (Figure 4).

Figure 4: Abandoned railcars, renovated train station, and new pathway in Hinsdale.

People can now bike, hike, cross-country ski, and commute using these rail-trail systems. By preserving the original corridors, people can appreciate the historical routes that visitors travelled, which are often different than today's highway systems. At the same time, non-automotive transportation and recreational needs are being established and fulfilled. From 2001 to 2009, rates of walking, biking, and active travel using various trails and pathways in the United States increased by 9.1%, 4.8%, and 13.9% respectively, because of their convenience to popular destinations, extent of mileage available, and increasing cost of gas prices among other reasons (Pucher et al. 2011). The presence of the rail-trails encourages more people to bike to their destinations rather than drive, and encourages people to get out and explore scenic and historical areas along the trails. The 365-mile Erie Canalway Trail system follows the historically significant Erie Canal, and connects dozens of New York towns and cities, from Buffalo to Albany. New York currently has about 1,000 miles of rail-trails and plans to introduce an additional 1,000 miles due to high demand and popularity (DeRita and Dropkin 2006). New England contains many rail-trails as well. (Table 1).

Table 1: Rail-trails in New England. Source: Rails-to-Trails Conservancy

State	Number of Rail-Trails	Miles of Rail-Trails
Maine	28	378
New Hampshire	67	535
Vermont	20	132
Massachusetts	59	409
Connecticut	20	180
Rhode Island	14	66

Rails-to-Trails Movement

The high demand for public recreational space has led to an increased interest in developing abandoned railways into walkable and bike accessible trails. About 21,400 miles of railways have been developed into 1,873 fully functioning rail-trails in the United States (Rails-to-Trails Conservancy 2014). Turco, Gallagher, and Lee (1998) describe that despite this production, residents near some proposed trails have shown resistance to their development. Homeowners anticipate an increase in litter, crime, and noise pollution in their community, and fear their homes will lose value. Advocates argue that using these trails for commuting helps limit the amount of traffic on city streets, provides additional and safe access to businesses and stores, and brings a greater sense of community to the area. Additionally, the National Association of Realtors and National Association of Home Builders (2002) revealed that 36% of 2,000 surveyed potential homeowners in the United States indicated walking, jogging, and/or biking trails as either an "important" or "very important" community amenity when choosing a home. Access to trails outranked sixteen other options, including security, ball fields, golf courses, parks, and access to shopping or business centers. At 44%, highway access was the only other community amenity that trumped trail accessibility.

Turco, Gallagher, and Lee (1998) surveyed homeowners in Bloomington, Illinois, before and after rail-trails were developed in the city. Through a longitudinal study, they found that the majority of homeowners who initially resisted trail development had changed their minds. The same Bloomington homeowners in Illinois who initially opposed development of the Constitution Trail had favorable responses five years after it was completed. They decided that they enjoyed having an area for exercising, gardening, and socializing in close proximity to their homes. Less than 15% of these residents in the follow-up survey expressed concern for litter on the trail, fear of invasion of privacy, theft, or noise pollution.

In Southern New Hampshire, a proposal was issued to connect Rockingham Boulevard in Salem to Bow Junction in Concord via rail-trail. Although originally planned as a thirteen mile pedestrian-bicycle path running adjacent to Interstate 93, a new plan was implemented based on the demand of people in this area. Three choices were originally proposed: a path adjacent to the highway system, a shared-use rail-trail running alongside an abandoned railroad bed, or an update to existing roads to provide shared bicycle and pedestrian use. Ultimately, the shared-use rail-trail option was chosen. The two main reasons cited were cost, as this option was the least expensive, and safety, as this option better suited inexperienced riders and children. The state of New Hampshire specified that it would not be directly involved in developing the rail-trails; instead it banded together a new group known as the Granite State Trail Conservancy. This is a group of volunteers from the eleven municipalities intersected by the trail, representing both public and private interests in the development of the Salem to Concord trail (Becker and Mclaughlin 2003).

Transportation Funding

In the early 1990s, the United States Department of Transportation (USDOT) demonstrated an increased interest in the way transportation is planned, built, and managed through the introduction of the Intermodal Surface Transportation Efficiency Act (ISTEA). The Act detailed crucial changes in the way pedestrian and bicycling pathways are developed and incorporated into communities (H.R. 2950 1991). Additionally, the USDOT and the Federal Highway Administration (FHWA) began collecting extensive data on these two modes of transportation. Previous investment trends at the federal level favored the convenience of personal automobile use. Today, the intention is to develop more inclusive and comprehensive transportation projects that incorporate public and non-motorized forms of travel.

One of the ways New Hampshire allocates support for these projects is through the Transportation Alternatives Program (TAP). The TAP is a competitive, flexible funding program created from the federal law Moving Ahead for Progress in the 21st Century (MAP-21) and is designed to provide safe, convenient, and reliable options for non-motorized transport (Jameson 2014). The TAP also consolidated many stand-alone projects, such as Safe Routes to School, Transportation Enhancement, Recreational Trails, and Scenic and Cultural Byways to make the funding process easier for project planners. Regional planning commissions (RPCs) work with towns to collaborate, design, and acquire TAP funding for current and future transportation projects. The Transportation Alternatives Program Advisory Committee (TAPAC) then reviews each project and selects those based on several criteria: potential for success, safety, socioeconomic benefits, project connectivity, RPC/MPO ranking, and multi-model connection (ibid).

Health and Active Commuting

Rail-trails are seen as providing more than just recreational opportunities. They can also support physical fitness initiatives. There is a growing concern about physical inactivity and related health issues of citizens in the United States. In light of this, rail-trail funding sources such as TAPAC favor initiatives that encourage walking and bicycling. Bopp, Kaczynski, and Campbell (2013) researched the health-related benefits of active commuting by surveying adult employees of major employers in the Mid-Atlantic states. The group used Qualtrics, an online surveying tool, and asked participants to describe their health, their monthly commuting habits, and demographics. Their results indicated that participants responded with lower perceived health when they commuted frequently by car. In contrast, those who walked and/or bicycled to work indicated a higher perceived health ranking.

In order to encourage positive reinforcement, the authors discuss the importance of active commuting promotion within the workplace with employer-sponsored transit passes and incentive programs, such as a contest for discounts at local establishments. The researchers also found that older participants and those with lower perceived health rankings were generally more reluctant to utilize active commuting. While they did not explore the depth of these responses, they attributed them to the possibility that sidewalks, a major component of pedestrian infrastructure, are absent in many communities. This demonstrates the link between community health and community planning. The authors note that employers may consider the benefits of collaborating with planning departments to emphasize alternative commuting to better serve their employees. Moreover, Pucher et al. (2011) cite a rising trend in people bicycling to work in rural areas. In towns with populations under 10,000, such as Swanzey, Winchester, and Hinsdale, 1.61% of the population bicycles to work, which exceeds the national average of 0.71%. This indicates that small, rural towns are being tasked with an increasing demand to develop bicycle and pedestrian infrastructure, often in the face of limited funding.

The Importance of Master Plans

Another criterion of many funding sources that support rail-trails is the potential of project success. As Evenson et al. (2011) note, the American Academy of Pediatrics recommendation of these active commuting initiatives and programs has generated a hastened approach to city planning and healthy exercise campaigns. A project that is rushed along without thoughtful long terms goals, appropriate infrastructure planning, and an understanding of citizen needs tends to have a lower rate of success than projects that include these features.

Evenson et al. (2011) describe the importance of state, local, and community master plans which seek to coordinate social, physical, and economic development for the municipalities involved. The authors surveyed North Carolina city staff members to see what types of bicycling and pedestrian master plans, if any, existed in each municipality. Survey participants were also asked if their town or city housed additional programs and policies that pertained to bicycling and pedestrian activity. The majority of responding municipalities have policies and projects designed to improve walking and bicycling infrastructure, such as sidewalk redevelopment and creating separate bicycle lanes on roadways. However, only about a quarter have promotional programs in their municipality, such as shopping discounts for bicyclists and group commuting programs. Evenson et al. (2011) found that urban municipalities had more detailed plans than less populated communities. Furthermore, the authors found that the presence of specific bicycle and pedestrian programs and policies increased the likelihood that these master plans were included in larger regional and statewide transportation projects, and thus accessible to more funding and utilization.

Efficacy of Master Plans

The economic and environmental implications of bicycle and pedestrian pathways and their relationship to public health have been discussed widely within the literature. In order to develop ambitious community-wide initiatives that increase daily activity, physical and social transformations must be made through the "reengineering" of our built environments. Evenson et al. (2011) note that the involvement of policymakers, professionals, residents, non-profit groups, and other stakeholders is important in garnering support for projects, as well as gaining assistance in development, implementation, and funding.

Steinman et al. (2010) analyzed 294 bicycle and/or pedestrian master plans of four US states: California, Missouri, North Carolina, and Washington. The authors described the main focus of each plan (e.g. bicycles, pedestrians) while comparing the demographics of each municipality. The researchers found that their initial hypothesis stating that more affluent areas tended to have more detailed master plans was not supported. Additionally, municipalities that shared physical and cultural characteristics to neighboring areas tended to have similar master plans. Simply put, the affluence of an area did not appear to relate significantly to the level of detail of the master plan. Instead, what mattered was what a neighboring municipality was *doing* about their plan. Their analysis showed that master plans tended to occur in local communities sooner than at the state level. Further, the municipalities that made an effort to develop plans revealed strikingly similar demographics to the averages of cities of similar size. This indicated nothing particularly special or different about these areas, aside from a shared passion to plan a more accessible transportation future. Neighboring communities with differing demographics, values, and goals must take great care to collaborate with one another when discussing a shared resource, such as rail-trails, which cross public, private, and political boundaries (Swanzey Master Plan Sub-Committee 2003 and Winchester Master Plan Sub-Committee 2008). The research by Steinman et al. (2010) is important to consider when examining the plans and projects of various municipalities in New Hampshire because of the long tradition of local control and most decisions are made town-by-town. Further, it describes the patterns of success with local, regional, and statewide master plans.

While Evenson et al. (2011) demonstrate how lack of detailed master plans can impede the effectiveness of bike and pedestrian policies; Balas (2002) argues that one of the major reasons some bicycle and pedestrian projects are unsuccessful is that pathways, routes, and other elements are not always planned well. The foremost reason for this, the author contends, is that many planners and engineers are not well educated in the needs, desires, restrictions, and requirements of non-motorized transportation. He surveys a sample of planning and engineering programs at various accredited colleges and universities in the United States to find what their curriculum offers in the way of bicycle and pedestrian planning. Of the twenty-one schools that responded, his results reveal that 66% of schools acknowledged teaching bicycle and pedestrian planning. However, of the schools that responded, only six offered stand-alone courses devoted to this topic. The majority of schools provided lectures on bicycle and pedestrian planning within larger courses that cover many other topics. The author also discusses various education techniques, such as dedicated seminars and comprehensive accredited programs, which would equip planners and engineers with information to design effective non-motorized transport projects.

Impact of Rail-trails on Commuting

Commuting to work by bicycle is becoming more common in the United States. From the 2000 census to the 2012 census, cycling to work increased by 0.20%, up from 0.40% McKenzie 2014). The 2009 National Household Travel Survey indicated a slightly higher national average of 0.71%, with a range of 0.60% to 0.85% (Pucher et al. 2011). More cities are incorporating bike paths and bike lanes on busy streets. For example, Chicago is home to many paths utilized by commuting bicyclists, especially those on their way to work in the morning. The addition and expansion of new bike paths in Chicago has contributed to a doubled increase for bicycling commuters in the last decade, and today 1.5% of all commuters in the city are bicyclists (McKenzie 2014).

McKenzie (2014) demonstrates that smaller and more rural cities and towns have a higher rate of commuters bicycling to work. One reason might be that many of the smaller cities in the study contain colleges, and many college students ride bicycles. Interestingly, many Southern cities have a low percentage of commuting bicyclists due to uncomfortably hot weather and the fact that the development of many Southern and Western cities occurred after World War II, in parallel with the rise of the automobile. Many of these “Sunbelt” cities were designed when city transportation planning emphasized driving over walking. While the author did not provide any history, he does document how much of an impact bicycling can have on a city. The rising rate of bicyclists in Chicago prompted the city to improve and expand roadways in order to develop new bike lanes. Additionally, the city issued a bike share program, which encourages people to ride to work rather than drive (McKenzie 2014). While bike share programs have been around since the mid-1960s in large European cities like Amsterdam, the adoption of a city-wide bike share program in the United States took thirty more years to transpire. In 1994, Portland, Oregon launched their “Yellow Bike Program”, but it soon fell by the wayside as the security and maintenance of the unrestricted-use bicycles was not well managed (DeMaio 2009). In 2013, New York City opened “Citi Bikes”, an expansive, privately owned bike share program which has become the largest in the United States (NYC Bike Share 2014).

Commuting Case Studies

As previously mentioned, active transportation, such as biking and walking, is an emerging way of life that corresponds to the increasing popularity of the Rails-to-Trails movement. With more trails available to the public, more people are opting to reduce their reliance on cars. Rail-trails help reduce traffic congestion, save money on gas, reduce carbon emissions, and promote active living. According to the Rails-to-Trails Conservancy, half the trips made in America today can be completed as a twenty minute or less bicycle ride. If half of all trips in the United States *were* completed on bicycle, then the economic, ecologic, social, and health benefits would be far more prominent than they are today. In light of this, many communities have developed and managed rail-trails in a way that pleases both commuters and the general public with the hopes of increasing popularity of the trails. The following case studies represent areas that illustrate the diversity of bicycle commuting in the United States, which tends not to focus exclusively on large cities.

Case Study: Toledo, Ohio

In the metropolitan region of Toledo, rail-trails were initially closed to bicyclists and pedestrians at sunset. Many residents desired the ability to cycle to and from work, time periods which often started sooner and ended later than the rail-trail curfew. To address this issue, rail-trail managers decided to allow the trails to remain open during non-daylight hours but only for those obtaining a permit. Permits can be acquired by downloading an application online and must be visible on the owner's bike at all times. The new curfew is designed to simultaneously be more accessible and keep unwanted people off the trails, which run near residential areas. If caught on the trail without a permit, a warning or fine is given by police officers who patrol the rail-trails (Reiter 2013).

Case Study: York, Pennsylvania

The York County Heritage Rail-Trail in Pennsylvania extends twenty-one miles in length southward to the Maryland border and follows the abandoned Northern Central Railway corridor. It has the official designation of being a National Recreational Trail, a title which provides the trail with additional promotion, funding, and maintenance. Seven trailheads located in neighborhoods of eleven municipalities allow residents to park their cars and bike to other towns. The entire length of the trail is ADA accessible, as are the restrooms, picnic tables, recycled art pieces, benches, historical sites, and museums that line the rail-trail. The rail-trail also connects with multiple high schools and parks, allowing residents to commute to work, school, and other destinations. Nearly 400,000 trail users in 2007 generated an estimated five to six million dollars of economic growth (York County Parks 2012).

Case Study: Davis, California

The city of Davis is situated in the southern part of Yolo County, an agricultural county in California's Central Valley situated between San Francisco and Sacramento. Davis is the largest urban area within Yolo County, and is known for its bicycle use, energy and ecological conservation, and careful design of urban growth. With a population of about 65,000, Davis is also home to the University of California, Davis (UCD). Of the city's population, approximately 10,000 to 30,000 are UCD students, making it a college town. A central downtown area, lack of large-scale shopping plazas, and innovatively designed neighborhoods makes Davis an easily navigable city, however the southern portion of the city is intersected by a major interstate, which separates it from the rest of Davis. Many students, faculty, and staff members of UCD in addition to Davis residents, utilized bicycle pathways to commute to work, shopping, and other errands. During the 1990's, bicycling accounted for 25% of all commuting trips, but had fallen to 17% over the last fifteen years or so. To address this issue, the city of Davis collaborated with residents, non-profits, public works departments, and other stakeholders to update and build upon their existing master plan. This plan, dedicated solely to bicycling infrastructure, promotional and educational programs, and management, was designed to encourage healthy, active living by revitalizing the city's bicycling amenities (City of Davis Public Works Department and City of Davis Bicycle Advisory Commission 2006).

Cases such as these are useful to our study as they highlight the different methods and strategies municipalities use to develop, manage, and promote their rail-trails. Of course, every town and city is different in terms of their values and funding abilities, as well as residents' attitudes towards rail-trails. It is important, then, that a variety of techniques and programs must be taken into consideration in order to support a prominent bicycle commuting culture.

Data Collection

Studies of bike trails have used many different techniques and methods in data collection, organization, and analysis. Understanding how previous research projects implemented their user surveys, obtained trail information, learned about maintenance procedures, and identified limitations gives us the information necessary to more effectively structure our research. The main goal of a trail study is to contribute information to the future management of the trail and its promotion to users.

Surveys

Bichis-Lupas and Moisey (2001) conducted a user survey on the Katy Trail in Missouri. This 237-mile multi-purpose rail-trail offers a variety of amenities to users, such as recreation, commuting, and tourism. It is the longest rails-to-trails project in the United States, and follows much of the Lewis and Clark route along the Missouri River. The authors sought to define users based on their use of the Katy Trail. By figuring out who the users were and their use of the trail, Bichis-Lupas and Moisey (2001) were able to characterize users into marketing groups and identify economic sectors that may benefit from advertising to a target customer base. The authors distributed on-site surveys to trail users during June, July, and August at different times of day, in order to capture a random sampling of summer users. Users were asked basic demographic questions, such as age, gender, annual income, education, and distance travelled to trailhead. Additionally, users were questioned about their activities on the trail, who their companions generally were, and their total trip expenditure (cost of gas to get to trailhead, cost for purchasing trail equipment, food items, among other expenses). The respondent data was statistically analyzed using ANOVA to compare the marketing groups, their habits and activities, and the cost associated with their trips. The results of their research indicated a type of user who purchases specific food and supplies for their trips on the trail, as well as how much they tend to spend on these items. This information was provided for use by local businesses and sporting good suppliers for advertising and marketing opportunities. Surveying trail-users to characterize their demographic and learn their use of the trail is also important because it allows managing entities (states, towns, and local stakeholders) to tailor maintenance to include amenities for specific activities, requirements, and preferences.

Surveying trail users can be executed in two general ways: on-trail surveys and off-trail surveys. On-trail surveys are generally administered through paper formats; however, off-trail surveys have more options in delivery through:

- Telephone
- Mail (post)
- Online surveys
- Personal in-home surveys
- Personal street intercept surveys
- Combinations of the above

The structure and delivery of a survey is important, because it controls the kinds of responses and information that can be collected and the types of research questions that can be statistically analyzed. Questions must be clear, relevant, and appropriate for the respondent, and answers must be useful to the researcher. Each question should be organized in a sequential fashion, and remain neutral in assumptions of the respondent. Questions that mislead or confuse respondents may result in unusable data and skewed results (Alreck and Settle 2004).

Rail-Trail Assessment and Mapping

A trail condition assessment which utilizes Geographic Information Systems (GIS) software and a Global Positioning System (GPS) provides the possibility of recording a large amount of trail condition data, as well as allowing the data to be visually represented with a map or map series. GIS is a computer system designed to collect, store, manipulate, analyze, manage, and display spatial data. A GPS is a satellite-based navigation system that allows the capture and storage of locational data on Earth's surface based on three or more satellite line-of-sights. Bruehler and Sondergaard (2004) conducted a trail condition assessment of fourteen all-terrain vehicle (ATV) trails in the Glenallen District in Alaska. The authors utilized GIS software and handheld GPS units to gather trail conditions along 200 miles of ATV trails, taking note of trail surface, surface condition, drainage, and trail slope, among others. The intent of the research was to establish a manageable, updatable geodatabase of trail conditions to better understand what maintenance issues need to be addressed on the trails, as well as assess the impact of trails on sensitive tundra flora and fauna species. Bruehler and Sondergaard (2004) created a trail rating system which ranked the characteristics of the trail from worst to best. They imported this information, as well as waypoint coordinates for the characteristics, photos of each point of interest, and various basemaps to provide a visual backdrop for the GPS location shapefiles into ArcMap. The resulting map of trails was overlaid with various topographic maps of the area in Alaska, color coded by overall trail conditions. They made their data and research available to ESRI users through a written compact disc with the intention that it would be utilized in other research projects. As noted in the authors' research, their work was also intended to be utilized by planning organizations to allow for specific project priority funding based on their recommendations- a goal which is similar to what SWRPC is seeking from an assessment of the Ashuelot Rail-Trail.

Rail-trail Promotion

Collecting and analyzing baseline trail data can prove to be beneficial in developing strategies which promote trails to existing, new, and potential trail users. A study in Greenville, South Carolina revealed many factors that contribute to trail usage and trail promotion among the community (Price and Reed 2014). The best qualities of the trails, which include beauty, design, and location, were mentioned as being the most important aspects for trail promoters to emphasize. Proper trail promotion allows local and visiting citizens to learn about the trails, their amenities, and the ways in which their use can benefit communities. Additionally, as more residents understand the benefits of having a pedestrian and bicycle friendly pathway located within their community, the likelihood of having a larger community support system may increase. According to the Rails-to-Trails Conservancy, Portland, Oregon has observed a steady increase in bicycling to levels five times higher than noted in 1990. This is a welcomed improvement from the initial introduction of their "Yellow Bikes" program in 1994, and a hopeful future for blossoming bicycle-friendly communities (DeMaio 2009).

