

# THREE NOTCHED TRAIL

## SEGMENTS OF INDEPENDENT UTILITY



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## INTRODCUTION

The Three Notched Trail historically connected areas in Richmond to the Valleys creating a major east west travel route documented as far back as 1730. However the origins of the trail lie with early Native American people who used the route as a game trail. The introduction of the U.S. Rote 250 largely replaced the original Three Notched Trail dramatically altering the area.

The Three Notched Trail (TNT) is a trail intervention project with the goal to “create a scenic and safe walking and biking route from the Rivanna River near Monticello to the Blue Ridge Mountains, following the path of the historic Three Notched Road” <sup>i</sup>. This incredible effort is being taken on by the Rivanna Trails Foundation (RTF) supported by Rip Verkerke, President of RTF and managed by Allie Hill RTF board member.

The Three Notched Trail intervention aims to create connected walking and biking routes to connect the areas between the Rivanna River to the Blue Ridge Mountains. The project scope requires significant and thoughtful phasing while land and funding are acquired to create this interconnected system. Approaching the trail project through the development of segments that will later be connected breaks a larger project into more feasible parts that will built up to a fully connected trail system over time. <sup>ii</sup>

The main focus of this report is to a provide method of analysis for determining potential segments of independent utility that could function as phases for the larger TNT trail project. This report includes research of Virginia Department of Transportation, National Environmental Policy Act Implementation Plan, precedent studies, GIS analysis and proposed areas for segments of independent utility.

### Contributors

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Allie Hill of the Rivanna Trails Foundation

# **METHODS**

## **PROJECT PROPOSAL**

Define and create a method of analysis for determining areas for segments of independent utility. Map existing trails, trailheads, support facilities and community assets that can support and be attractive to a trail system. Crozet trail system and Charlottesville trail system have potential for improved connectivity. Identify possible areas for segments of independent utility that could be incorporated between the Crozet and Charlottesville area to support a future trail corridor.

## **GOALS**

The goal of this project is to first identify criteria for successful segments of independent utility and then develop a method of analysis based on criteria. Then I will create an asset based map that will be used to identify potential areas for segments of independent utility. The focus of this project will be to collect and layer information to develop potential areas for future trails to improve existing connection to trails and facilitate broader connection between the Blue Ridge through the Rivanna area.

## **METHOD**

The methods used in this report include background research and precedent study to develop an understanding of what contributes to successful trails and how segments of independent utility can facilitate greater connectivity. Mapping analysis in GIS is a prominent method for identifying and suggesting areas for segments of independent utility. Data for the asset based mapping was found from Albemarle GIS open data, ESRI living atlas, and ESRI base maps. Community points were derived from google earth kml points that are input and converted to shapefiles in GIS ArcMap.

## **DELIVERABLES**

1. Definition of segments of independent utility
2. Precedent study of long biking trials
3. Method of analysis for determining segments
4. GIS Map of 1) trailheads, 2) existing trails, 3) support facilities and 4) community assets
5. Propose areas for possible segments of independent utility

## SEGMENTS OF INDEPENDENT UTILITY

Collaborating with Allie Hill and reviewing the around the TNT project lead me evaluating the feasibility of segments of independent utility. For background on segments of independent utility I looked to the National Environmental Policy Act (NEPA) and the Virginia Department of Transportation (VDOT). These resources present background and can serve as guides for the implementation of transportation improvements like the TNT project.<sup>iiiiiv</sup>

### DEFINITION OF SEGMENTS OF INDEPENDENT UTILITY

The NEPA implementation Plan aims to provide the framework for the long-term implementation of transportation improvements, considering needs, funding, and requirements for future NEPA documentation<sup>v</sup>.

Independent Utility- “Each phase should have independent utility and logical termini to the extent that the phase provides a functional transportation system even in the absence of other phases” <sup>vi</sup>.

Segments of Independent Utility- is a strategy of for separating areas that can function as phases of a larger project that have independent utility in that have a distinct purpose or functionality whether it is constructed alone or connected later<sup>viiviii</sup>.

### GUIDELINES FOR PROPOSING SEGMENTS OF INDEPENDENT UTILITY

The Virginia Department of Transportation provides guidelines in Section 9 and 10 about the requirements for proposing segments of independent utility. This report provides suggested areas for segments of independent utility as general recommendations. The following information serve as a guideline for the Rivanna Trails Foundation if they are to work with VDOT on proposing segments of independent utility.

VDOT Section 10 outlines 1) potential considerations for utilization as projects proceed to implementation, 2) funding sources, 3) information on logical termini and independent utility to meet NEPA criteria and funding requirements, 4) review of potential future for connections to the preferred corridor, 5) typical section width and safety measure considerations, and 6) potential funding sources.<sup>ix</sup>



U.S. Department  
of Transportation

**Federal Highway  
Administration**



The suggested funding sources include:

- SMART SCALE
- Transportation Alternatives Program (TAP)
- Surface Transportation Program (STP) (State or Regional STP)
- Congestion Mitigation Air Quality (CMAQ)

VDOT Section 9 outlines specific requirements for segments of independent utility application proposals which typically include: 1) segment design sketch, 2) segment typical sections, 3) segment cost estimate, and 4) segment project schedule.