The research by Pucher and Buehler (2008) suggests a different focus of trail promotion elements as the most important: safety, convenience, and designated right of way bicycle pathways separate from motor vehicle traffic. Dedyna (2014) describes the work of Trisalyn Nelson, a geographer at the University of Victoria. She developed BikeMaps.Org, a mapping website that allows bicyclists to track cycling dangers, including accidents, near-misses, washouts, and bike thefts with locations of each event. Website users may view and update this information in real-time anywhere in the world. The project is funded in part with a Capital Regional District grant of just $8,000, which is an affordable, engaging, and accessible way to collect this type of data.

In the Netherlands, Denmark, and Germany, bicycle trips comprise 27% of all trips made each year for errand cycling, commuting, and local recreational activities. The United States average of nearly 1% pales in comparison to this figure (Pucher et al. 2011). In these countries, bicyclists ride openly on designated pathways, free from the anxiety of maneuvering around motor vehicles. Riders frequently leave their helmets home, and remain unabashed by their skill level: an idea which torments many Americans into avoiding the bicycle altogether. Instead of forcing motor vehicle drivers to "share the road" and bicyclists to assert themselves alongside cars (as is typical in American biking culture), environments and infrastructure are created to protect cyclists from motor vehicle drivers in the Netherlands, Denmark, and Germany. The understanding that bicycles and motor vehicles are inherently different allows pathways to be designed with sufficient space, signage, and amenities so new and inexperienced riders may travel safely to their destinations (Pucher and Buehler 2008).

Chapter 3: Methodology and Results

Methodology and Results

To assess the viability of the ART as a commuter pathway and obtain baseline characteristics of the trail, our group employed several data collection methods including surveys, GPS, and interviews. Specific instruments include visual assessment using trail attribute forms (Appendix B), GPS receiver data collection, paper comment cards, online and paper community surveys, and interviews of local stakeholders. The following chapter details our methodology and results of our analysis of the Ashuelot Rail-Trail and its users.

Method 1: Rail-Trail Data Collection

One of the first steps of our research was trail attribute collection along the Ashuelot Rail-Trail. The Ashuelot Rail-Trail is 20.6 miles long, beginning in Keene and ending in Hinsdale, New Hampshire. Each member of our four-person group used a bicycle to ride the segments of the ART while obtaining attribute data, trail characteristics, as well as GPS waypoints and photos of certain features. We partitioned the length of the trail into approximately three mile sections, making our trail data collection outings, called ART Rides, easier to manage. Each section began at a car access point to the trail, which provided us the convenience of driving to and from outlying sections of the trail. This also allowed us to save time by not travelling the cumulative length of the trail for every segment. Beginning at the Keene trailhead south of NH Route 101/12, we were equipped with a GPS unit, camera, trail assessment forms, and comment cards. If we happened upon a group or individual using the trail during our ART Ride, we would ask them politely if they would like to fill out a comment card.

One of the goals of our project was to create an ArcGIS geodatabase detailing the attributes and conditions of the Ashuelot Rail-Trail. We developed a system to document different attributes and characteristics of the trail, such as trailheads, places of interest, viewsheds, bridges, changes in trail surface, road crossings, parking for trail access, stop signs, and other features. Each attribute or characteristic was assigned a corresponding GPS waypoint and photo. Finally, each waypoint and attribute was then recorded on a paper Rail-Trail Assessment form. We designated a fifty foot buffer zone between each waypoint to accomplish two things: to alleviate GPS inaccuracy issues, and to space the waypoints out to make an aesthetically pleasing final map.

GPS waypoints and line segments were downloaded to a computer using DNRGPS, a software program that allows the transfer of GIS information from the GPS to the computer. With the "track" feature turned on in the GPS, a line segment is drawn, ultimately creating the route of the Ashuelot Rail-Trail. The marked waypoints created a point shapefile and the "track" created a separate line shapefile which were later joined together in ArcMap.

The process we used to attach attributes to line segments along the trail is called Linear Referencing. The first step we took after organizing our data in a Microsoft Excel spreadsheet was to highlight the points where there was any trail surface change, trail moisture change (wet or dry), or trail texture change (smooth to rutted). Trail surface materials include stonedust, gravel, dirt, sand, and grass. Trail moisture is based on whether the rail-trail is >50% dry or >50% wet. Trail texture describes the terrain and level of erosion between smooth, lightly rutted, or very rutted. Each line segment between points displays a change in one of these attributes. An Excel sheet was created for each attribute, one each for surface, moisture, and texture. After importing each attribute Excel file to ArcGIS, the Create Routes tool was used to convert our GPS line file into a single route that displayed measured locations. After breaking the X,Y locations into three categories, the Locate Features Along Routes tool was used to locate features along the trail route that signified changes in surface, moisture, and texture. This tool then converted the X,Y locations into measured distances. We created a shapefile from each of the three event tables and added a new field which would contain the score for that condition. Then, a Line Intersect was performed to combine each of the three attributes into one line.

We then ranked the attributes based on a number scale where low numbers represent the best trail rideability conditions and high numbers represent the worst rideability trail conditions. Once we did this, we calculated a final score field by summing up each attributes' ranks using the Field Calculator tool. Rankings were broken down into seven categories: excellent, very good, good, average, needs improvement, poor, and impassable. Sections of trail that received a final ranking score of three were categorized as an 'excellent' rating, a score of four was categorized as 'very good', a score of five was categorized as 'good', a score of six was categorized as 'average', a score of seven was categorized as 'needs improvement', a score of eight was categorized as 'poor', and a score of nine was categorized as 'impassable'. The final score field is represented by a color ramp that displays the overall trail rideability (Appendix C-5).

A final Excel spreadsheet containing attributes such as the location of bridges, culverts, viewsheds, obstructions, and other features was created along with the waypoint number which represented the features' locations along the Ashuelot Rail-Trail. The major attributes in this Excel file were then added to our Ashuelot Rail-Trail line segment in ArcGIS. These attributes are represented by labels on the final map (Appendix D).

Results

We collected a total of 181 waypoints along the ART. Of these, fifty-four were used to represent changes in trail condition: twenty-one trail surface changes, eighteen trail moisture changes, and fifteen trail texture changes. Using Linear Referencing, we were able to generate a linear feature that contained multiple overlapping sets of attributes and conditions associated with various segments. The advantage of this approach is that data can be updated without having to change the geometry of the line, instead all edits can be made just to the attribute table. We created a series of four maps: one map represented changes in surface material, the second map represented changes in trail moisture, the third map represented changes in trail surface, and the final map represented the aggregate of all attributes. By using Linear Referencing, we were able to create clear, informative, and attractive maps of the ART and its related attributes and characteristics (Appendix C-5).

Keene contains approximately two and a half miles of the ART, as well as other paths including the Cheshire Rail-Trail, the Jonathan Daniels Trail, and the Appel Way Trail which extend to other parts of the Monadnock region (Keene Comprehensive Master Plan Steering Committee 2010). The Keene portion of the ART is in excellent condition. Much of the surface is paved or maintained with stonedust, the shoulders are regularly cleared of brush, there is clear signage for identifying road crossings and hazards, and culverts provide adequate drainage of the trail (Figure 5).

Figure 5: Ashuelot Rail-Trail at Krif Road Trailhead, Keene.

The town of Swanzey contains about six miles of the Ashuelot Rail-Trail, the bulk of which is in excellent condition (Figure 6). Swanzey boasts a newly resurfaced four mile section of the trail, and maintains brush, potholes, signage, and standing water fairly well, with the exception of the last few hundred yards before Winchester. This area needs particular attention, as it includes standing water, is unsurfaced (dirt and grass instead of stonedust), and contains some washouts along the trail.

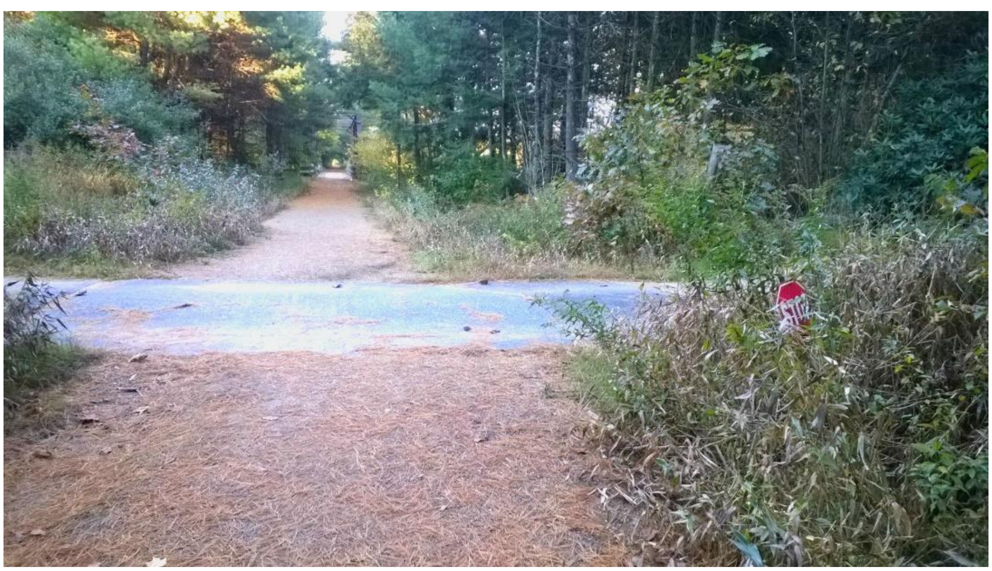


Figure 6: Ashuelot Rail-Trail in Swanzey, driveway crossing.

Winchester contains approximately nine miles of the Ashuelot Rail-Trail, the largest portion of the trail within the region (Figure 7). The condition of this portion of the ART is quite varied, being very good in some parts and average in others. As we detail later in this report, many areas of the trail remain unsurfaced (grass, dirt, or sand), brush is left untrimmed, poor drainage results in standing water and washed out culverts, and relatively little signage is posted for walkers, bicyclists, and horseback riders. The winter maintenance of the trail is better, as local snowmobiling organizations volunteer to groom trails and maintain proper signage (C. Redfern, member of the Bicycle/Pedestrian Pathway Advisory Committee, October 2014).

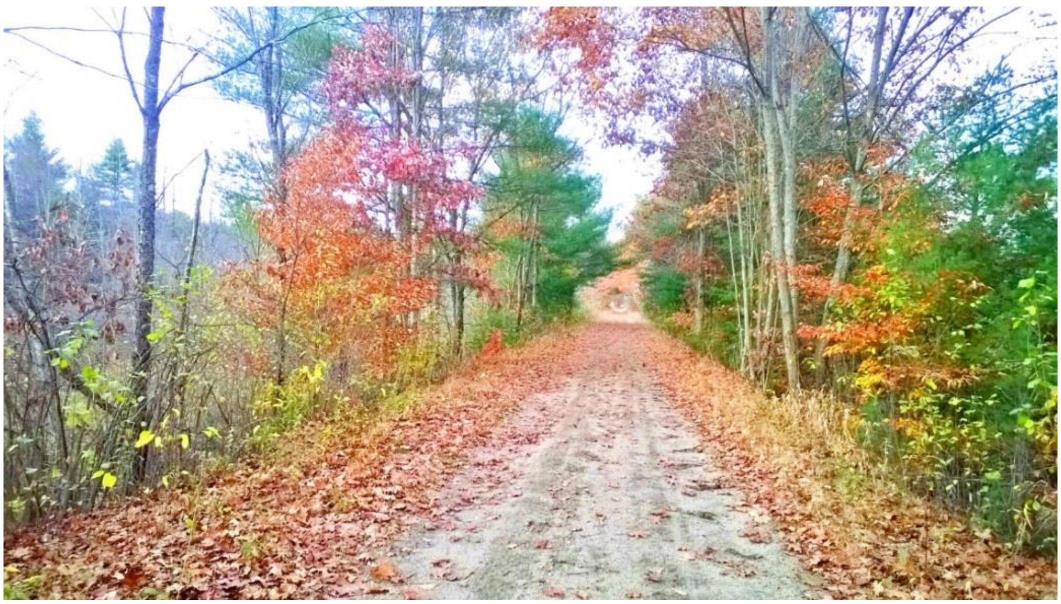


Figure 7: Ashuelot Rail-Trail in Winchester.

The Ashuelot Rail-Trail covers about three and a half miles through Hinsdale, and much of this is a sharp contrast of fairly well maintained areas and very poorly maintained areas (Figure 8). In a three-mile stretch, the surface of the trail changed widely from stonedust, to rocks, to dirt and grass. Some areas of the trail were smooth, while others were heavily rutted and difficult to traverse. Proper signage was not well maintained through Hinsdale. The signs that did exist were efforts attributed to the local snowmobiling organizations.

Figure 8: Ashuelot Rail-Trail in Hinsdale.

Method 1A: Bike Counts

In order to accurately capture data on the usage of the ART, we collaborated with SWRPC to obtain bike count data. SWRPC employees set up a total of seven rubber pneumatic tube counters at key locations along the ART. Before deployments of the counters, a laptop with the counter software program allows the employees to set the time and location on each counter. When deployed, the tube spans the width of the trail and is connected to air sensors on the side of the trail. Each time a bicycle rides over a rubber pneumatic tube, the sensor recognizes the air pressure change in the tube and stores the data as a count, where the counts and distance between counts are accessed later through the counter software program. The tubes and sensors were left at each point on the trail for one week in order to observe a variety of conditions. After one week, the tubes and sensors were collected, and the data was downloaded and analyzed to determine the number of bicyclists that had used each section of the trail. The counter software splits counts into fifteen minute intervals for each day. It also collects the time of the count and delineates an AM and PM peak, which demarcates the two times of day with the most bicycle traffic. The peak summarizes an hour where the most bikers rode over the tubes. Using our weekly sample data count, we can determine when people use the trail and better understand the patterns of bike usage on the trail.

Results

The bike counters were deployed from September 30, 2014 through October 21, 2014, and counted a total of 364 bikes. Four counting tubes were deployed in Winchester, two in Swanzey, and one in Hinsdale (Table 2). The Winchester counts had morning peaks ranging from 9:30am-10:45am with a maximum of four bicyclists per hour. Winchester's evening peaks ranged from 5:00pm-6:45pm with a maximum of five bicyclists per hour. The Swanzey counts had morning peaks ranging from 11:00am-12:15pm with a maximum of four bicyclists and evening peaks ranging from 3:15pm-4:15pm with a maximum of five bicyclists per hour. The Hinsdale bicycle count came up with zero registered counts, showing the lack of usage in this area. The low counts may also be attributed to the time of year in which this information was collected. Autumn represents the latter part of bicycling season in New England. Results may have been more substantial if data were collected during the summer peak of the biking season.

Table 2: Bike counts and locations provided by SWRPC.

Count Location	Town	Total Counts	Counts per Day
West of Depot Street	Hinsdale	3	0.42
North of Eaton Road	Swanzey	61	8.71
North of Sawyer's Crossing Road	Swanzey	169	24.14
North of Elm Street	Winchester	78	11.14
South of Coombs Bridge Road	Winchester	14	2
West of Gunn Mountain Road	Winchester	26	3.71
West of NH Route 119	Winchester	13	1.86
Total		364	9.54

Method 2: Surveying Community Members

In order to collect feedback from Ashuelot Rail-Trail users, two surveys were developed. The first was a 5x8" comment card consisting of eight questions (Appendix A). Questions include what town the subjects are from; their age range; how often they use the trail; during which season or seasons they use the trail; what specific kinds of activities they use the trail for; if they use the trail for recreation or commuting; where the individual commutes to (if applicable); and how the individual would rate the overall quality of the trail. These were distributed in person to walkers and bicyclists on the Ashuelot Rail-Trail and took just a few minutes to complete. They were distributed and immediately collected from respondents.

The second survey, the Ashuelot Rail-Trail Commuter Survey, was developed using Qualtrics software and was distributed both in person and via e-mail. Qualtrics allowed survey questions to be built and organized online, and provided a direct URL link to our survey. This link was sent to potential respondents via e-mail from a list of email contacts provided by our interviewed stakeholders. When a person completed the survey, all answers were recorded in an Excel spreadsheet. This survey was the larger and more in-depth of the two, designed to target local business owners, employees, and community members. Its focus was to identify commuting trends of respondents, and more specifically whether individuals use rail-trails for commuting purposes (Appendix E). Some questions on the survey were similar to the comment card survey, such as age and place of residence, but the survey also distinguished whether or not the respondent was a college student. Questions regarding general commuting habits were broken down into four categories to learn how an individual commutes to work, school, grocery shopping, or any other regular errand. Within these categories were subcategories that asked how far subjects commuted to their destinations, how many times they commute there per week, and what mode of transportation they use to get there.

The next section of the survey asked if individuals used rail-trails for commuting purposes. If they answered yes, a follow-up question identified which trail or trails they use. Survey takers were presented with a simple map of popular bicycle paths in Keene which included the ART (Figure 9).

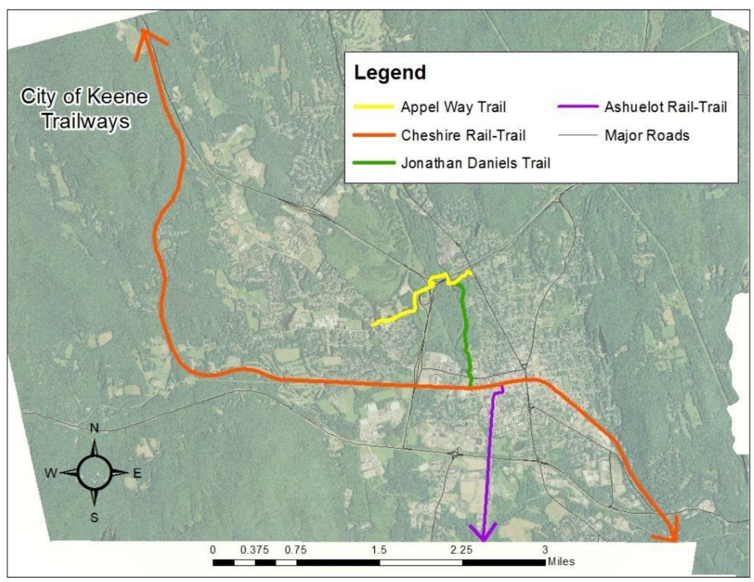


Figure 9: ART Survey Trail Reference Map. Source of NH GRANIT and authors.

If they answered no, the follow-up question asked why they do not use the rail-trail system for commuting. The last question asked if an individual's employer provided incentives for using non-motorized means of transportation when commuting to work.

Targeted survey subjects included college students, snowmobile club members, local business employees, city planners, stakeholders, and local residents. Targeted local businesses and employees consist of those along Main Street in Keene. The survey respondents came from a variety of backgrounds, which allowed us to collect from a diverse sample population. Survey distribution and collection took place in person and online from September 2014 through November 2014.

Results

Comment Cards

Twelve responses were collected through the on-trail comment card survey. The age of respondents varied widely. Though the sample was small, it provided us with some context of how diverse the population of ART users may be (Figure 10). The responses also revealed that the majority of these Ashuelot Rail-Trail users utilized the trail for recreation purposes rather than commuting purposes. Nine of the twelve respondents stated that they utilized the trail solely for recreation. The most popular activities according to survey takers are walking, running, and bicycling. Users identified snowshoeing and crosscountry skiing as typical wintertime trail activities. It came as some surprise that eight of the twelve respondents use the trail year-round, as we assumed many people chose to use the trail mainly in the warmer months. Most users identified the trail as being in "excellent" and "good" condition as opposed to

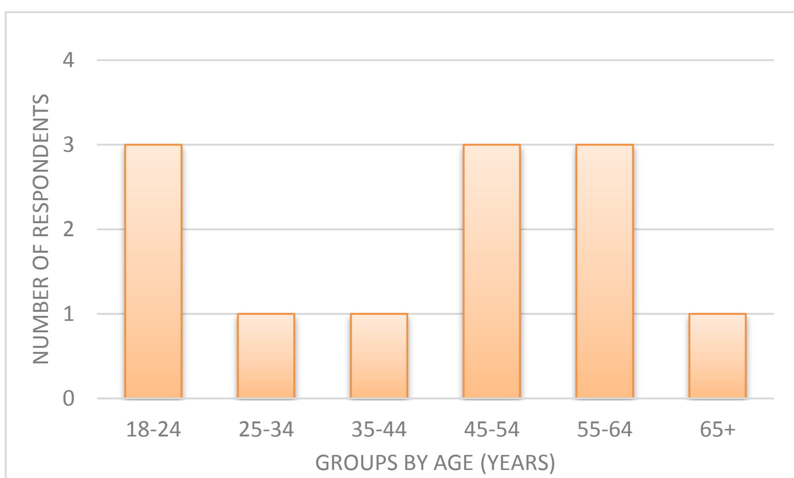


Figure 10: Distribution of respondents' age as indicated on comment cards.

"poor" or "needs improvement." Ultimately, these comment cards provided an interesting look into trail user habits, however statistical analyses could not be run due to an insufficient number of responses.

Ashuelot Rail-Trail Commuter Survey

In total, eighty-three complete responses were collected through the paper and online Ashuelot Rail-Trail Commuter survey. This provided a good foundation for statistical analysis between groups, and allowed us to observe trends among trail users themselves including their commuting habits. We obtained surveys from thirty-three college students from the area (enrolled at Keene State College, Antioch University of New England, River Valley Community College, or another institution) and from fifty non-student respondents. The towns of residence for respondents were more varied than we expected. While most respondents hailed from Keene or Swanzey, some travelled further for work and school, such as Ashburnham, Massachusetts and White River Junction, Vermont (Table 3).

Table 3: Respondents' town of residence as indicated on the ART Commuter Survey.

Town of Residence	Number of Respondents	Town of Residence	Number of Respondents
Ashburnham, MA	1	**Surry, NH**	1
Charlestown, NH	1	**Swanzey, NH**	18
Jaffrey, NH	3	**Walpole, NH**	1
Keene, NH	49	**Westmoreland, NH**	1
Marlow, NH	1	**White River Junction, VT**	1
Nashua, NH	1	**Winchester, NH**	1
Nelson, NH	2	**Worcester, MA**	1
Pelham, NH	1		

While the deliberate inclusion of students as part of our survey sample led to a skew among age groups, we collected responses from every age group, which provided a diverse sample of the local population (Figure 11). Thirty-eight respondents fell within the 18-24 year old bracket, while other respondents fell in older age brackets. We wanted to hear from respondents of all ages because the opinion of each local resident is important in understanding the needs and habits of trail users.

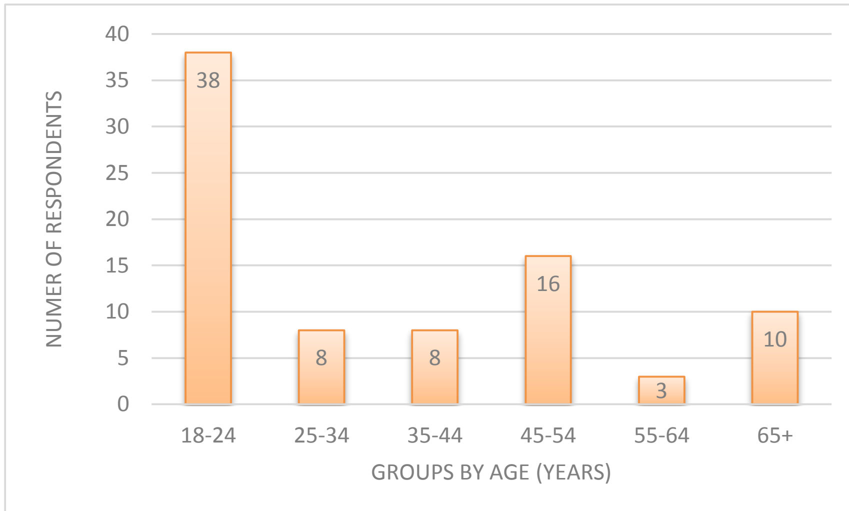


Figure 11: Distribution of respondents' age as indicated on the ART Commuter Survey.

We also looked at respondents' commuting habits to work, school, and grocery shopping. Of the eighty-three total respondents, seventy respondents provided commuting habits to work. Thirty-two respondents identified themselves as college students, whereas thirty-eight identified themselves as non-students. Fifty-three respondents indicated that they commuted to work by car (Figure 12). These numbers were not unanticipated, as most people in the United States commute to work by personal vehicle (United States Department of Transportation 2009). Bicycling to work was much less popular, with only nine respondents completing trips by bicycle. We were surprised to see that as many as thirty-three respondents commuted to work by walking or running.

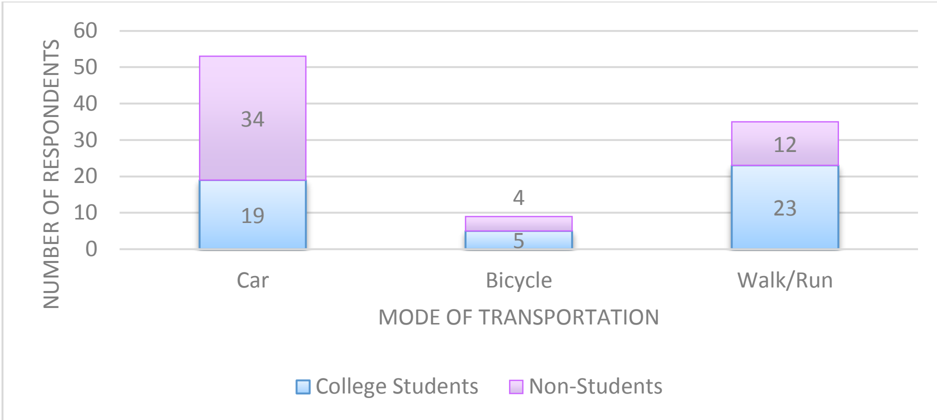


Figure 12: Respondents' mode of transportation when commuting to work.

We also analyzed college student respondents' commute to school. Of the thirty-three respondents who indicated that they were college students, only ten drove their car to campus which is not much different than their commute to work (Figure 13). Additionally, just seven respondents reported bicycling to school. This was an unexpected result, as we assumed that a larger number of students would commute to campus via bicycle given the low numbers who use a car to get there. In fact, twenty-six respondents utilized walking or running to commute to campus. This may not be that unusual, considering most Keene State College students live on or within one mile of campus.

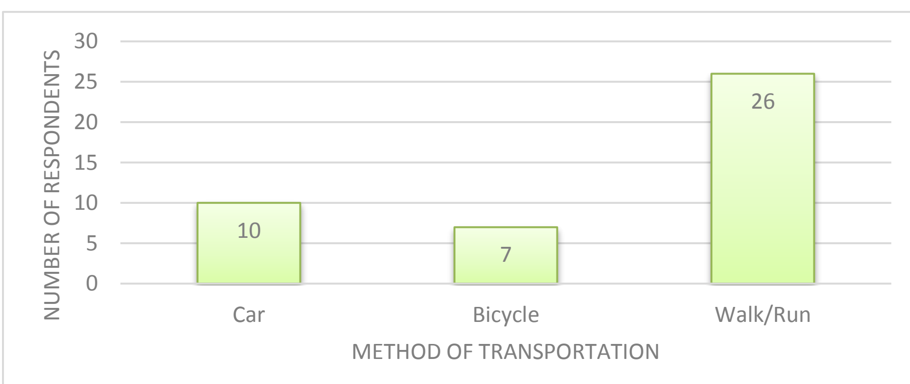


Figure 13: Respondents' mode of transportation when commuting to school.

We also surveyed for commuting habits to grocery shopping centers. Of the total eighty-three respondents of the survey, seventy-eight respondents provided commuting habits for grocery shopping. Thirty-one respondents indicated that they were college students, whereas forty-seven indicated that they were non-students. Seventy respondents indicated that they commuted by car for grocery shopping, while just six travelled by bicycle, and six by walking or running (Figure 14). While there are many local grocery stores in the Mondanock region within walking distance to many neighborhoods, the amount and weight of grocery items is often too difficult for someone to carry or strap to their bicycle. It came as no little surprise to us that the majority of respondents drive a personal vehicle to and from grocery shopping destinations.

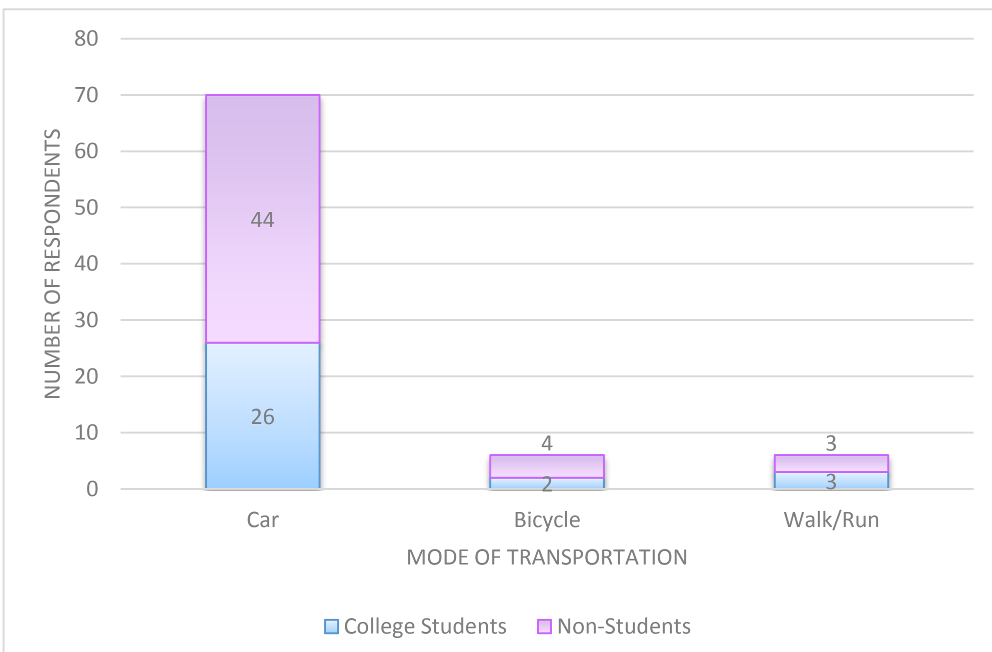


Figure 14: Respondents' mode of transportation when commuting to grocery shopping destinations.

One component of our research was assessing the ART as a viable commuter pathway. When asked if respondents used any of the trails for commuting purposes, sixty said they did not, while just twenty-three responded that they did. This result was unexpected, as we assumed that because the trails connect rural areas to more urbanized downtown centers like Keene, more people would utilize these pathways. Of the respondents who answered that they did use the trails for commuting purposes, the majority indicated that they utilize the Cheshire Rail-Trail and the Ashuelot Rail-Trail to get to their destination (Figure 15).

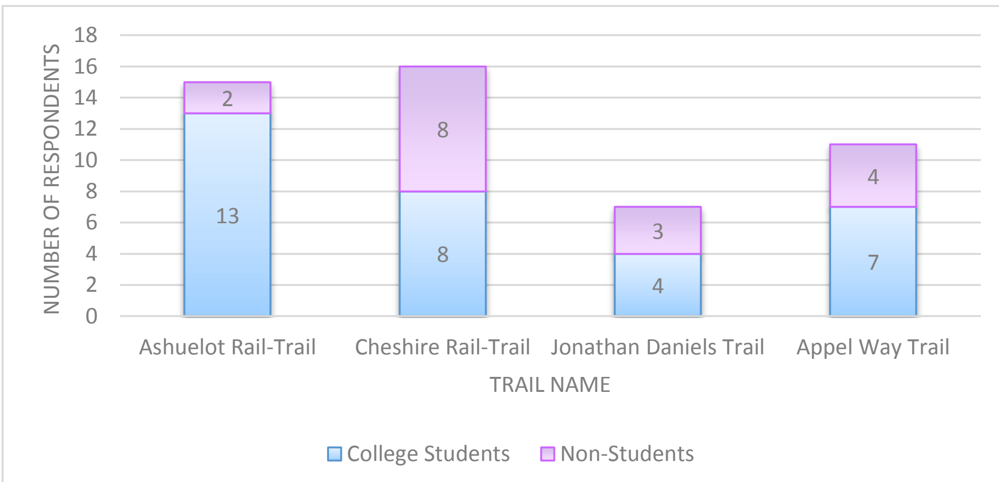


Figure 15: Respondents' use of trails for commuting purposes.

Several respondents also indicated that they used the Jonathan Daniels Trail and the Appel Way Trail to commute. This network of trails connects a variety of neighborhoods, work places, and local destinations. The Appel Way Trail, located within the city of Keene, connects much of West Keene to Cheshire Medical Center on Court Street. Many elementary schools can be accessed via this route as well. The Jonathan Daniels Trail, also referred to as the Ashuelot River Trail, connects the Appel Way Trail to West Street through Ashuelot River Park. West Street and adjacent roadways allow access to many businesses, such as the Colony Mill Marketplace, as well as to Antioch University of New England. The Jonathan Daniels Trail intersects the Cheshire

Rail-Trail, and continues south towards Keene State College. The Cheshire Rail-Trail can bring trail users from the town of Walpole into the Keene downtown area, as well as vice versa. In Keene, the Cheshire Rail-Trail also connects residents from West Keene and Southeast Keene directly into the city's Main Street hub.

Respondents who answered that they did not utilize the trails for commuting purposes indicated that the main reason is that their destination is too far, meaning that using the trail would mean going out of their way or less time efficient compared to using a car. Several other reasons were identified by respondents as preventing their use of the trails for commuting purposes, including not having a bicycle, feeling unsafe, unpredictable changes in weather, and that the condition of the trail is unsatisfactory (Figure 16).

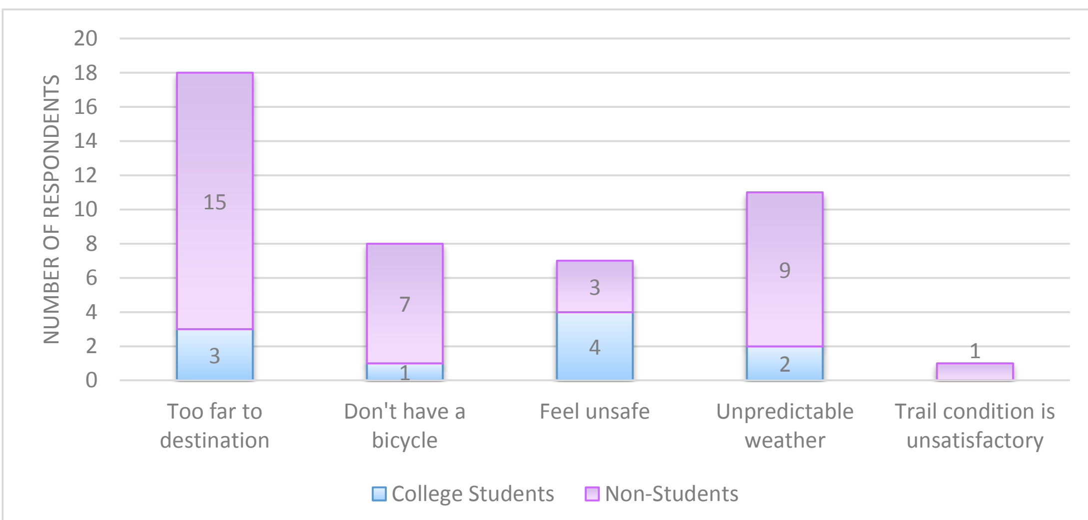


Figure 16: Respondents' reasons for not using the trails to commute.

Lastly, we surveyed respondents to see whether they were aware of any incentives their employer offered for commuting to work by non-motorized transport. Of the sixty-seven respondents who were employed, fifty-four claimed that their employer did not offer employee incentives, four respondents indicated that their employer did offer incentives, and nine respondents were not sure.

Statistical Results

Our group wanted to determine basic commuting habits of respondents. Because most college students live on or within one mile of the college campus, we assumed that many students did not have a car or if they did, used it very little. We assumed they tended to keep their car trips to a shorter amount of time than non-student respondents. To determine the significance of this hypothesis, we ran a statistical analysis in SPSS.

We hypothesized that college students tended to spend less time traveling to work compared to non-student respondents. Therefore our null hypothesis is:

H_o - There is no significant difference between college students and non-student respondents in the time travelled to work.

We measured two independent groups: the number of respondents who answered whether they were a college student and those who were not. The variable was the length of time they spent commuting to work, therefore, we ran an independent two sample t-test. Some student respondents were confused by a question asking about the area they live in while at school and their commuting habits associated with the area. Instead of indicating that they lived within the Monadnock Region during the school year, they answered about their commuting habits within their hometown. We considered these as invalid responses, and removed them from the statistical analysis.

In our t-test, we assumed equal variance and set the confidence level at 95%, for a threshold value of 0.05. Our results showed that the Sig. (two tailed) value of 0.018 is less than 0.05, which means that we rejected our null hypothesis (Table 4). This indicates that there is a significant difference in the time travelled to work between college students and non-student respondents. It is important to note the mean minutes travelled by each group as well: college students, on average, travel about five minutes to work, whereas non-college respondents travel about sixteen minutes to work.

Table 4: T-test for significance of time travelled to work between college students and non-student respondents.

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variances Assumed	-2.417	68	.018	-10.628	4.398

Group Statistics	N	Mean	Std. Deviation	Std. Error Mean
College Students	32	5.19	6.775	3.904
Non-Students	38	15.82	24.063	1.198

We were also curious to learn if there was a significant difference in trail use for commuting purposes between college students and non-college respondents. We assumed that because most college students live in Keene close to the popular trails, that they would use the trails more than non-college respondents. To test the significance of this hypothesis, we ran a statistical analysis in SPSS.

We hypothesized that college students used the trails for commuting purposes more than non-student respondents. Therefore our null hypothesis is:

H_o - There is no significant difference between college students and non-student respondents in the use of trails for commuting purposes.

We measured two independent samples: college students and non-college students, and whether or not they used the trails to commute. Because this was a binary response (yes or no), we ran a Chi-Square test.

In our test, we assumed equal variance and set the confidence level at 95%, allowing a threshold value of 0.05. Our results showed that the Asymp Sig. (two sided) value of 0.015 is less than 0.05, which means that we rejected our null hypothesis (Table 5). This indicates that there is a significant difference between college students and non-student respondents in trail use for commuting. It important to note the cross tabulation of the test: fourteen college students use the trails to commute, while nineteen do not, and nine non-student respondents use the trails to commute, while forty-one do not.

Table 5: Chi-Square test for significance of trail use between college students and non-student respondents.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.920[a]	1	.015

Group Statistics	Yes	No	Total
College Student	14	19	33
Non-Student	9	41	50
Total	23	60	83

It is helpful to note here, that none of the eighteen respondents from the town of Swanzey indicated that they used the trails for commuting. At first, this may seem surprising, as Swanzey lies just south of the major urban economic center of Keene, where many residents commute for work. Swanzey, in fact, contained some of the worst trail conditions, despite their recent efforts to improve trail surface. The impassable portion of the trail may be just enough to deter many Swanzey residents, depending where they reside within Swanzey, from accessing their work destination via the Ashuelot Rail-Trail.

Additionally, we offered respondents the option to provide commuting habits for another regular errand which they do more than twice a month. Seventy-four respondents provided another regular errand they commute to (Figure 17). The most popular errand was going to the bank, with twenty-four responses. Going to the laundromat was the second most popular errand, with seven responses, followed by going to the gym, with five responses. We had assumed that more college students would go to the bank than non-students, because students often receive periodic financial support from family members. We were interested to see that the number of respondents who commuted to the bank were almost equally divided between college students and non-students. Thirteen college students indicated going to the bank as their additional regular errand, while eleven non-students indicated they also went to the bank more than twice a month. In general, the bulk of these respondents commuted there about once a week on average and did so by using a personal vehicle.

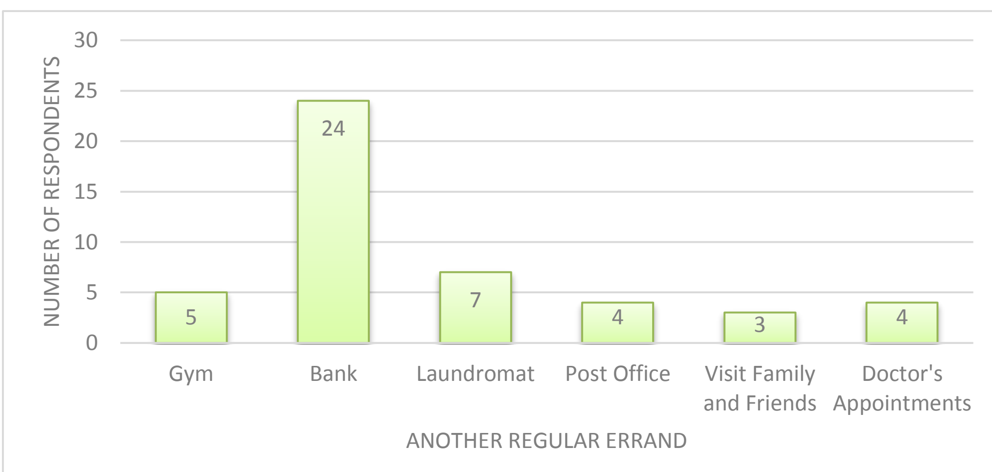


Figure 17: Respondents' other regular commuting errands as indicated on the ART Commuter Survey.