- 1) Segment Design sketch: Preferred corridor conceptual design sketch utilizing GIS data and including:
  - Aerial base mapping
  - Shared use path concept layout corresponding to typical sections
  - Property and right of way lines
  - Approximate construction limits
  - Temporary / permanent easements
  - Utility easements
  - Major structure locations
  - Existing infrastructure challenges
  - Design assumptions
  - Environmental resources (wetlands and streams)
- 2) Segment typical sections
  - Potential for shared path scenarios

3) Segment cost estimate

- Itemized cost quantities based on preliminary engineering assumptions.
- cost items utilize recommended percentages of construction cost, resulting in an overall construction cost total.

4) Segment project schedule

- development of a schedule for project segments baseline durations for Preliminary Engineering
- Right of Way (if necessary)
- Construction

## TRAIL PRECEDENTS

The following examples serve as inspiration for the long term aspiration of the Three Notch Trail connecting from the Blue Ridge to Richmond. These precedents exemplify the success of engaging with support facilities, and community assets. The success of these projects aided in developing a rational for the mapping analysis and categorization of assets and trail conditions to consider

### PALOUSE TO CASCADES STATE PARK TRAIL, WASHINGTON<sup>x</sup>



Length: 285 miles (110 well developed)

Location: Rattlesnake Lake (east of Seattle, WA) to the Washington – Idaho border

Surface: Crushed gravel, gravel ballast (chunkier gravel), sand

## GREAT ALLEGHENY PASSAGE, PENNSYLVANIA <sup>xi</sup>



Length: 150 miles

Location: Pittsburgh, PA to Cumberland, MD

Surface: Crushed gravel

## C&O CANAL TOWPATH, MARYLAND <sup>xii</sup>



Length: 185 miles

Location: Cumberland MD to Washington DC

Surface: Varies widely, mostly dirt and crushed gravel, rough in places

WABASH TRACE NATURE TRAIL, IOWA <sup>xiii</sup>



Length: 63 miles

Location: Iowa (Council Bluffs to Blanchard)

Surface: well-maintained dirt

## MAPPING ANALYSIS

The focus of the project was the development of a methodology for evaluating assets, needs and potential for areas for segments of independent utility. Assets were separated into four categories 1) trail heads, 2) connection to existing trails, 3) support facilities and 4) community assets.



## MAPPING DATA SOURCES

DRPT Rail Database <sup>xiv</sup>

Albemarle County GIS Data <sup>xv</sup>

Google earth <sup>xvi</sup>

## MAPPING ANALYSIS | TRAIL HEADS

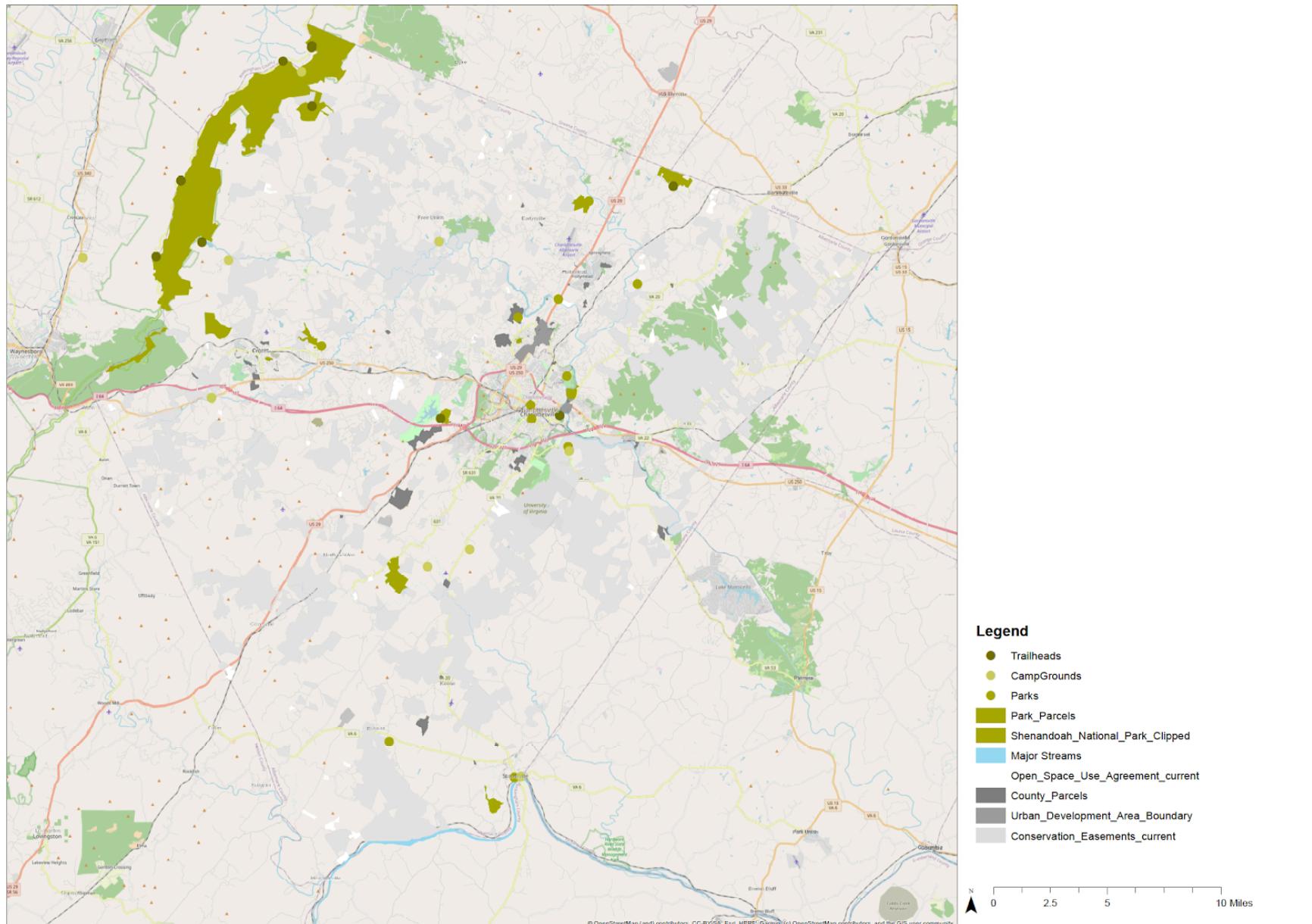
### IMPORTANCE OF TRAIL HEADS

Trail heads represent potential starting and ending anchors for a trail which contribute the independent utility of a segment by providing destinations and purpose that have utility and allow the intervention to stand on its own. These points can also aid in future trail development as logical sites for connection and extension of trails.

- Trailheads
- CampGrounds
- Parks
- Park\_Parcels
- Shenandoah\_National\_Park\_