Method 3: Interviewing Stakeholders

In addition to our surveys and trail assessment, we also used interviews with key individuals to gain additional insight about the ART and the potential for commuting. The interview process began with identifying local stakeholders from towns containing sections of the rail-trail. Individuals and organizations were chosen for their experience with, and knowledge of, the Ashuelot Rail-Trail. By choosing interviewees from different areas, we were able to gain perspectives from each community's rail-trail experiences and needs. Through our questions, we were able to gain valuable information about the ART including local ownership of the trail, history, funding, management, future and current projects, data, commuting trends and what each stakeholder would like to see from our project. Stakeholders included members of local cycling and snowmobile clubs who frequently use the trail, city planners, transportation planners, and local citizens. Interviewees were asked a series of general questions about the ART, including history of the trail, maintenance and funding of the trail in their area, major organizations invested or interested in the trail, and future aspirations they have for their community's section of the ART. The questions were specifically developed to be general, so as to allow the 'semi-structured' interview to remain open to new directions in conversation.

The first stakeholder we interviewed was Chuck Redfern. Mr. Redfern is an employee for the City of Keene, a member of Bicycle/Pedestrian Pathway Advisory Committee (BPPAC) of Keene, and a member of Pathways for Keene. Mr. Redfern's knowledge of the local rail-trails as well as his town planning background made him an ideal candidate for the interview. A local active citizen, Greg Pregent, was interviewed next because of his cycling experience. Mr. Pregent is the Chair of BPPAC, and is also a member of the Monadnock Radio Group. Margaret Sharra is a town planner for the Town of Winchester who was contacted but not interviewed because of her lack of knowledge about the trail. While Ms. Sharra was a valuable contact, she was unable to provide us with information regarding the Ashuelot Rail-Trail. Ms. Sharra provided our group with several contacts for snowmobile clubs and organizations, and email contacts of individuals who were part of the group to whom we sent the online Qualtrics survey. Our final interview consisted of two Swanzey Town employees, Sara Carbonneau and Bruce Bohannon. Ms. Carbonneau is the Swanzey Town Planner and Mr. Bohannon is the Swanzey Emergency Management Director as well as a snowmobile enthusiast. Ms. Carbonneau and Mr. Bohannon were chosen because of their trail knowledge, which was gained through voluntary maintenance of the Swanzey section of the Ashuelot Rail-Trail.

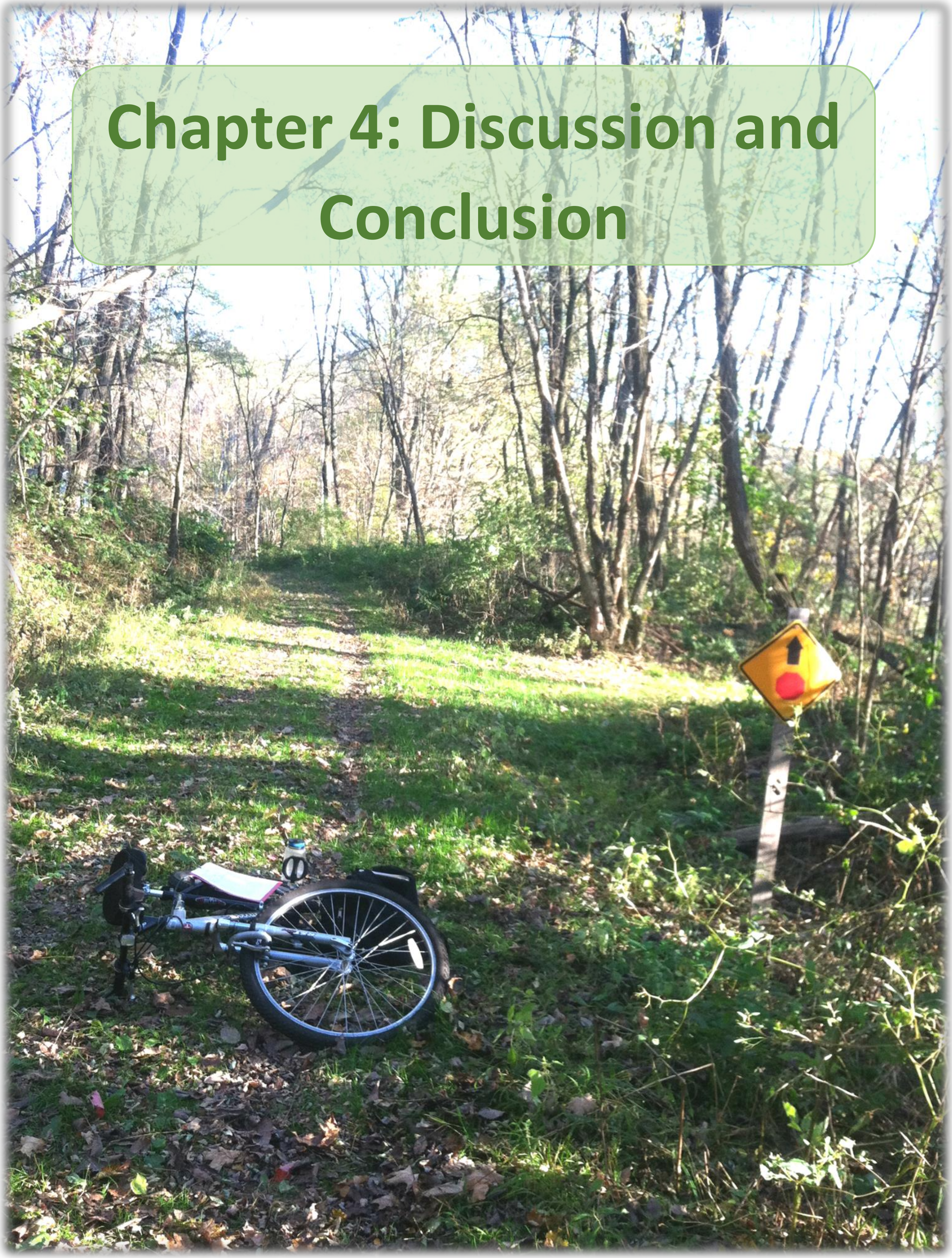
Results

After compiling the information from our interviews, we analyzed our responses from each subject. We found similar ideas, problems, and concerns from each stakeholder. These included the need for more maintenance of the Ashuelot Rail-Trail. The majority of the people we interviewed stated that once large projects were completed, the maintenance was frequently ignored by the State. Mr. Redfern stated, “The State of New Hampshire is lacking as a rail-trail steward”. Mr. Pregent added that a section of the ART was “destroyed” by the large tires of PSNH vehicles when employees were attending to a power line. With little signage warning ATVs users to avoid using the trails, the tires of these large motor vehicles also contribute to aggressive trail wear and surface erosion. Additionally, many stakeholders felt that a regional cycling and rail-trail committee was needed, similar to BPPAC in Keene, but more inclusive to the rest of the region. This would result in more comprehensive rail-trail management and use throughout the entire Ashuelot Rail-Trail. Mr. Bohannon, an avid snowmobiler, mentioned, "Swanzey trail management is performed by local volunteers and snowmobile clubs", a statement which illustrates the burden placed on community members with little funding. Further, Mr. Pregent included the general lack of basic trail signage, parking, and amenities for trail users. Designated parking areas are few and far between, mile makers, and trail kiosks are virtually non-existent. Benches, restrooms, and other areas to rest are also not included on this trail.

Funding was also a key topic because some projects are being planned without the promise of financial support. Both Ms. Carbonneau and Mr. Bohannon provided our group with valuable information for the town of Swanzey regarding trail funding and projects. The consensus was that if any projects were to be funded, a public-private partnership was needed. Groups and organizations are currently working together to develop such partnerships, and Southwest Region Planning Commission was identified as an important entity in that collaboration. Projects were typically joint-funded by two towns involved in the project, as well as privately funded by individuals and local businesses. For example, the North Bridge was a $2.3 million project that was public-privately funded. The maintenance of the ART in Keene is a three-way partnership between the city of Keene, Keene State College and Pathways for Keene.

While logistical information such as ownership and funding of the ART was plentiful, there was a general lack of knowledge about commuting trends and trail use among the stakeholders we interviewed. Each person stated that they were aware of several individuals who used the Ashuelot Rail-Trail to commute to work, but were not able to provide any additional information. The recommendations that we provide based on our interviews is that each town requires more funding for improved rail-trail maintenance and the planning of future projects, as well as developing a collaborative, regional rail-trail committee.

Chapter 4: Discussion and Conclusion



Discussion

Our observations and analysis in this study reveal that the current commuting trends on the Ashuelot Rail-Trail are quite limited. Out of the eighty-three complete responses that we collected in our survey of the community, just fifteen respondents indicated that they used the Ashuelot Rail-Trail to commute to work, school, grocery shopping centers, and to other destinations. Additionally, only one out of twelve respondents of the comment card survey indicated they commute along the ART. In light of this information, we have provided recommendations and discussion points in this chapter.

Accessibility

The Ashuelot Rail-Trail technically begins near the shopping complex known as the Center at Keene, and continues southward, adjacent to the Keene State College Campus (KSC). This paved portion of the trail offers a convenient way to access the KSC athletic fields and West Street shopping centers from the College, and many students use it as a means to do so. Continuing south, however, the path is intersected by NH Route 101/12, a major highway which connects Keene and the Monadnock Region to points east and west (Figure 18). This section of road is very busy, with 22,000 cars a day coming and going with a posted speed limit of 40 mph from a major intersection to the east and a large rotary to the west (Southwest Region Planning Commission 2014). Instead of crossing the highway, our group chose to turn around and take a common detour: back around campus past the Redfern Arts Center along the College Trail, which runs underneath NH Route 101/12 via a pedestrian underpass bridge, meets with Martell Court south of NH Route 101/12, and leads over another bridge to the KSC Athletic Complex. According to Cote et al. (2014), the College Trail is well utilized: on average, 20 people an hour use this trail during warmer months. The authors note that this trail is often used as a practice trail for the KSC Cross Country team; however they observed bicyclists and other pedestrians as well. The College Trail is not incorporated into the Keene pathways system, and instead is maintained by Keene State College. This trail, however, provides a safe connection from the College campus, and completely bypasses NH Route 101/12. From here, the path makes its way to the athletic field parking lot and west on Krif Road, where it is intersected by the Ashuelot Rail-Trail. The difficulty in this is that the detour is a confusing, unsigned route along sidewalks and roadways. Bicyclists must yield to people walking along the narrow pathways between the athletic fields. Additionally, there are no signs that inform trail users of this informal detour; so many likely brave the traffic and risk great injury. There is a plan to develop a South Bridge over NH Route 101/12, similar to the North Bridge; however the scheduled completion date is 2023, which is a long way off for a desperately needed project. Our recommendation is to temporarily incorporate the College Trail as an official detour route, complete with proper signage and trail maps, for the Ashuelot Rail-Trail in order to bypass NH Route 101/12.

Figure 18: NH Route 101/12 intersecting the Ashuelot Rail-Trail in Keene.

In addition to Mr. Pregent's comment about lack of accessibility, we discovered that there are not many official trailheads or points of access along the route, which may prevent people from utilizing the trail. Even though the trail closely follows major highways on its journey from Keene to Hinsdale, many drivers are likely unaware that it exists. Simple pullouts with signs would help promote its visibility and use. Part of the success of bicycle pathways in the Netherlands, Denmark, and Germany has also been attributed to their expansive networks in which trails are intersected with other trails, which lead to additional trails, thereby allowing users to commute to many different areas using the same path system (Pucher 2008). Currently, the Ashuelot Rail-Trail is a single corridor that connects Hinsdale to Keene, and only meets up with other trails near downtown Keene. It is our recommendation that stakeholders and managing organizations consider developing new trails that connect the ART to other regional trails, and establish routes to local neighborhoods, schools, shopping centers, downtown locations, and other typical destinations and place signs with maps at these locations.

Promotion, Trail Information, and Maintenance

Several other features of the ART and greater Monadnock trail system need to be reassessed in order to address the needs of trail users. Promotion of the regional trails is uncoordinated and disjointed because it is not any one organization's responsibility. Independent and non-profit organizations, such as Pathways for Keene, provide valuable information and several maps of the area, however stewardship is not clear. Lack of signage leaves visitors unsure about who is in charge, who to contact about information or maintenance, and why the trail is important. Information is available online, including a basic trail map and specifics of the trail, such as length and relative difficulty; however the information available on each website varies greatly. Additionally, there is only one trail information kiosk along the entire

20.6 miles of the trail. This kiosk, located in Winchester, provides a snowmobiling map for trail users in winter months. This is useful for snowmobilers and other winter recreationalists, however it is underutilized for trail users at any other time of year. As discussed earlier, various snowmobiling clubs maintain the trails during the winter and help to promote the trails through word of mouth, however year-round maintenance tends to fall on the towns which the trail runs through. Often, these towns do not have the funding or manpower to properly maintain the trails, and some portions are left unattended and disregarded. It is our recommendation that mile markers, information kiosks with year-round trail maps, and other amenities be established along the length of the trail to better serve the interests of trail users. Because of the limited funding each town receives, it may be best for towns to submit grant proposals to the State of New Hampshire to fund these projects.

Many of our interviewees cited the need for a regional bicycle planning organization: an entity that consists of local stakeholders from each town, willing to develop a strategic plan to better promote and maintain the trails. Our recommendation for Southwest Region Planning Commission and other interested parties is to utilize our research as a starting point in the development of an informed and comprehensive plan of action. Interested parties may utilize our data, maps, and recommendations for this purpose. Further, our research could be used to generate an online mapping service, available as a Public Participation geographic information system (PPGIS), much like Tristalyn Nelson's project outlined on page 29 of this report. PPGIS is an online program in which users may access the service directly from any computer or mobile phone to see up to date weather information, trail surface changes, bicycling accidents, and other important events, as well as provide updated information themselves. Nelson's research has provided Victoria, British Columbia with an effective, efficient, and low-cost tool to manage bicycling trends, issues, and requirements in the area. This could be useful to towns in the Monadnock region who are interested in this kind of project. It is easier than employing an entire workforce dedicated to managing and operating the trail, as well as being affordable and accessible by anyone in the region who has internet access.

Conclusions

Limitations of our study include funding, time, knowledge, and resources. We worked without any funding from Keene State College or outside sources. This gave us limited resources to work with and hindered us from collecting further data. This project took place over the course of one collegiate semester, or about five months. If more time was allotted to work on this project, more comprehensive results and data could have been collected. If this project was investigated over the course of a year, for example, there would be more data collected because most people use rail-trails in summer months. This would have led to broader survey results and more responses to both surveys.

Additionally, specific groups of people could have been targeted in our survey and analyzed to see what trends hold true for them. Spreading the research and data collection over the summer would have yielded interesting results as there are significantly fewer college students in Keene during the summer months. In receiving responses from our surveys, it was evident that some individuals were confused by what the term "commuting" actually referred to. In speaking with respondents, we learned that many individuals believed commuting only involved how they get to and from work. We explained that this was only a portion of what commuting meant. When people make a plan to travel to their destination, whether that be to work, school, shopping centers, or any other place, they are commuting. If we created a survey that initially explained this or addressed this issue, we may have received different results.

Overall, this project sought to assess the physical condition of the Ashuelot Rail-Trail and identify commuting trends that may develop in relationship to these trail characteristics. While many factors were analyzed in developing the ranking of the entire trail, ultimately the portion of the trail that runs through Keene is in the best condition (Appendix C-5). The worst portion of the trail, however small, runs through Swanzey, past a section of trail newly resurfaced this past summer. Keene's section is comprised of packed stonedust and is relatively smooth while Swanzey's section changes surfaces frequently and has many drainage problems. This caused several areas of the trail in Swanzey to be inundated with standing water. Thus, while some surfaces in Swanzey may have been paved with stonedust, the amount of standing water and issues in other segments of the trail elevated its rank to worse conditions.

In terms of commuting, only about one-third of survey respondents said they use rail-trails for commuting purposes. According to our statistics, there is low use of the rail-trails among non-student respondents. This may be due to the proximity of the trail to respondents' homes and commuting destinations, as the most common response indicates that they do not use the trail because the trail is not convenient for them to use; it would require them going out of their way. Despite this, according to our survey, the Ashuelot Rail-Trail is the second most popular rail-trail in Cheshire County used for commuting purposes. This information reaffirms the necessity in developing a more expansive trail network, convenient for more than just college students to access. Further, it was rewarding to see that many non-trail users did not cite that the trails were in poor condition. This shows that although they do not use the trails, respondents generally feel that the physical condition of the trails is not the main concern. Although there are significant plans for the future of the Ashuelot Rail-Trail, many are not in the immediate future. The current trend for rail-trails is that they will be used primarily for recreation. That could change if more people are made aware of the benefits of using rail-trails. Moreover, the viability of the ART as a commuter pathway is substantial, however this potential is latent. With the inclusion of our recommended elements, the Ashuelot Rail-Trail could soon be a trailblazing alternative to commuting within the Monadnock region.

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Appendix A: Comment Card

Ashuelot Rail-Trail (ART) Comment Card

What town are you from? ________________________

What is your age? (Circle one)

Under 18 18-24 25-34 35-44 45-54 55-64 65+

How often do you use the Ashuelot Rail-Trail? (Circle one)

Daily Weekly (days per week) 1-2 3-4 5-6 Occasionally

In which seasons do you use the ART? (Circle all that apply)

Winter Spring Summer Autumn

What do you use the Ashuelot Rail-Trail for? (Circle all that apply)

Commuting Recreation Other: _______________

If you are commuting, where do you go? (Circle all that apply)

Work School Shopping Other: ___________ Not Applicable

What activities do you participate in on the ART? (Circle all that apply)

Walking/Running Biking Snowmobiling Horseback riding

Snowshoeing/Skiing Other: ________________

How would you rate the quality of the ART? (Circle one)

Needs Improvement Average Good Excellent

Who Are We and What Do We Want?

We are a group of Keene State College Geography students working on a Seminar Project that focuses on acquiring basic information about the Ashuelot Rail-Trail and its users. The information you give us will provide a statistical foundation in our geographic research. We hope the data we gather from users like you will supply local stakeholders with the information they need to better maintain the rail-trails and other alternative transportation projects in the Monadnock region.

We thank you for your support!