Campsites along the western section of the Palouse to Cascades Trail



## MAPPING ANALYSIS | EXISTING TRAILS

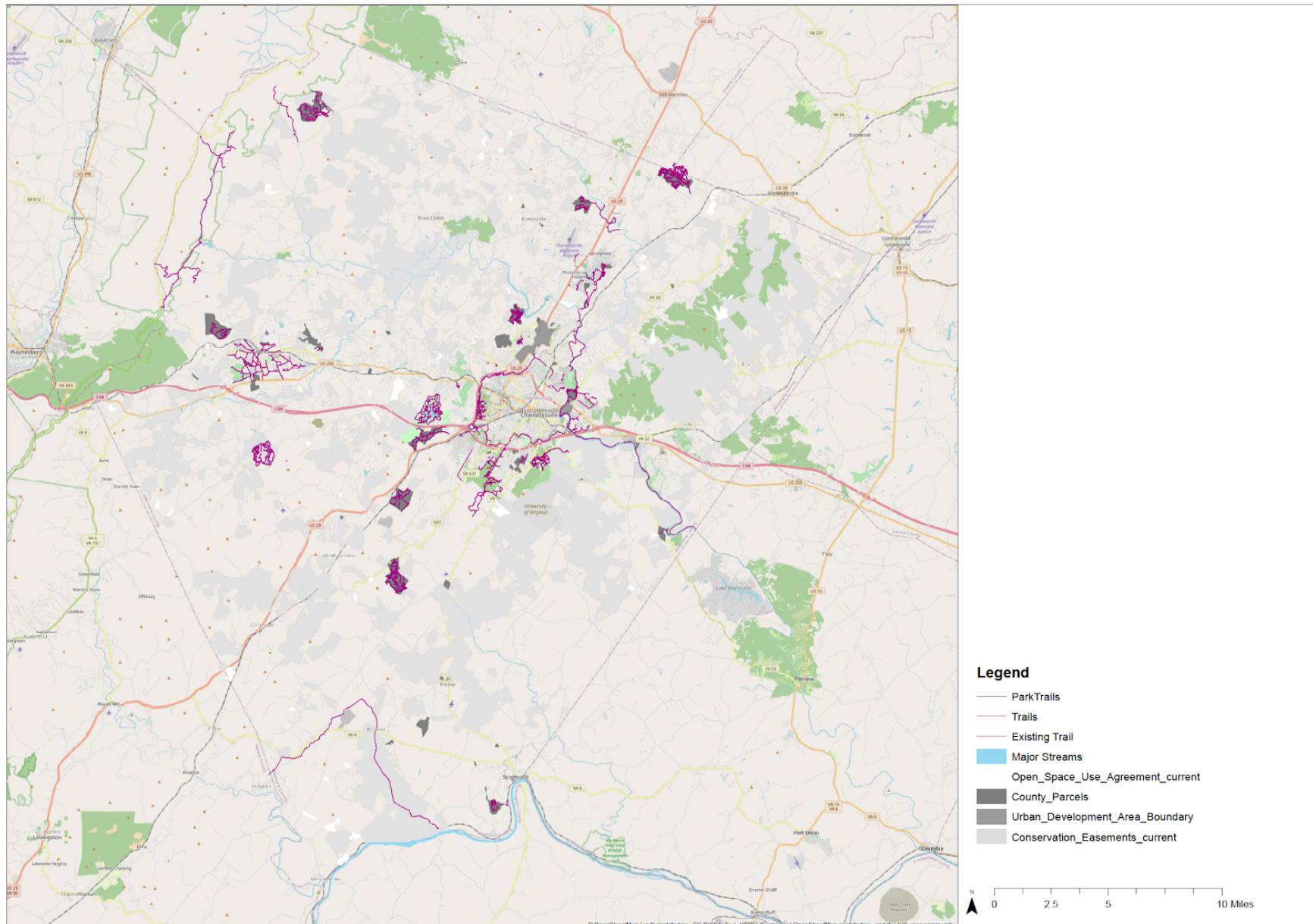
### IMPORTANCE OF EXISTING TRAILS

Connecting to existing trails are a major asset that can support and strengthen segments of independent utility. Focusing on extending connections to existing trails aligned with the aims and vision for the Three Notched Trail as a walking and biking connection from the Blude Ridge to Rivanna. Connecting to existing trails in Charlottesville and Crozet is a potential asset for the development of segments of independent utility that extends existing networks.