Additional Comments:

____

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____

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Appendix B: Rail-Trail Assessment Form

Rail-Trail Assessment Form

Data Collection Date:

Datasheet For Segment:

Approximate Segment Length:

Recent Rainfall: Today Within 3 Days >Within 1 Week Unknown

Direction of Travel: Outbound Inbound (toward Keene is inbound)

Waypoint #	Attributes	Surface(2)	Condition(3)	Suitability(4)	Photo ID

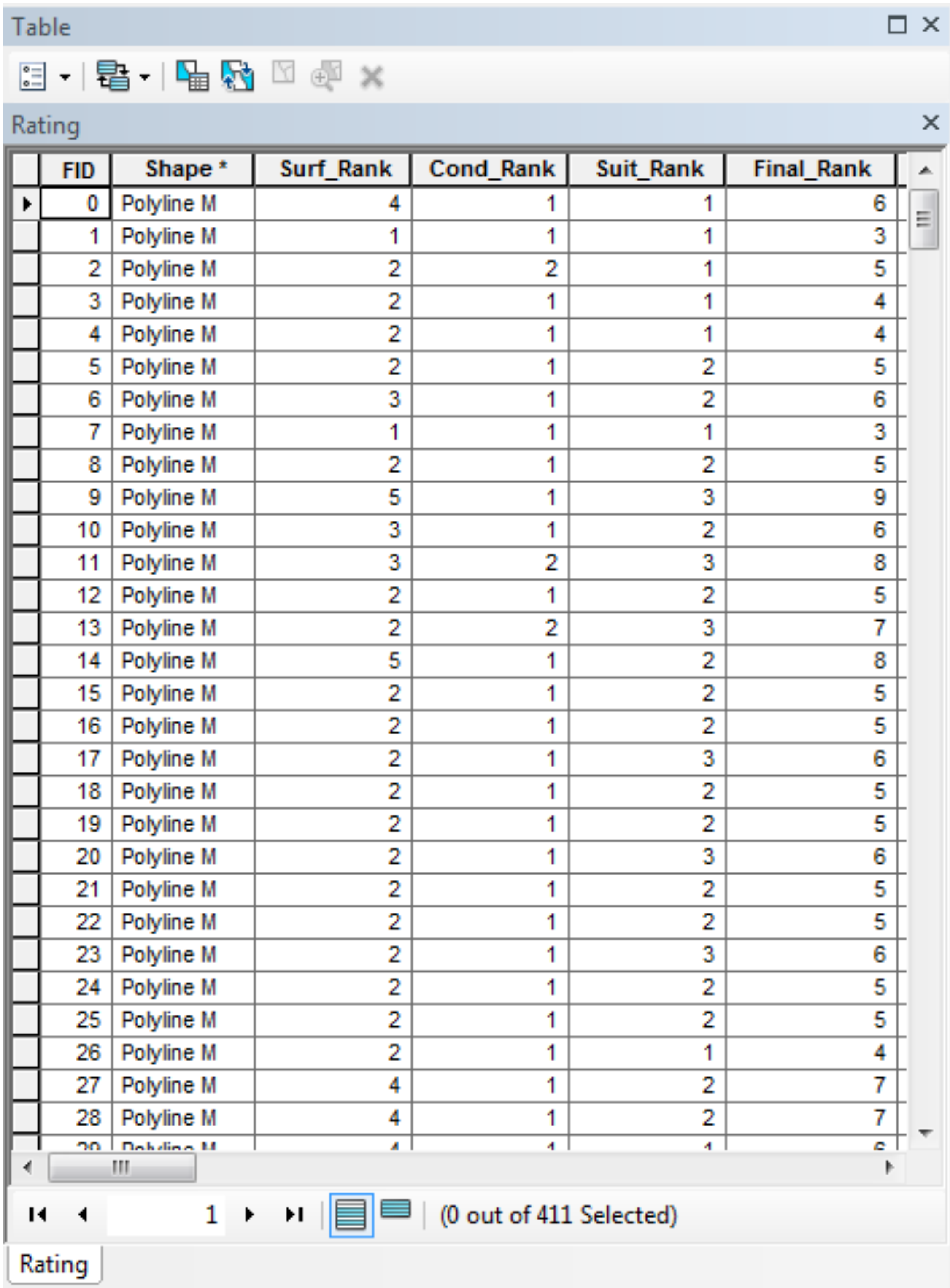
Trail Point Attributes

1. Trailhead
2. Trail surface (paved, concrete, dirt, gravel, stonedust, sand, grass, other)
3. Trail condition (> 50% dry, > 50% wet, standing water/puddle, other)
4. Surface suitability (smooth, lightly rutted, very rutted, other)
5. Parking (name nearest road)
6. Road crossing (road name, approx. width)
7. Visible structure (provide distance and description)
8. Sign (describe)
9. Trail branch (direction & destination if known)
10. Gate (describe condition)
11. Natural obstruction or hazard (tree down, washout, other)
12. Bridge (describe condition)
13. Culvert or drainage (describe condition)
14. Bike (describe evidence)
15. Horse (describe evidence)
16. Snowmobile (describe evidence)
17. ATV (describe evidence)
18. Motor vehicle (describe evidence)
19. Informal trail (describe evidence)
20. Point of interest (viewshed, rail depot, pond, lake, other)

Off Trail Points of Interest *Please provide distance to nearest trailhead, point name, and description of attribute.

a. Lodging
b. Shopping
c. Food
d. Large worksite
e. Entertainment

Appendix C-1: Rideability Ranking Attribute Table



Table

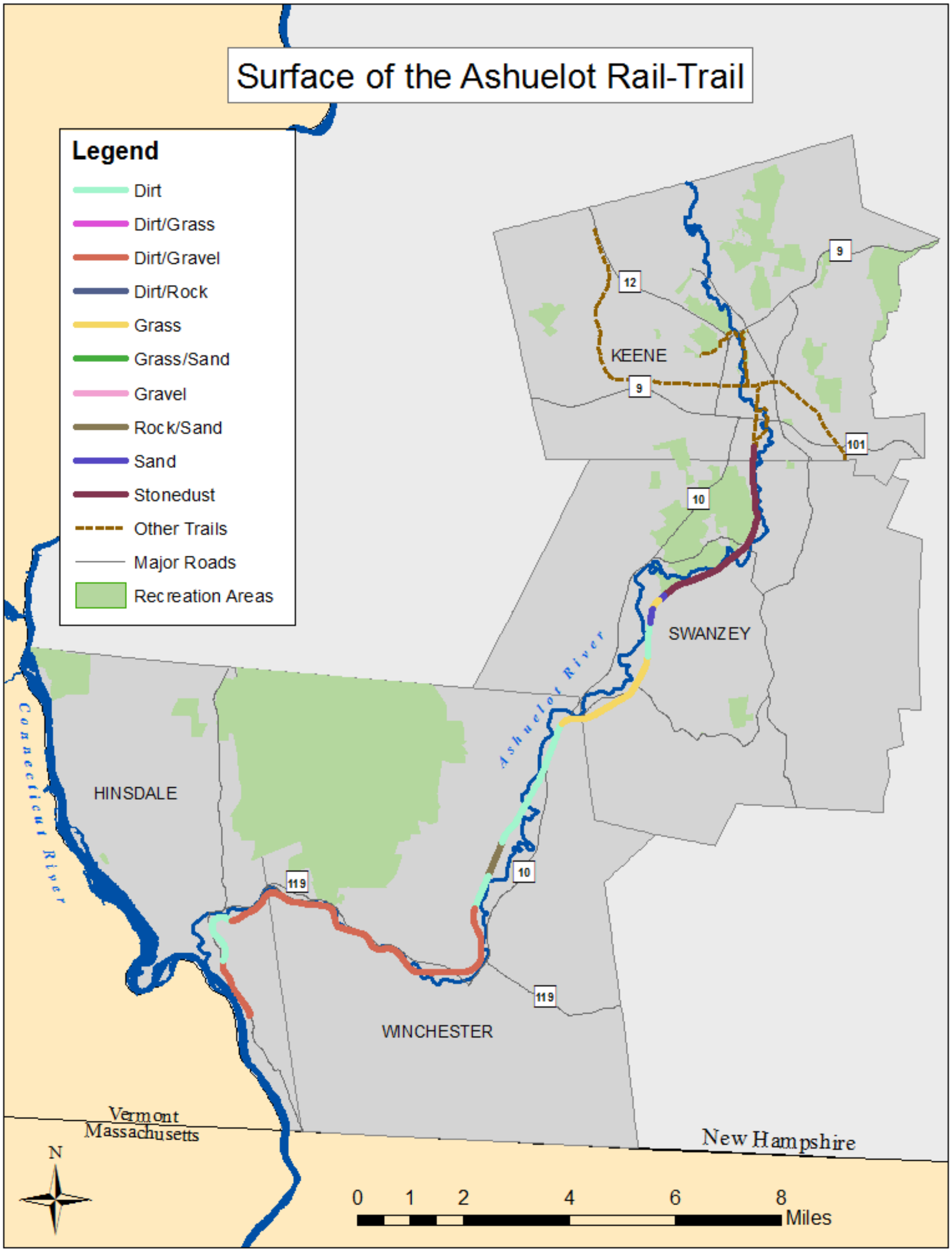
Rating

FID	Shape *	Surf_Rank	Cond_Rank	Suit_Rank	Final_Rank
0	Polyline M	4	1	1	6
1	Polyline M	1	1	1	3
2	Polyline M	2	2	1	5
3	Polyline M	2	1	1	4
4	Polyline M	2	1	1	4
5	Polyline M	2	1	2	5
6	Polyline M	3	1	2	6
7	Polyline M	1	1	1	3
8	Polyline M	2	1	2	5
9	Polyline M	5	1	3	9
10	Polyline M	3	1	2	6
11	Polyline M	3	2	3	8
12	Polyline M	2	1	2	5
13	Polyline M	2	2	3	7
14	Polyline M	5	1	2	8
15	Polyline M	2	1	2	5
16	Polyline M	2	1	2	5
17	Polyline M	2	1	3	6
18	Polyline M	2	1	2	5
19	Polyline M	2	1	2	5
20	Polyline M	2	1	3	6
21	Polyline M	2	1	2	5
22	Polyline M	2	1	2	5
23	Polyline M	2	1	3	6
24	Polyline M	2	1	2	5
25	Polyline M	2	1	2	5
26	Polyline M	2	1	1	4
27	Polyline M	4	1	2	7
28	Polyline M	4	1	2	7

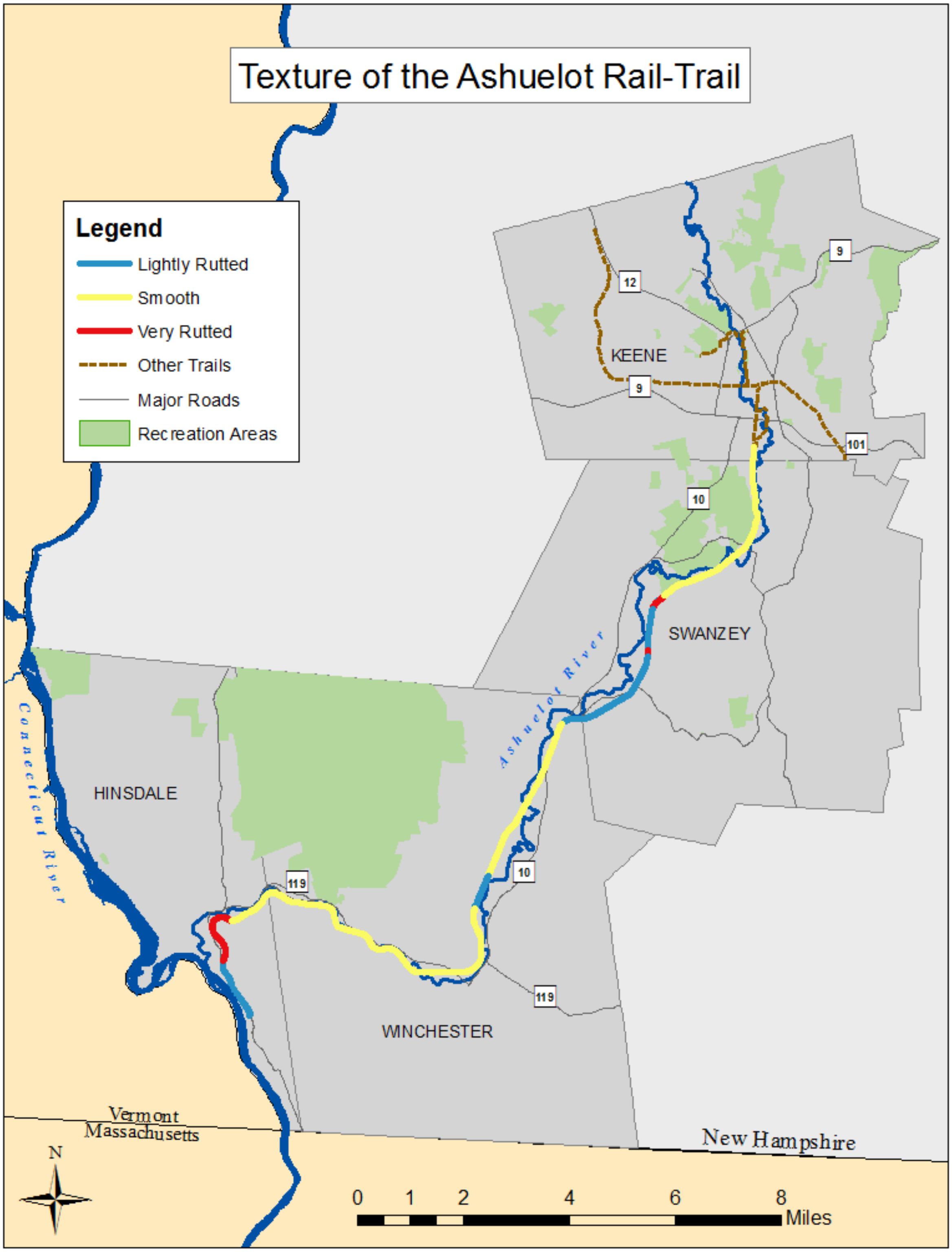
1 (0 out of 411 Selected)

Rating

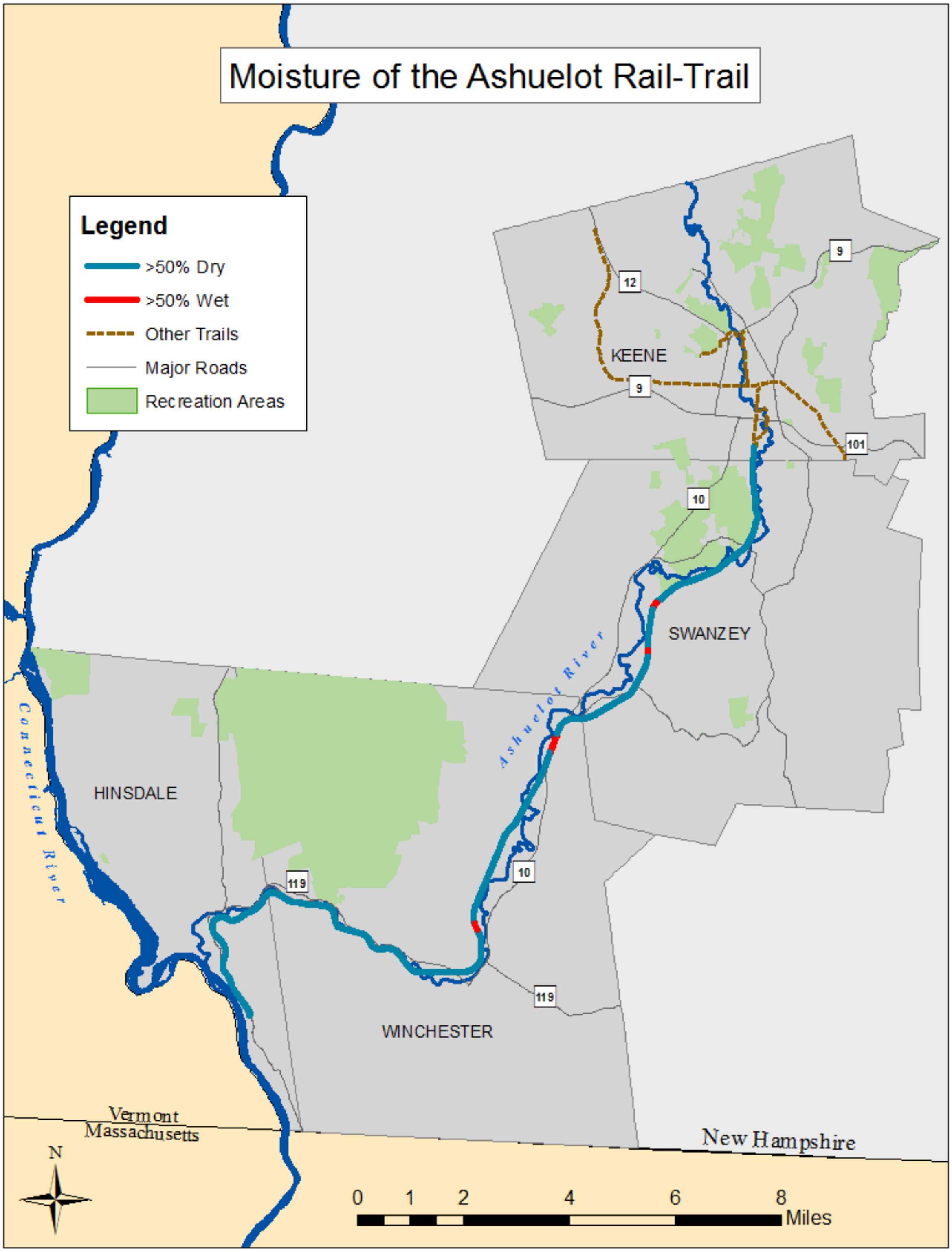
Appendix C-2: Map of Surface Material on ART



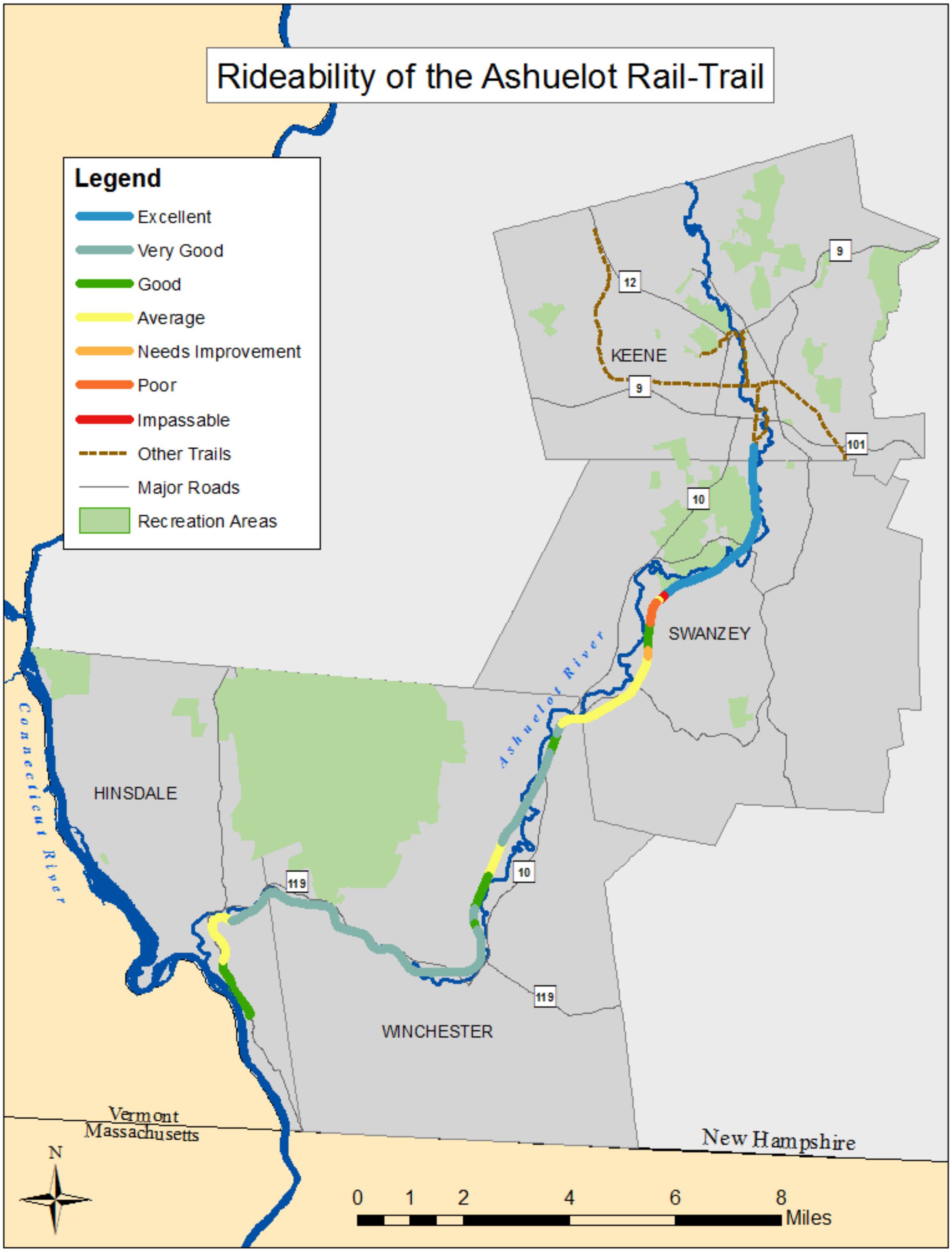
Appendix C-3: Map of Surface Texture on ART



Appendix C-4: Map of Surface Moisture on ART

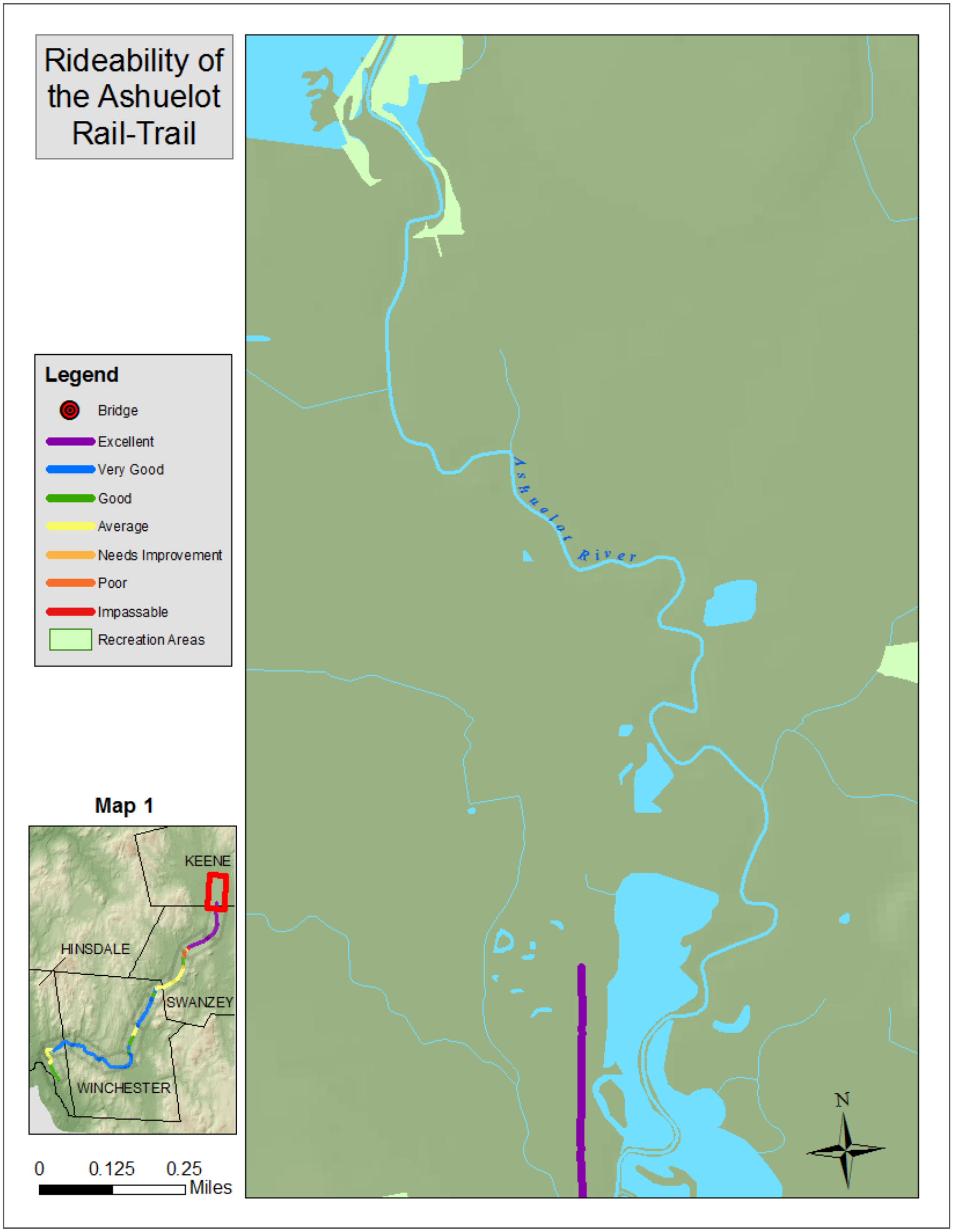


Appendix C-5: Map of Overall Rideability on ART

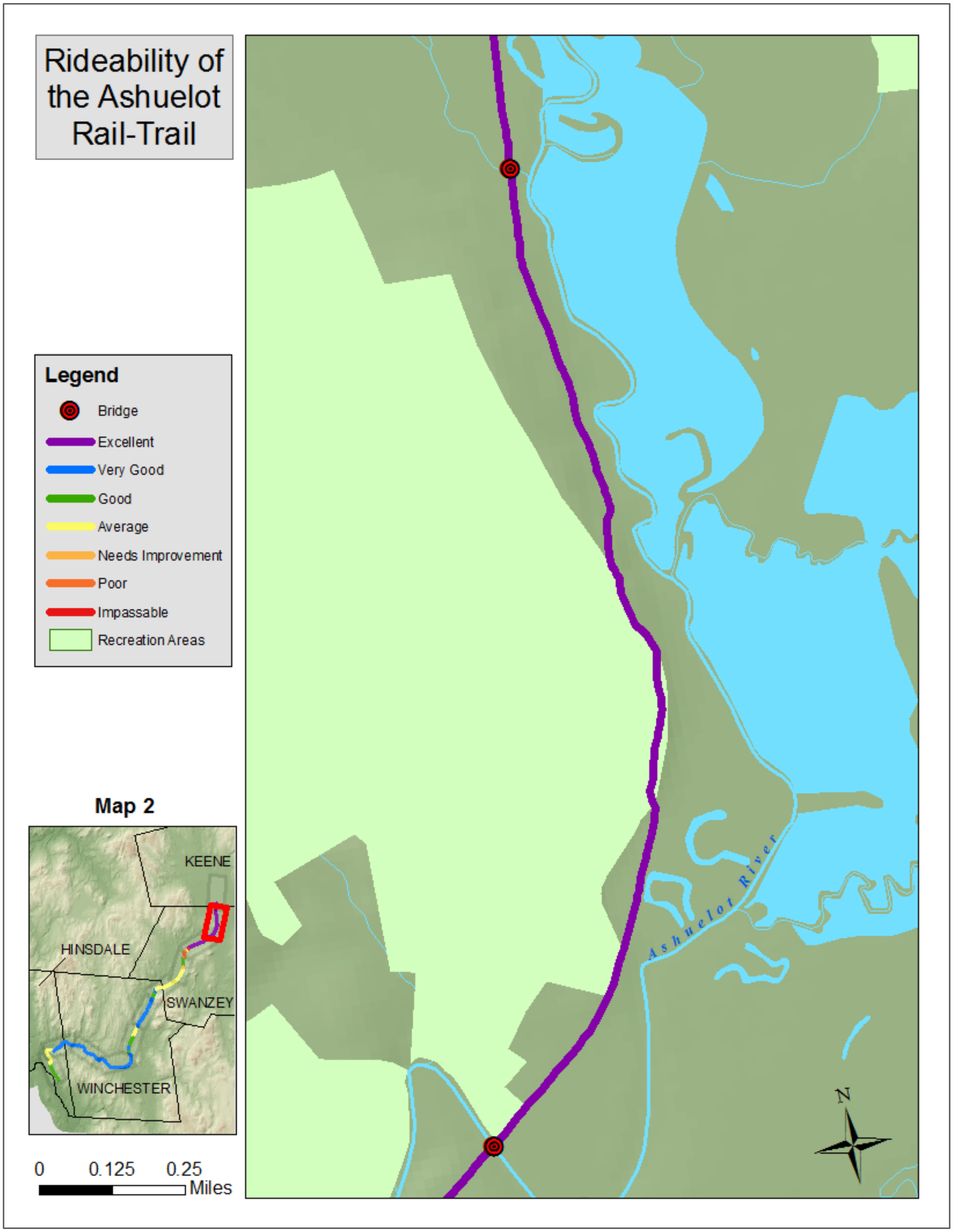


Appendix C-6: Strip Map of Rideability on ART

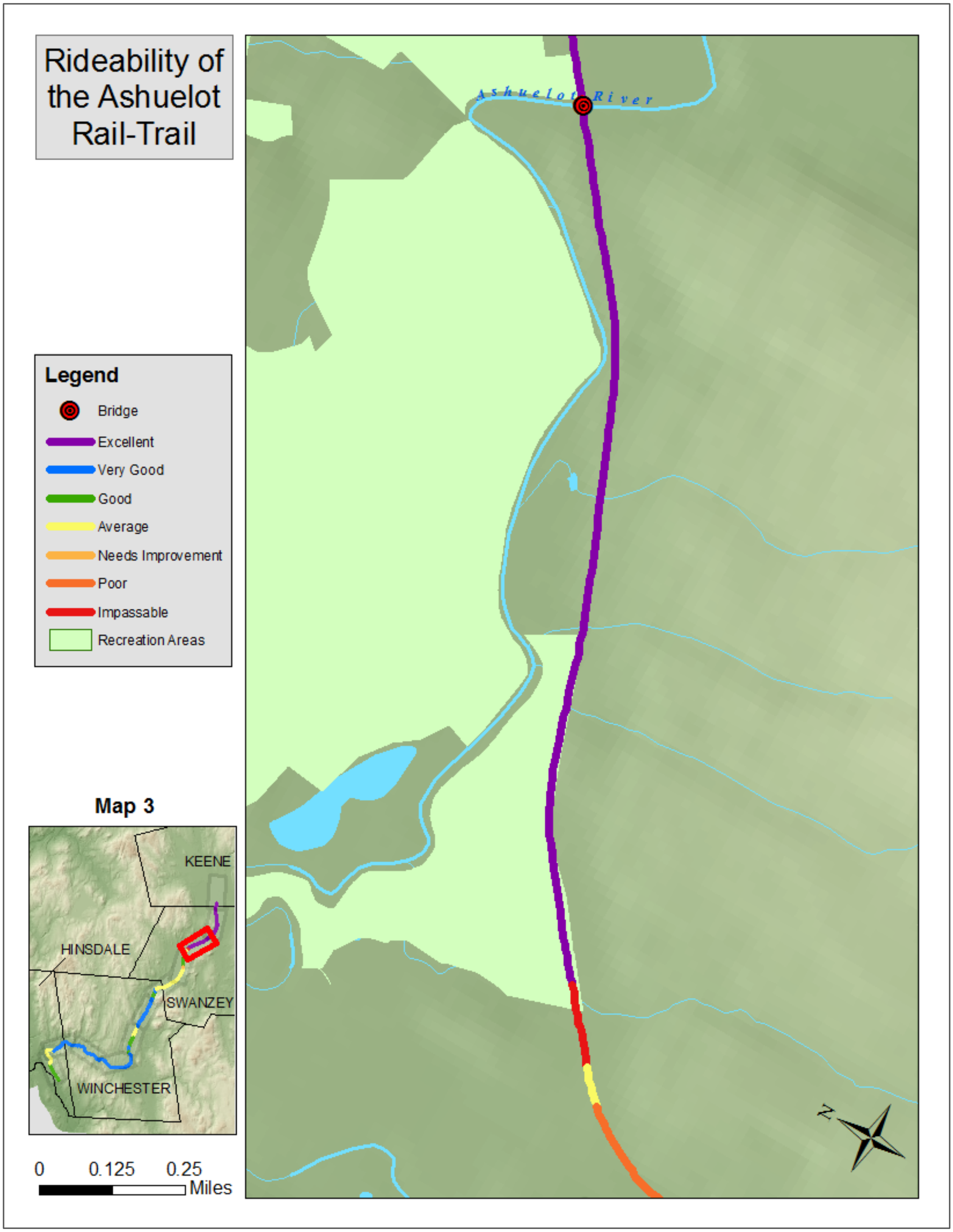
Map 1



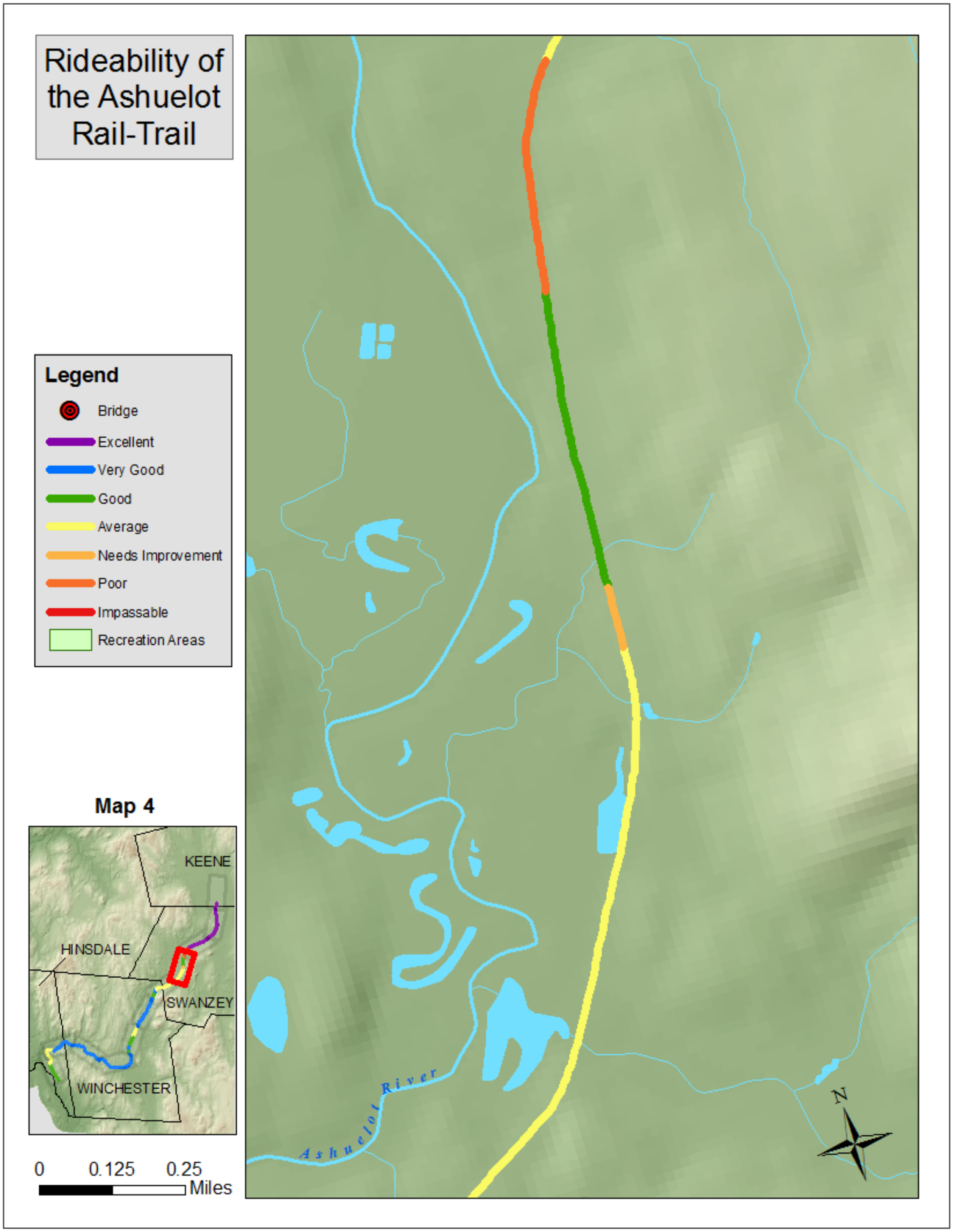
Strip Map of Ashuelot Rail Trail: Map 2



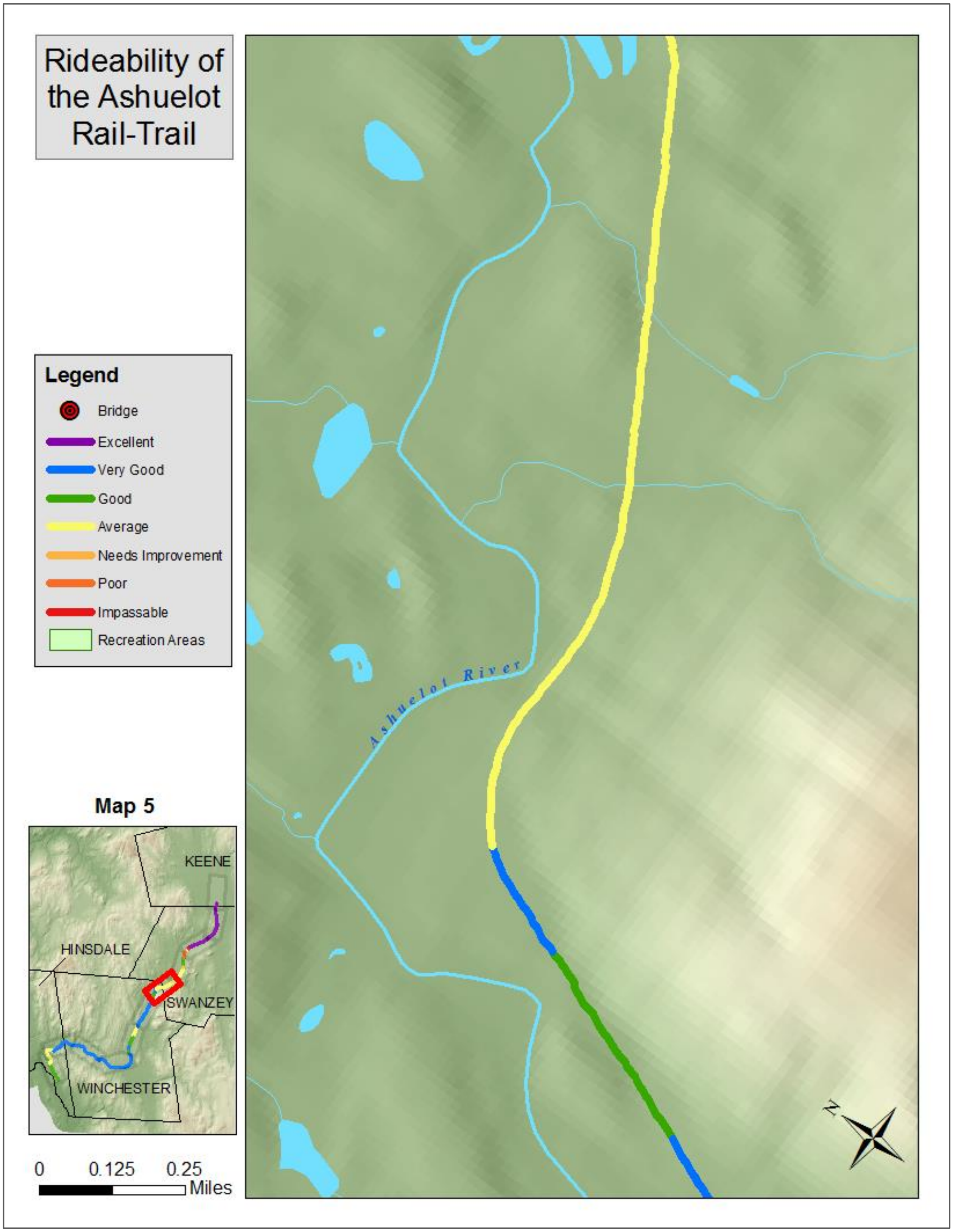
Strip Map of Ashuelot Rail Trail: Map 3



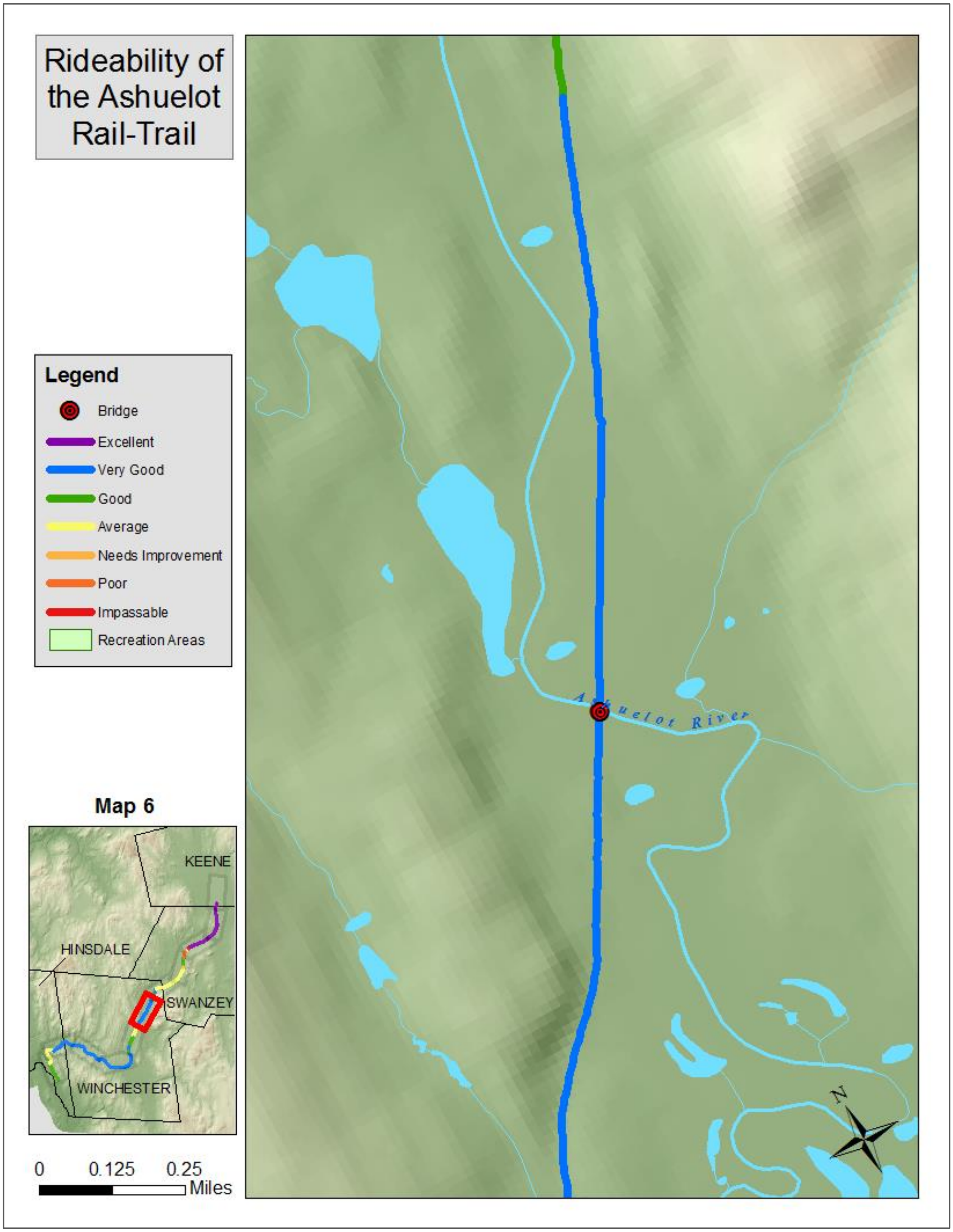
Strip Map of Ashuelot Rail Trail: Map 4



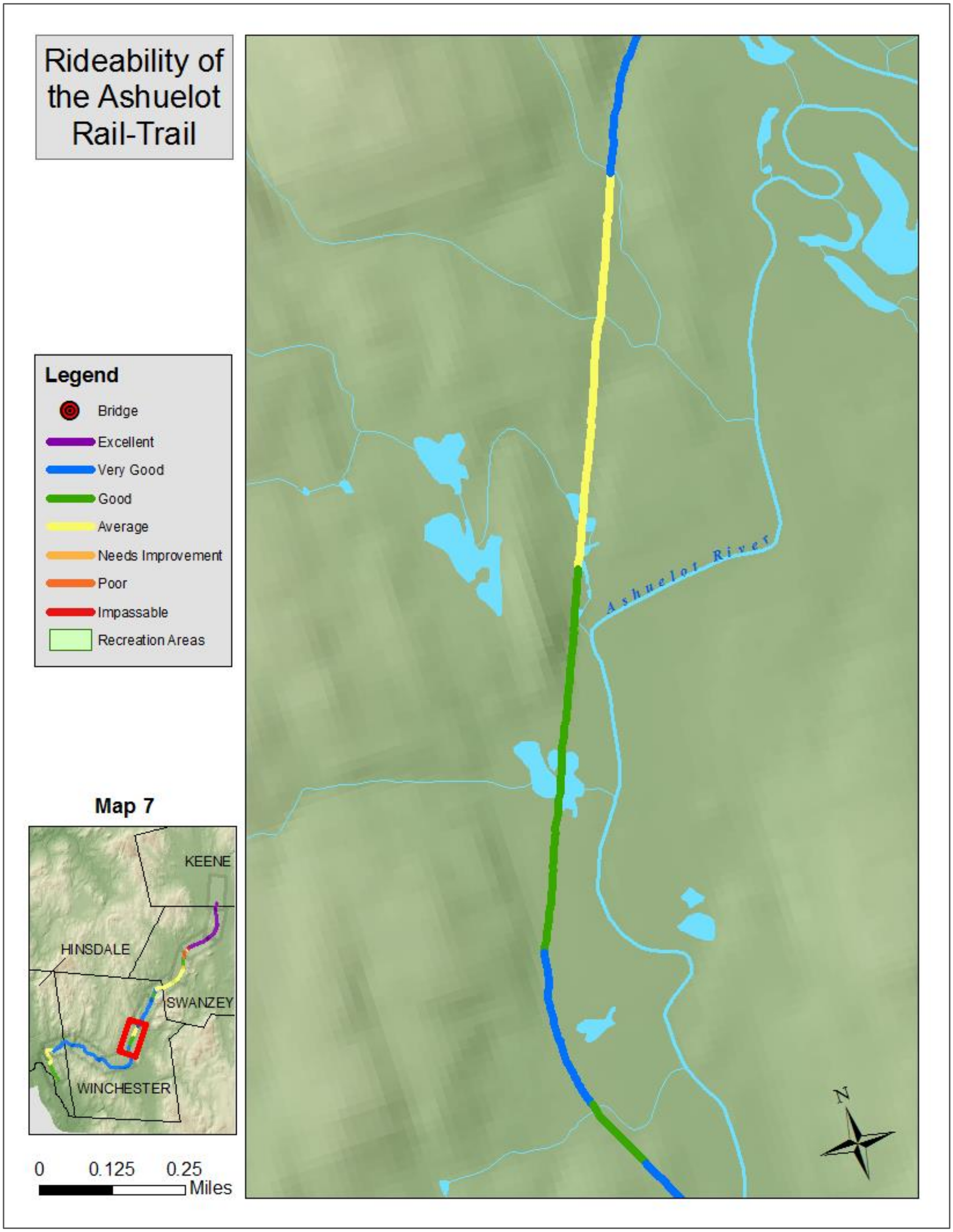
Strip Map of Ashuelot Rail Trail: Map 5



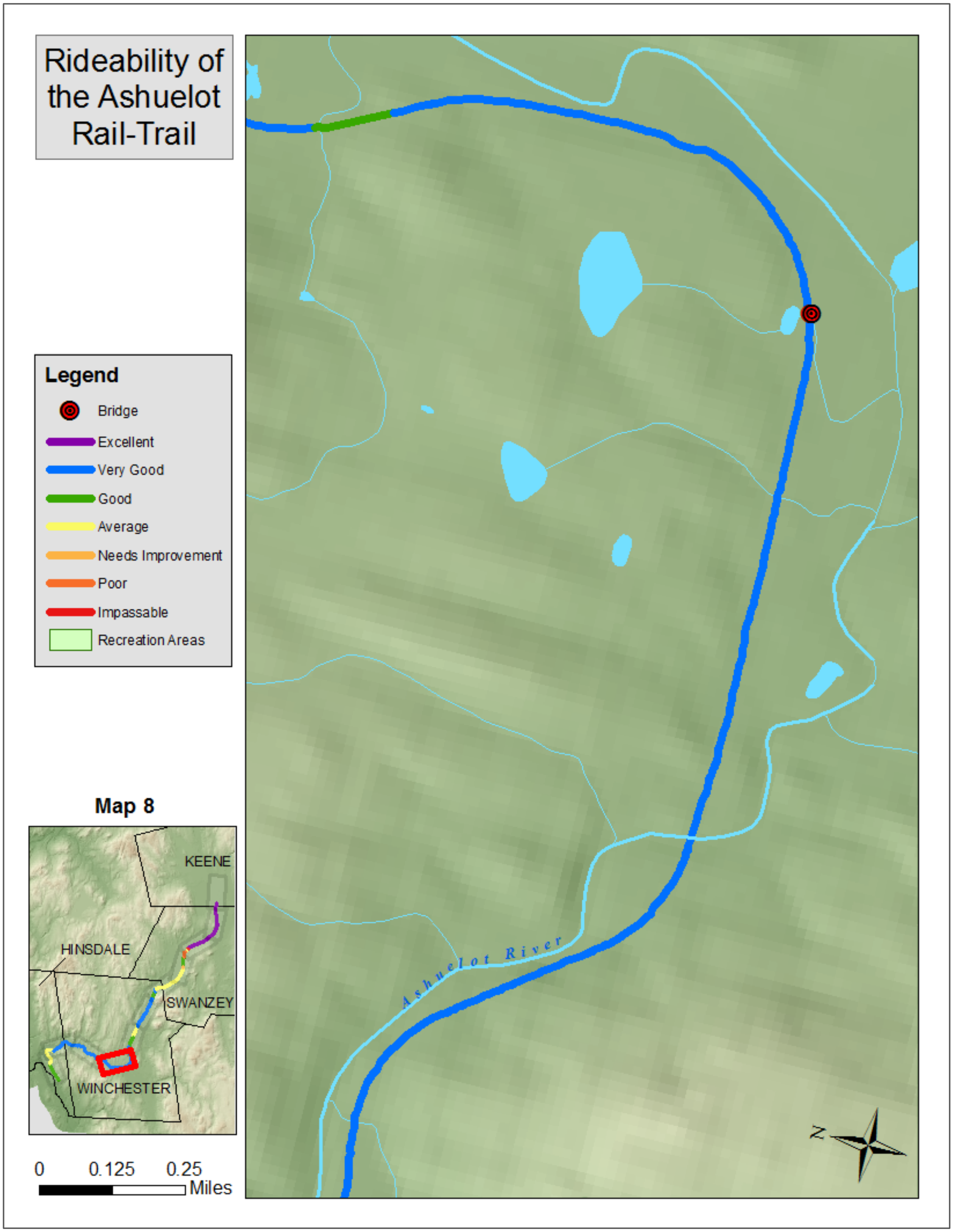
Strip Map of Ashuelot Rail Trail: Map 6



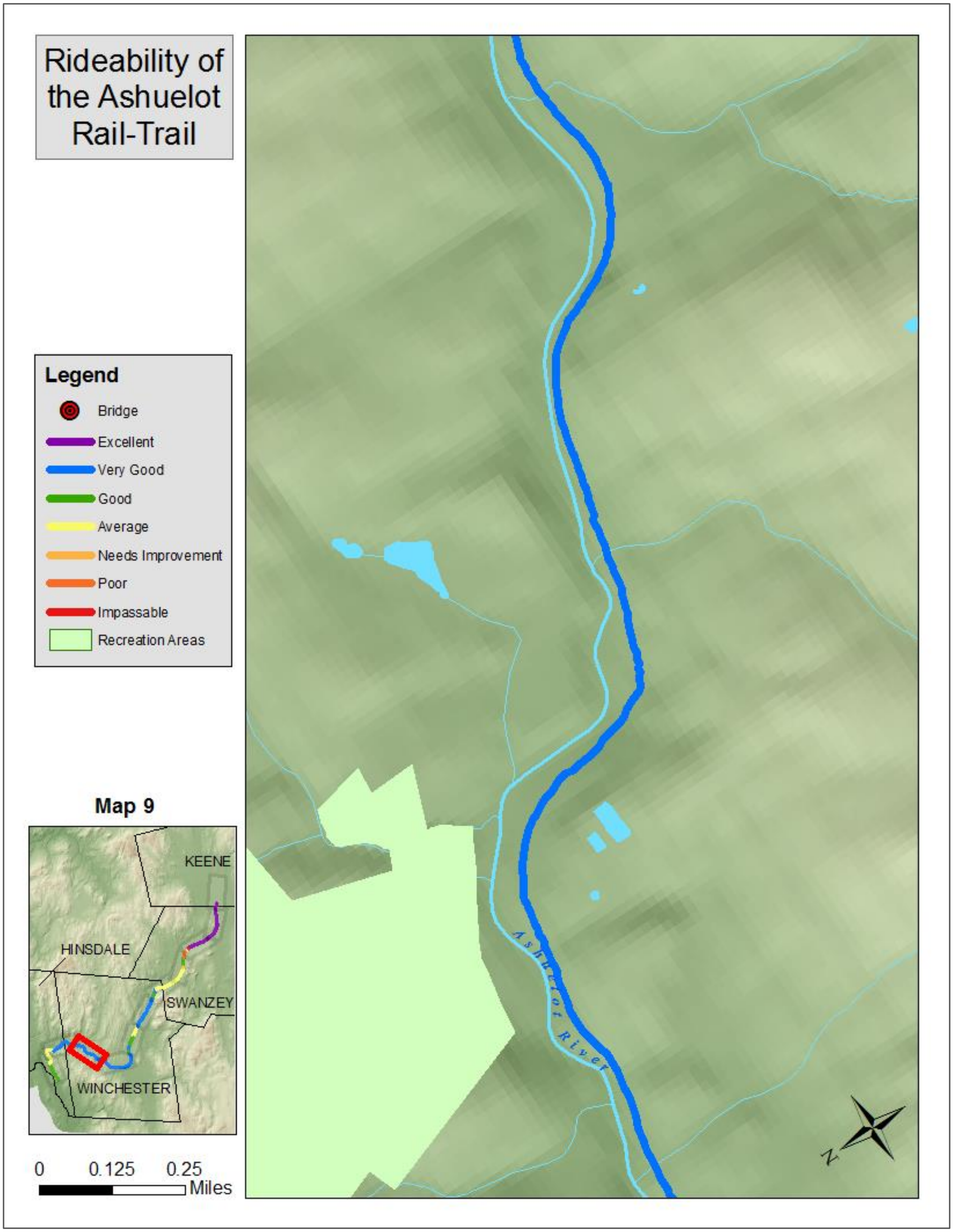
Strip Map of Ashuelot Rail Trail: Map 7



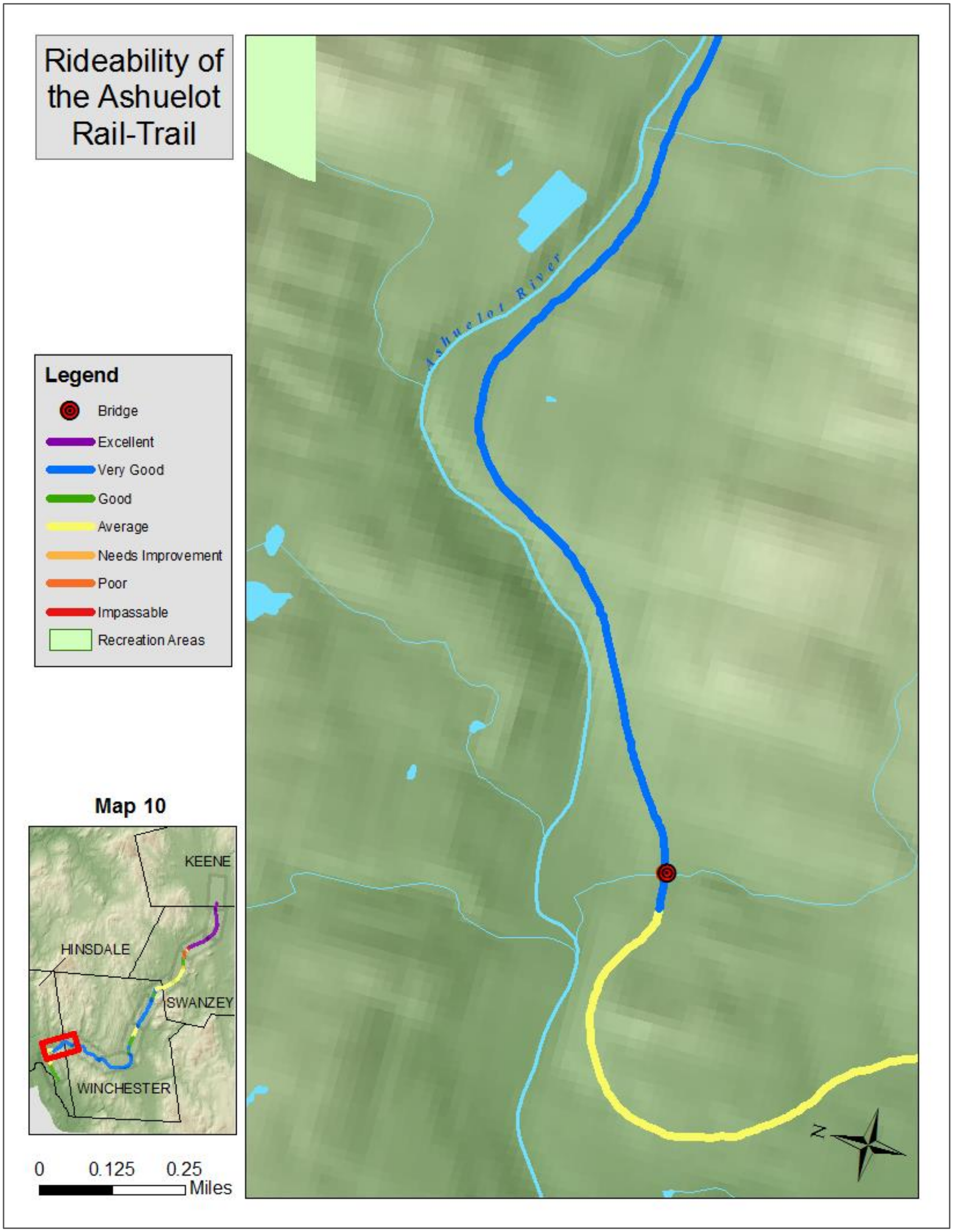
Strip Map of Ashuelot Rail Trail: Map 8



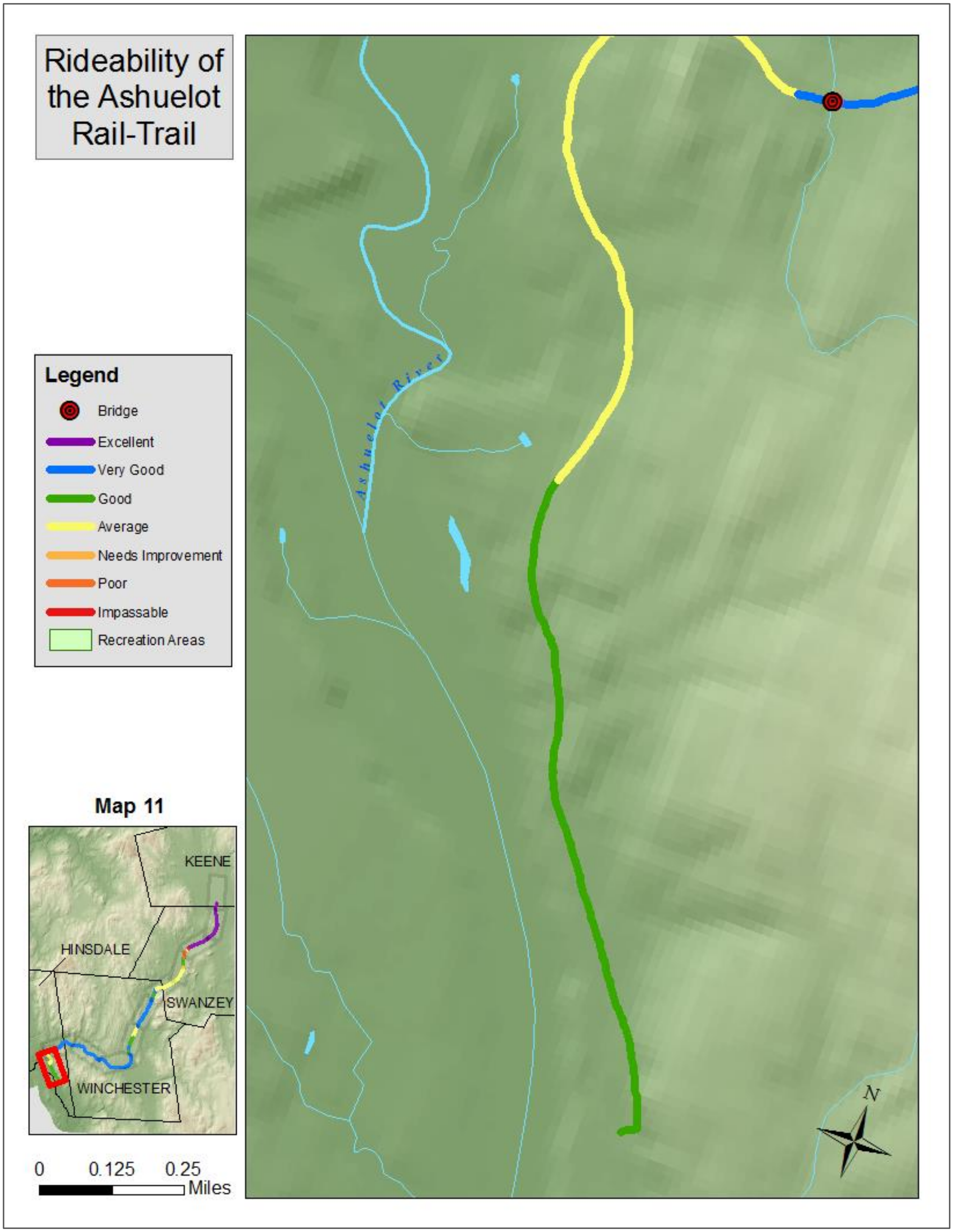
Strip Map of Ashuelot Rail Trail: Map 9



Strip Map of Ashuelot Rail Trail: Map 10



Strip Map of Ashuelot Rail Trail: Map 11



Appendix D: Major Trail Attribute Table

	Master Rail-Trail Assesment Form					
Waypoint #	Attributes	Surface (2)	Condition (3)	Suitability (4)	Date	Recent Rainfall
0	6 - Krif Rd Crossing	Gravel	>50% Dry	Smooth	Oct. 7	Today
1	8 - Caution Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
2	12 - Bridge	Gravel	>50% Dry	Smooth	Oct. 7	Today
3	8 - Trail Info Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
	9 - Right Turn to Yale Forest	Gravel	>50% Dry	Smooth	Oct. 7	Today
4	8 - Caution Bridge Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
5	13 - Wet Drainage Culvert	Gravel	>50% Dry	Smooth	Oct. 7	Today
6	20 - River Clearing Area	Gravel	>50% Dry	Smooth	Oct. 7	Today
7	12 - Bridge Leads to House	Gravel	>50% Dry	Smooth	Oct. 7	Today
8	8 - Caution Gate Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
9	10 - DOT Gate	Gravel	>50% Dry	Smooth	Oct. 7	Today
	6 - Matthews Road	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - Blank Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
10	8 - Caution Gate Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
11	8 - Stop Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