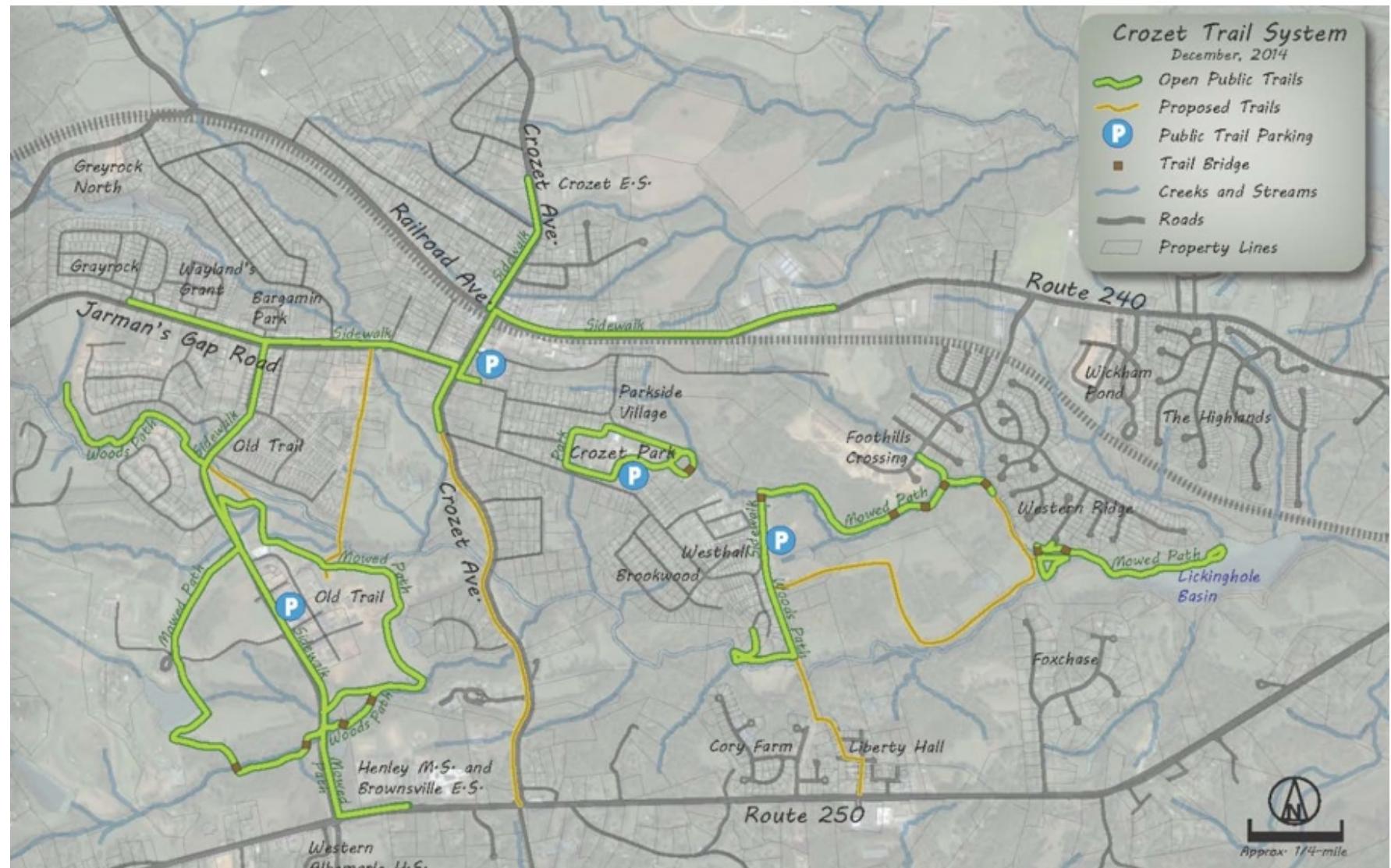
- ParkTrails
- Trails
- Existing Trail

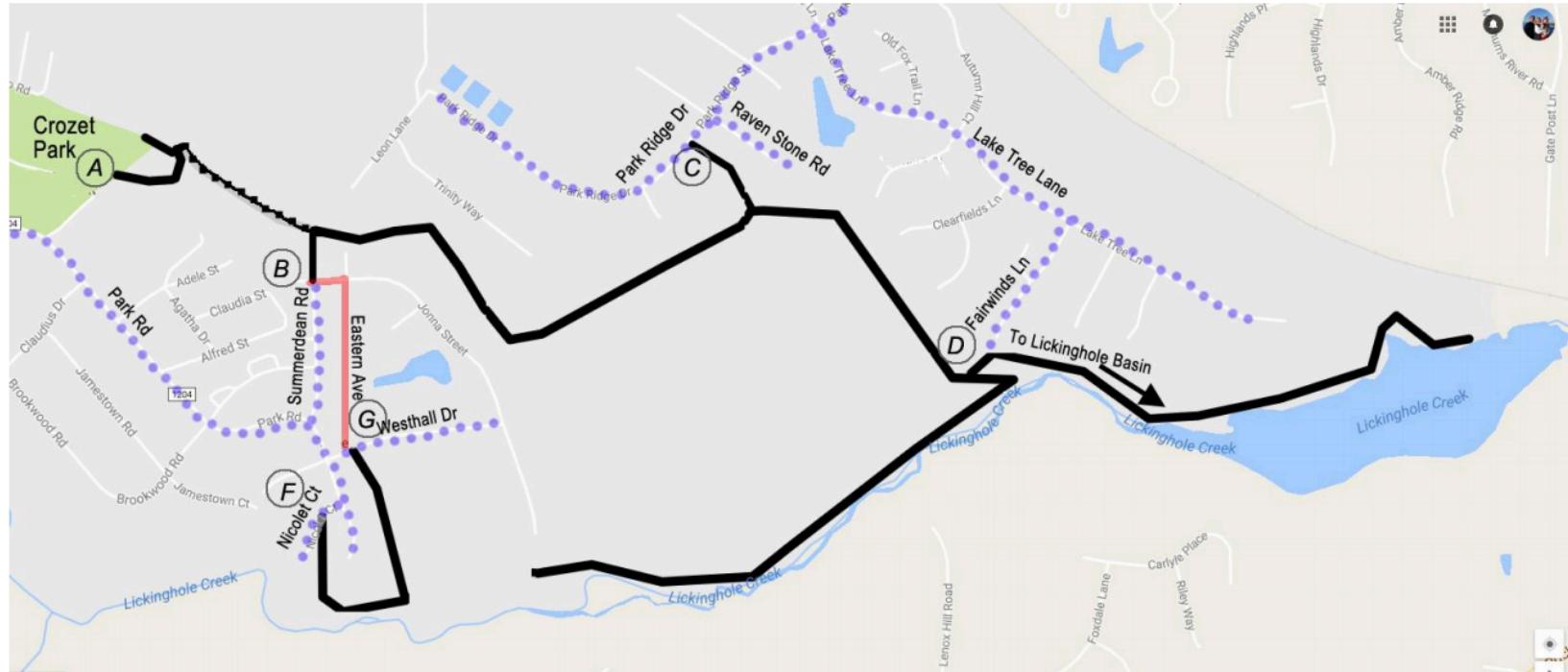


Rail and Trail paths present opportunities for connection over long distances



## CROZET TRAILS xvii





### Crozet Connector Trail

#### Entrances to the Trail

**A:** In the northeast corner of Claudius Crozet Park, around the Dog Park.  
GPS Coordinates: N38° 03.845' W78° 41.520'

**B:** At the north end of Summerdean Road, in Westhall. Look for a paved pathway between two houses.  
GPS Coordinates: N38° 03.742' W78° 41.262'

**C:** From Park Ridge Drive, in Foothill Crossing. Look for the trail sign just past Raven Stone Road.  
GPS Coordinates: N38° 03.879' W78° 40.775'

**D:** At the southern end of Fairwinds Lane, in Western Ridge.  
GPS Coordinates: N38° 03.671' W78° 40.403'

**E:** From Nicolet Court, in Westhall. Look for the trail sign on the left side of the street.

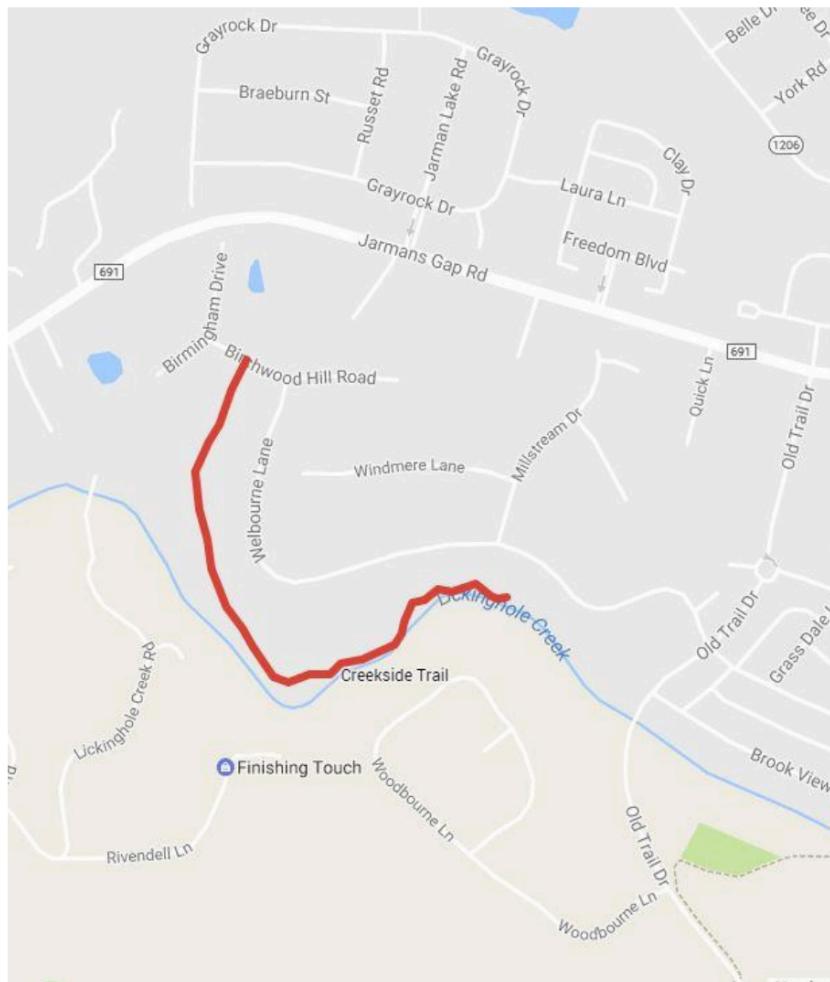
GPS Coordinates: N38° 03.497' W78° 41.252'

**G:** At the intersection of Westhall Drive and Eastern Avenue, near the entrance to Westlake. Trail sign marks entrance through the woods.  
GPS Coordinates: N38° 03.555' W78° 41.199'

More maps at [CrozetTrailsCrew.org](http://CrozetTrailsCrew.org)

- Trail
- Proposed Trail
- Sidewalk
- Road

## Creekside Trail

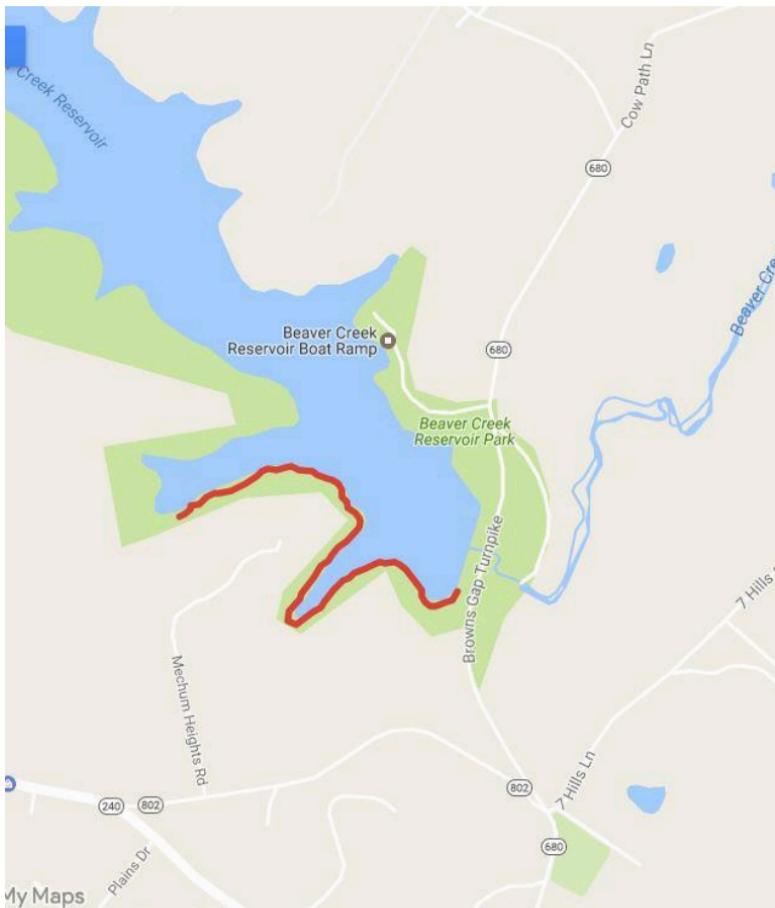


### Find the trail:

Enter the Old Trail trail system from Welbourne Lane, directly across from Millstream Drive. In a short distance, turn right to follow the Creekside trail along Lickinghole Creek. At present, the farther end is not completed, due to construction on the area.

GPS Coordinates: N38° 03.951' W78° 42.968'

## Henley Hornets Trail



### Find the trail:

From the boathouse in Beaver Creek Park, walk along the base of the dam to the south end, where you will find the opening into the woods. The trail is out-and-back along the shores of the reservoir. Please pay attention to the private property signs.