12	8 - Stop Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
	6 - Matthews Road	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - Stop Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - No Highway Vehicles	Gravel	>50% Dry	Smooth	Oct. 7	Today
13	8 - Stop Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
14	8 - Stop Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
15	8 - Stop Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - No Highway Vehicles	Gravel	>50% Dry	Smooth	Oct. 7	Today
	6 - Matthews Road	Gravel	>50% Dry	Smooth	Oct. 7	Today
16	8 - Stop Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
17	8 - Caution Gate Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
18	8 - Stop Sign	Gravel	>50% Dry	Smooth	Oct. 7	Today
	6 - Sawyers Crossing	Gravel	>50% Dry	Smooth	Oct. 7	Today
	1 - Trail Parking	Gravel	>50% Dry	Smooth	Oct. 7	Today
	10 - DOT Gate	Gravel	>50% Dry	Smooth	Oct. 7	Today
19	8 - Caution Gate Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
20	12 - Good Condition	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - Stop Ahead	Gravel	>50% Dry	Smooth	Oct. 7	Today
	8 - Yale Forest	Gravel	>50% Dry	Smooth	Oct. 7	Today
21	8 - Stop Sign	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
	6 - Driveway Crossing	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
22	8 - Stop Sign	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
23	13 - Good Condition	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
	20 - Ashuelot Viewshed	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
24	6 - Driveway Crossing	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
25	8 - Stop Sign	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
	6 - Driveway Crossing	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
26	13 - Culvert Fenced Off	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
27	12 - Wooden Bridge, Residential	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
28	13 - Culvert Fenced Off	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
29	13 - Culvert wetland powerlines	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
30	19 - informal trail towards woods	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days