GPS Coordinates: N38° 04.221' W78° 39.119'

## CHARLOTTESVILLE TRAILS <sup>xviii</sup>

### Amenities Key:

-  Recreation Center
-  Library
-  River Drop-In Location
-  Parking

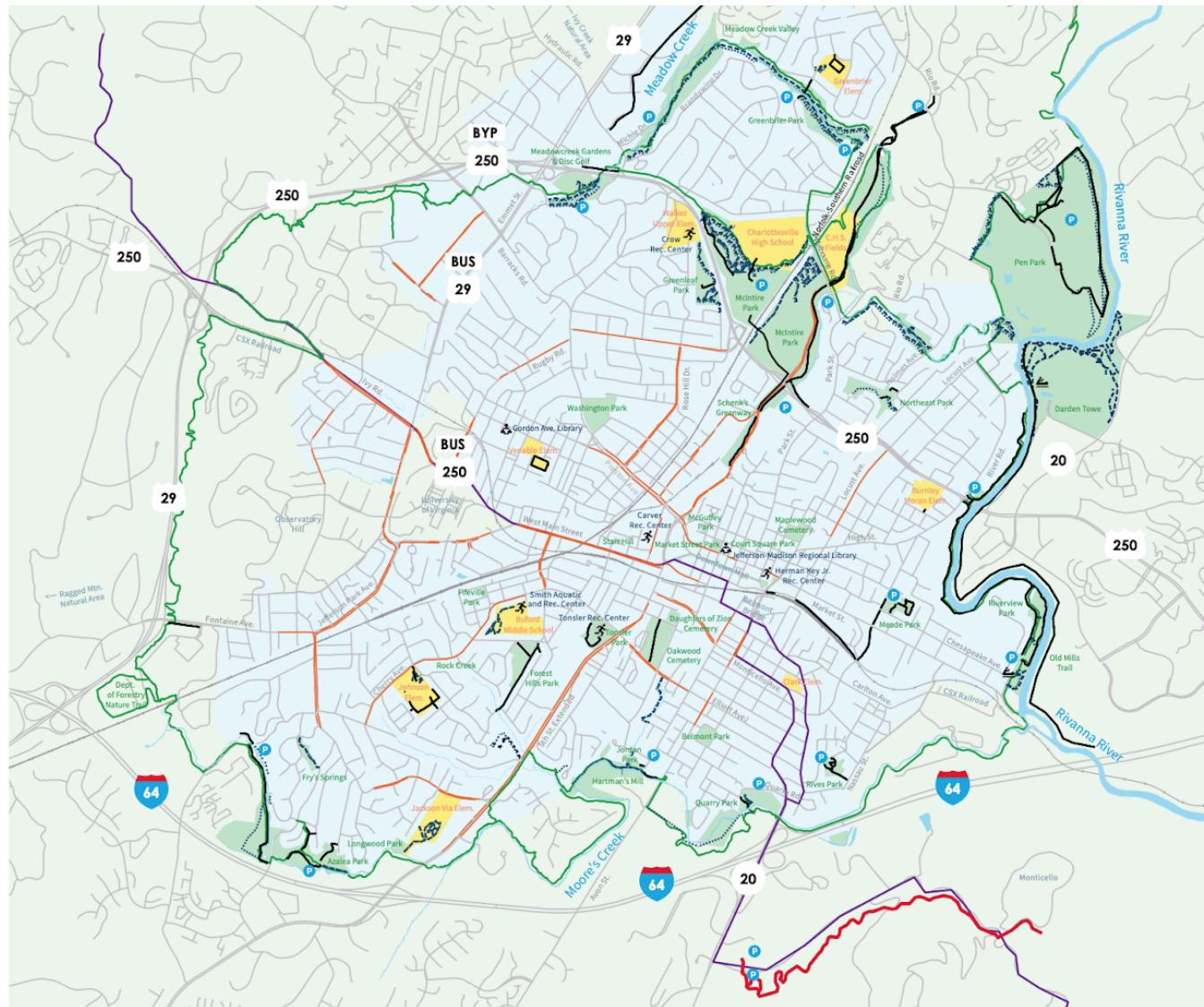
### Map Key:

-  Streets
-  Railroads
-  Paved Trails
-  Unpaved Trails
-  Bike Lanes
-  Bike Route 76
-  Rivanna Trails
-  Foundation Footpath
-  Saunders-Monticello Trail  
(owned and operated by the Thomas Jefferson Foundation)
-  Parks
-  Schools
-  Water
-  City Limits
-  Albemarle County



### Map Scale

0 .25 .5 1



Name and Location	Distance	Unpaved Trail	Paved Trail	Restrooms
Azalea Park   304 Old Lynchburg Road	3/4 mile	🚶	♿	🚻
Darden Towe Park   1445 Darden Towe Park	1 mile	🚶	♿	🚻
Coal Tower/Meade Avenue Trail   Water Street	1 mile		♿	
Forest Hills Park   1022 Forest Hills Avenue	1/4 mile		♿	🚻
Greenbrier Park   1933 Greenbrier Drive	1/2 mile	🚶		
Greenleaf Park   1598 Rose Hill Drive	1/2 mile	🚶		🚻
John Warner Pky   Parking at 828 McIntire Rd	2 miles	🚶	♿	
Jordan Park   1607 6th Street SE	1/4 mile	🚶		
McIntire Park   375 Route 250 Bypass	3 mile	🚶	♿	🚻
Meade Park   300 Meade Avenue	1/4 mile		♿	🚻
Meadowcreek Gardens   2030 Morton Drive	1/2 mile	🚶		🚽
Meadow Creek Valley   Brandywine Drive	1.5 miles	🚶		
Northeast Park   1001 Sheridan Avenue	1/4 mile	🚶		
Pen Park   1300 Pen Park Road	2 mile	🚶	♿	🚻
Quarry Park   427 Quarry Road	1/4 mile		♿	🚻
Riverview Park   298 Riverside Avenue	2 mile		♿	🚽
Rives Park   926 Rives Street	1/4 mile		♿	🚻
Schenk's Greenway   711 McIntire Road	1/4 mile		♿	
Starr Hill Park   7th Street NW & Elsom Street	.1 mile	🚶		
Tonsler Park   500 Cherry Avenue	1/4 mile		♿	🚻