31	7 - Power Station	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
	8 - Caution Gate Ahead	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
	13 - Good Condition	Stonedust	>50% Dry	Smooth	Oct. 9	Within 3 Days
32	10 - DOT Gate	Sand	>50% Dry	Very Rutted	Oct. 9	Within 3 Days
	18 - Motor Vehicle Tracks	Sand	>50% Dry	Very Rutted	Oct. 9	Within 3 Days
33	8 - Caution Gate Ahead	Sand	>50% Dry	Very Rutted	Oct. 14	Within 3 Days
34	8 - Stop Sign Ahead	Sand	>50% Dry	Very Rutted	Oct. 14	Within 3 Days
35	8 - Trail Sign	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	6 - Eaton Street	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	8 - Stop Sign	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	10 - Good Condition	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	18 - Motor Vehicle Tracks	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
36	8 - Stop Ahead	Grass	>50% Wet	Very Rutted	Oct. 14	Within 3 Days
37	12 - Underpass Bridge	Grass	>50% Wet	Very Rutted	Oct. 14	Within 3 Days
	11 - washout	Grass	>50% Wet	Very Rutted	Oct. 14	Within 3 Days
38	18 - Motor Vehicle Tracks	Sand	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
39	10 - Good Condition	Sand	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	8 - Stop Sign	Sand	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	6 - Homestead Ave	Sand	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	10 - DOT Gate	Sand	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
40	8 - Stop Sign Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
41	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
42	6 - Horse Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
43	6 - Horse Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
44	6 - Farm Crossing	Dirt	>50% Wet	Very Rutted	Oct. 14	Within 3 Days
45	11 - washout	Dirt	>50% Wet	Very Rutted	Oct. 14	Within 3 Days
46	6 - Farm Crossing	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
47	13 - Fair Condition	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
48	6 - Farm Crossing	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
49	9 - Homestead Ave Access	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
50	13 - Fair Condition	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
51	8 - Stop Ahead	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
52	10 - Good Condition	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	6 - Homestead Ave Crossing	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	10 - Good Condition	Grass	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
53	8 - Stop Sign Ahead (upside down)	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
54	8 - Broken Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
55	6 - Unmarked dirt road crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
56	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
57	10 - Gate (vehicle may fit through)	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	6 - Depot Rd Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	10 - Gate Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
58	19 - informal trail	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
59	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	20 - Pond	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
60	13 - Fair Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
61	8 - Gate/Stop Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
62	8 - "Wheeled Vehicles Proibited"	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	10 - Gate Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
63	13 - New Culvert	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
	6 - RT 10 Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 14	Within 3 Days
64	6 - RT 10 Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 25	Within 3 Days
	8 - Snowmobiles	Dirt	>50% Dry	Lightly Rutted	Oct. 25	Within 3 Days
65	8 - Caution	Dirt	>50% Dry	Lightly Rutted	Oct. 25	Within 3 Days
	8 - Please Stay on Trail	Dirt	>50% Dry	Lightly Rutted	Oct. 25	Within 3 Days
66	8 - Caution Gate Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 25	Within 3 Days

67	8 - Stop	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	6 - Coombs Bridge Rd	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	10 - Gate	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	8 - Stop	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
68	8 - Caution Gate Ahead	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
69	13 - Dry	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	17 - ATV Track	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
70	8 - Snowmobiles	Dirt	>50% Wet	Smooth	Oct. 25	Within 3 Days
71	8 - Caution	Dirt	>50% Wet	Smooth	Oct. 25	Within 3 Days
	8 - Stop Ahead	Dirt	>50% Wet	Smooth	Oct. 25	Within 3 Days
72	10 - Gate	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	6 - Monadnock Speedway	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	8 - Stop	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	13 - Dry	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	8 - Trail Permitted Use	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
73	13 - Wet	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
74	19 - Blocked by large log	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
75	13 - Wet	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
76	20 - Driving Range	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
77	8 - Caution Bridge Ahead	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
78	12 - Poor Condition (Dino's Crossing)	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
79	8 - Caution Bridge Ahead	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
80	8 - Caution Gate Ahead	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
81	10 - DOT Gate	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	8 - Stop	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	8 - Trail Permitted Use	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
	6 - Old Westport Rd	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
82	8 - Caution Gate Ahead	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
83	20 - Viewshed/Motocross Course	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
84	11 - Downed Trees	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
85	13 - Wet	Dirt	>50% Dry	Smooth	Oct. 25	Within 3 Days
86	13 - Wet	Rock/Sand	>50% Dry	Smooth	Oct. 25	Within 3 Days
	19 - Wet trail branch	Rock/Sand	>50% Dry	Smooth	Oct. 25	Within 3 Days
87	13 - Wet	Rock/Sand	>50% Dry	Smooth	Oct. 25	Within 3 Days
88	11 - Large Washout	Rock/Sand	>50% Dry	Smooth	Oct. 25	Within 3 Days
89	19 - Old Westport Road Access	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	5 - Parking on Old Westport Rd	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
90	19 - Powerline Trails	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	7 - Power Station	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
91	13 - Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
92	13 - Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
93	8 - Caution Gate Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
94	10 - Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	6 - Old Spofford Rd	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
95	8 - Stop Ahead	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Sign (inbound)	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	11 - washout mid-trail	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
96	8 - Stop Sign (outbound)	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Ahead	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Caution Gate Ahead	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
97	6 - Old Westport Rd	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Sign	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
98	10 - Good Condition	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	13 - Good Condition (plasitc corrugated)	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
99	12 - Poor Condition	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	13 - Aluminum corruagted	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	11 - Bridge washing out	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Caution Sign	Grass/Sand	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days

100	13 - Poor Condition	Grass/Sand	>50% Wet	Lightly Rutted	Oct. 28	Within 3 Days
	11 - Standing Water	Grass/Sand	>50% Wet	Lightly Rutted	Oct. 28	Within 3 Days
101	8 - "Junction Ahead"	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
102	8 - Stop Sign (outbound)	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Trail Info Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	6 - Bridge St	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Snowmobiles Permitted	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - Stop Sign (inbound)	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
103	13 - Poor Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
104	19 - Informal Trail to Howard St	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	5 - Possible Parking on Howard St	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
105	1 - Howard St	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
106	8 - Broken Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	10 - Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	6 - Elm St	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
	8 - No Tresspassing (driveway next to trail)	Dirt	>50% Dry	Lightly Rutted	Oct. 28	Within 3 Days
107	11 - Large Divot	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
	17 0 Dirtbike evidence	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
108	8 - Caution Gate Ahead	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
109	10 - Good Condition	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
110	6 - Ashuelot Street	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
111	10 - Good Condition	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
112	8 - Good Condition	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Broken Stop Ahead/ Gate Ahead Sign	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
113	13 - Poor Condition, Outlet Embedded	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
114	8 - Stop Ahead	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
115	10 - Good Condition	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Trail Permitted Use	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
116	6 - Rt 119	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 29	Today
117	13 - Good Condition	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	10 - Good Condition	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
118	8 - Caution Ahead	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	8 - Broken Stop Ahead	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	8 - Caution	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
119	13 - Across Trail- Good Condition	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	13 - Across Driveway- Good Condition	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	6 - Driveway Crossing	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
	8 - Stop Sig (inbound)	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
120	8 - Stop Ahead (inbound)	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
121	13 - Good Condition	Dirt/Gravel	>50% Wet	Lightly Rutted	Oct. 29	Today
122	2 - Surface Change	Stonedust	>50% Wet	Lightly Rutted	Oct. 29	Today
123	3	Stonedust	>50% Dry	Lightly Rutted	Oct. 29	Today
124	13 - Poor Condition	Stonedust	>50% Dry	Lightly Rutted	Oct. 29	Today
125	8 - Caution Gate Ahead	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Stop Ahead	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	12 - Decent Condition	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	17 - ATV Tire Tracks	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
126	10 - Good Condition	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Stop Sign	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Caution Bridge Ahead	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	6 - Back Ashuelot Rd	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today
	8 - Stop Sign (inbound)	Dirt/Grass	>50% Dry	Lightly Rutted	Oct. 29	Today

127	8 - Stop Ahead	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Driveway Ahead	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	6 - Driveway Crossing	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign (inbound)	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	13 - Good Condition	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
128	11 - Tree Down	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Ahead (inbound)	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
129	13 - Good Condition	Stonedust	>50% Dry	Smooth	Oct. 29	Today
	8 - Driveway Ahead	Stonedust	>50% Dry	Smooth	Oct. 29	Today
130	13 - Poor Condition	Stonedust	>50% Dry	Smooth	Oct. 29	Today
	11 - Washout	Stonedust	>50% Dry	Smooth	Oct. 29	Today
131	2 - Surface Change	Stonedust	>50% Wet	Smooth	Oct. 29	Today
132	13 - Good Condition	Stonedust	>50% Wet	Smooth	Oct. 29	Today
133	8 - Stop Ahead	Stonedust	>50% Wet	Smooth	Oct. 29	Today
134	11 - Washout	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	13 - Good Condition	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	10 - Good Condition	Stonedust	>50% Wet	Smooth	Oct. 29	Today
135	6 - Back Ashuelot Rd	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign (inbound)	Stonedust	>50% Wet	Smooth	Oct. 29	Today
136	10 - Good Condition	Stonedust	>50% Wet	Smooth	Oct. 29	Today
137	8 - Caution Sign	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	11 - Washout	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	13 - Double Culvert, Good Condition	Stonedust	>50% Wet	Smooth	Oct. 29	Today
	8 - Caution Sign	Stonedust	>50% Wet	Smooth	Oct. 29	Today
138	11 - Motor Vehicle Divot	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	18 - Tire evidence	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
139	8 - Trail Info Sign	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Trail map	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	6 - Back Ashuelot Rd	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	20 - Ashuelot Covered Bridge	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Trail Permitted Use	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
	10 - Good Condition	Dirt/Grass	>50% Wet	Smooth	Oct. 29	Today
140	8 - Caution Gate Ahead	Dirt/Rock	>50% Wet	Smooth	Oct. 29	Today
	8 - Stop Sign	Dirt/Rock	>50% Wet	Smooth	Oct. 29	Today
141	13 - Potential Culvert	Dirt/Rock	>50% Wet	Smooth	Oct. 29	Today
142	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
143	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
144	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
145	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
146	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
147	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
148	8 - Caution Sign	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
149	10 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
	8 - Trail Map - Winch Trail Riders	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today

150	8 - Caution Gate Ahead	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
	7 - Old Mill	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
151	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
	10 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
152	8 - Caution Gate Ahead	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
153	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
154	20 - Dam	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
155	13 - Culvert Catch Basin	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
156	11 - Tree Down	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
157	13 - Poor Condition, Inlet Embedded	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
158	13 - Fair Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
157	13 - Poor Condition, Inlet Embedded	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
158	13 - Fair Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
159	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
160	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
161	11 - Tree Down	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
162	8 - Caution Gate Ahead	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
	8 - Watch For Plows	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
	13 - Good Condition	Dirt/Rock	>50% Dry	Smooth	Oct. 29	Today
163	10 - Good Condition	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 27	Within 3 Days
164	8 - Stop Sign (outbound)	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 27	Within 3 Days
	6 - Depot Rd Crossing	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 27	Within 3 Days
	8 - Stop Sign (inbound)	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 27	Within 3 Days
	20 - Old Railroad Station	Dirt/Gravel	>50% Dry	Lightly Rutted	Oct. 27	Within 3 Days
165	8 - Caution Gate Ahead	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Trail Arrow	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Slow Signs (2)	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
166	10 - Good Condition	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Stop Sign Ahead	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Caution Gate Ahead	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Broken Trails Activity Sign	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
167	10 - 2 Gates each side, No tresspassing	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	18 - Evidence of tracks	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	6 - Dirt Road Crossing	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
168	17 - ATV Tire Tracks	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
	8 - Stop Sig Ahead	Dirt/Gravel	>50% Dry	Smooth	Oct. 27	Within 3 Days
169	6 - Tower Hill Rd Crossing	Gravel	>50% Wet	Very Rutted	Oct. 5	Within 3 Days
	8 - Stop Signs (2)	Gravel	>50% Wet	Very Rutted	Oct. 5	Within 3 Days
170	8 - Stop Sign	Gravel	>50% Wet	Very Rutted	Oct. 5	Within 3 Days
	20 - Nice Foliage View	Gravel	>50% Wet	Very Rutted	Oct. 5	Within 3 Days
171	13 - Catch Basin and Culvert Across	Gravel	>50% Wet	Very Rutted	Oct. 5	Within 3 Days
172	13 - Side Culvert	Gravel	>50% Dry	Very Rutted	Oct. 5	Within 3 Days
173	8 - Stop Sign	Gravel	>50% Dry	Very Rutted	Oct. 5	Within 3 Days
	6 - Informal Road Crossing	Gravel	>50% Dry	Very Rutted	Oct. 5	Within 3 Days
	19 - Rt 63 access trail	Gravel	>50% Dry	Very Rutted	Oct. 5	Within 3 Days
174	20 - General Store: Rt 63	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	6 - Paved Driveway Crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
175	11 - Tree Branch Hanging Low	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
176	8 - Caution Gate Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
177	10 - Good Condition	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
178	6 - Small farm road crossing	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
179	20 - License Plate House	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
180	8 - Stop Sign Ahead	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
181	17 - ATV Tracks	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	6 - 63 South	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	1 - Dole Junction	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	5 - Parking off 63 South	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
	8 - Stop Sign	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days
182	9 - Fort Hill Rail-Trail	Dirt	>50% Dry	Lightly Rutted	Oct. 5	Within 3 Days

Appendix E: ART Commuter Survey

Keene State College
229 Main Street
Keene, NH 03435

Department of GEOGRAPHY
Keene STATE COLLEGE

We are a group of Keene State College Geography students working on a Seminar Project that focuses on acquiring basic information about the Ashuelot Rail-Trail and its users. The information you give us will provide a statistical foundation in our geographic research. We hope the data we gather from users like you will supply local stakeholders with the information they need to better maintain the rail-trails and other alternative transportation projects in the Monadnock region.
We thank you for your support!

1. *What town are you from?* ______________________________

2. *Are you a college student?*

☐ Yes ☐ No

3. *How old are you?*

☐ Under 18 ☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65+

4. *Tell us about your commuting habits…*

To Work-

How long/far to destination by car? ____________

How many days per week do you go there? ____________

How many times a week do you commute by:

________Car ________Bicycle ________Walk/Run
________Other:______________

To School-

How long/far to destination by car? ____________

How many days per week do you go there? ____________

How many times a week do you commute by:

________Car ________Bicycle ________Walk/Run ________Other:
____

Grocery Shopping-

How long/far to destination by car? ____________

How many days per week do you go there? ____________

How many times a week do you commute by:

________Car ________Bicycle ________Walk/Run
________Other:______________

<u>Another Regular Errand</u>- (something you do more than twice a month)

What kind of errand? ____ (e.g. doctor's appointments, post office, laundromat, bank)

How long/far to destination by car? __________________

How many days per week do you go there? __________________

How many times a week do you commute by:

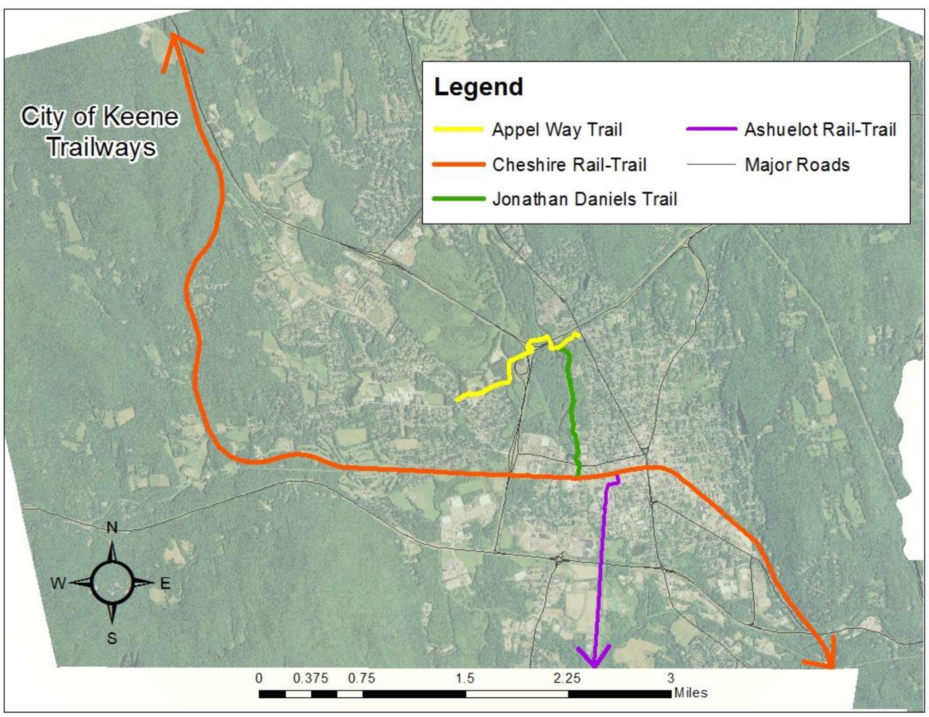
__________Car __________Bicycle __________Walk/Run __________Other:____________________

5. Do you use any of the regional, recreational trails for commuting purposes?

☐ Yes ☐ No (If no, skip to question 5b)

5a. If so, which trails do you use? (Check all that apply)

☐ Ashuelot Rail-Trail ☐ Cheshire Rail-Trail ☐ Jonathan Daniels Trail ☐ Appel Way Trail ☐ Other: ________________________



5b. If not, why? (Check all that apply)

☐ Too far to destination ☐Don't have a bicycle ☐ Feel unsafe ☐ Changes in season or unpredictable weather ☐ Trail condition unsatisfactory ☐ Other: ________________________ ________________________ __

6. Does your employer offer any incentives to utilize non-motorized transportation when commuting to work?

☐ Yes ☐ No ☐ Not sure ☐ Not applicable

7. Additional Comments:

Thank you very much for taking the time to complete this survey.
Your feedback is valued and very much appreciated!

Appendix F: Southwest Region Planning Commission Bike Counts

1. Ashuelot Rail Trail North of Eaton Road-Swanzey

*** Virtual Day=9, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1	1	1	1	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 1115 - 1215 (2), AM PHF=0.48 PM Peak 1215 - 1315 (2), PM PHF=0.57

2. Ashuelot Rail Trail North of Elm Street-Winchester

*** Virtual Day=11, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	5	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 0945 - 1045 (4), AM PHF=0.45 PM Peak 1745 - 1845 (5), PM PHF=0.25

3. Ashuelot Rail Trail North of Sawyer's Crossing Road-Swanzey

*** Virtual Day=24, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	1	1	3	2	3	3	5	4	2	1	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	0	0	0	0	0	0	0	0

AM Peak 1100 - 1200 (3), AM PHF=0.84 PM Peak 1515 - 1615 (5), PM PHF=0.58

4. Ashuelot Rail Trail South of Coombs Bridge Road- Winchester

*** Virtual Day=2, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 0930 - 1030 (1), AM PHF=0.28 PM Peak 1700 - 1800 (1), PM PHF=0.56

5. Ashuelot Rail Trail West of Depot Street- Hinsdale

*** Virtual Day=0, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 1045 - 1145 (0), AM PHF=0.25 PM Peak 1530 - 1630 (0), PM PHF=0.50

6. Ashuelot Rail Trail West of Gunn Mountain Road-Winchester

*** Virtual Day=3, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 1030 - 1130 (1), AM PHF=0.35 PM Peak 1530 - 1630 (1), PM PHF=0.39

7. Ashuelot Rail Trail West of NH 119-Winchester

*** Virtual Day=2, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM Peak 0945 - 1045 (0), AM PHF=0.42 PM Peak 1345 - 1445 (0), PM PHF=0.25