## MAPPING ANALYSIS | SUPPORT FACILITIES

### IMPORTANCE OF SUPPORT FACILITIES

Support facilities are critical components for successful trails because they facilitate and support particular functions that allow segments to function on their own. Support facilities may include commercial, parking facilities, and places for eating and refreshment. Support facilities such as schools or churches could provide support in maintaining trails as well as opportunities for parking.

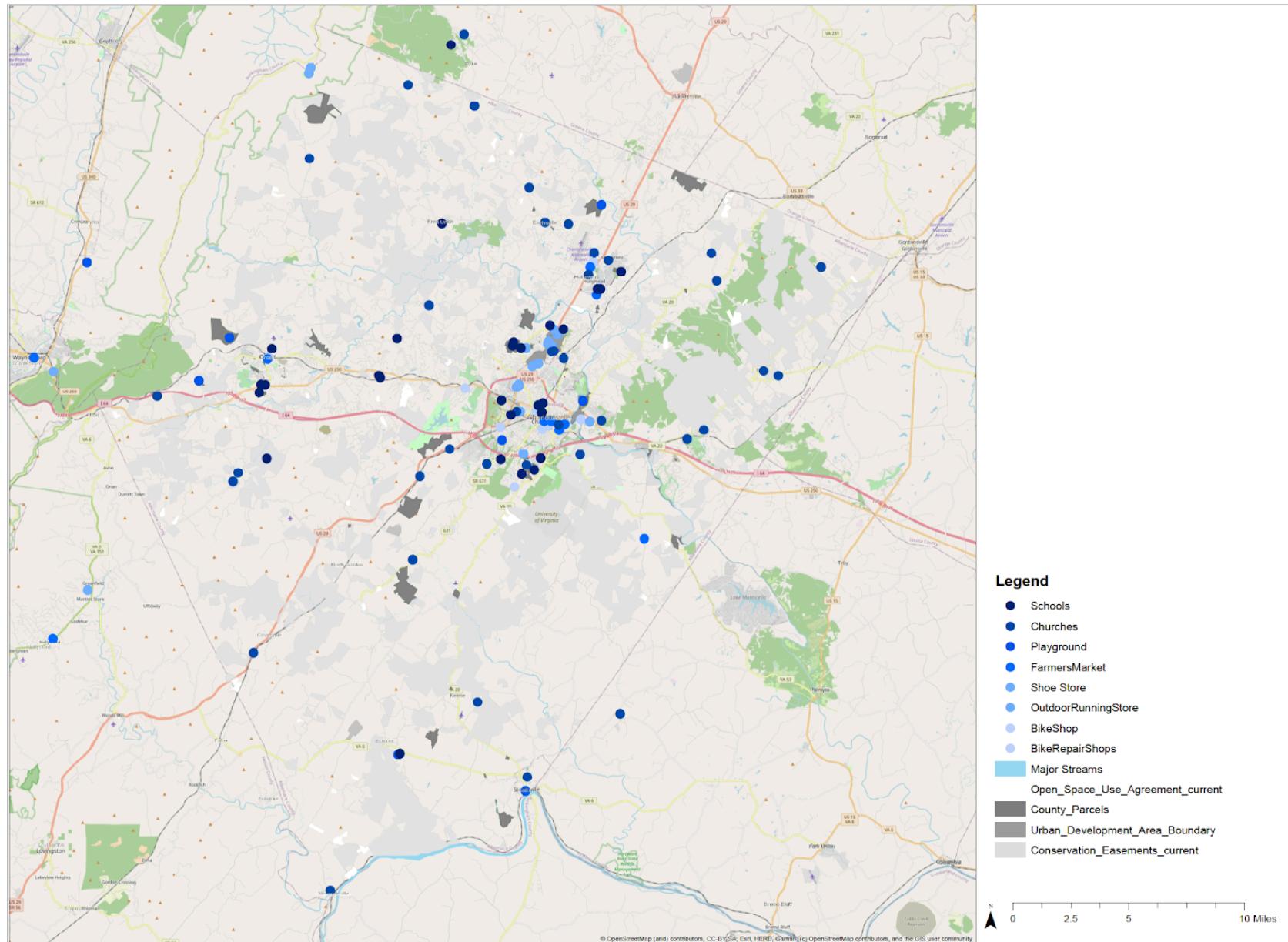
- Schools
- Churches
- Playground
- FarmersMarket
- Shoe Store
- OutdoorRunningStore
- BikeShop
- BikeRepairShops



Connellsville, PA caters to cyclists riding the GAP Trail with bike repair shops and bike-themed restaurants.



Connellsville, PA caters to cyclists riding the GAP Trail with bike repair shops and bike-themed restaurants.



## MAPPING ANALYSIS | COMMUNITY ASSETS

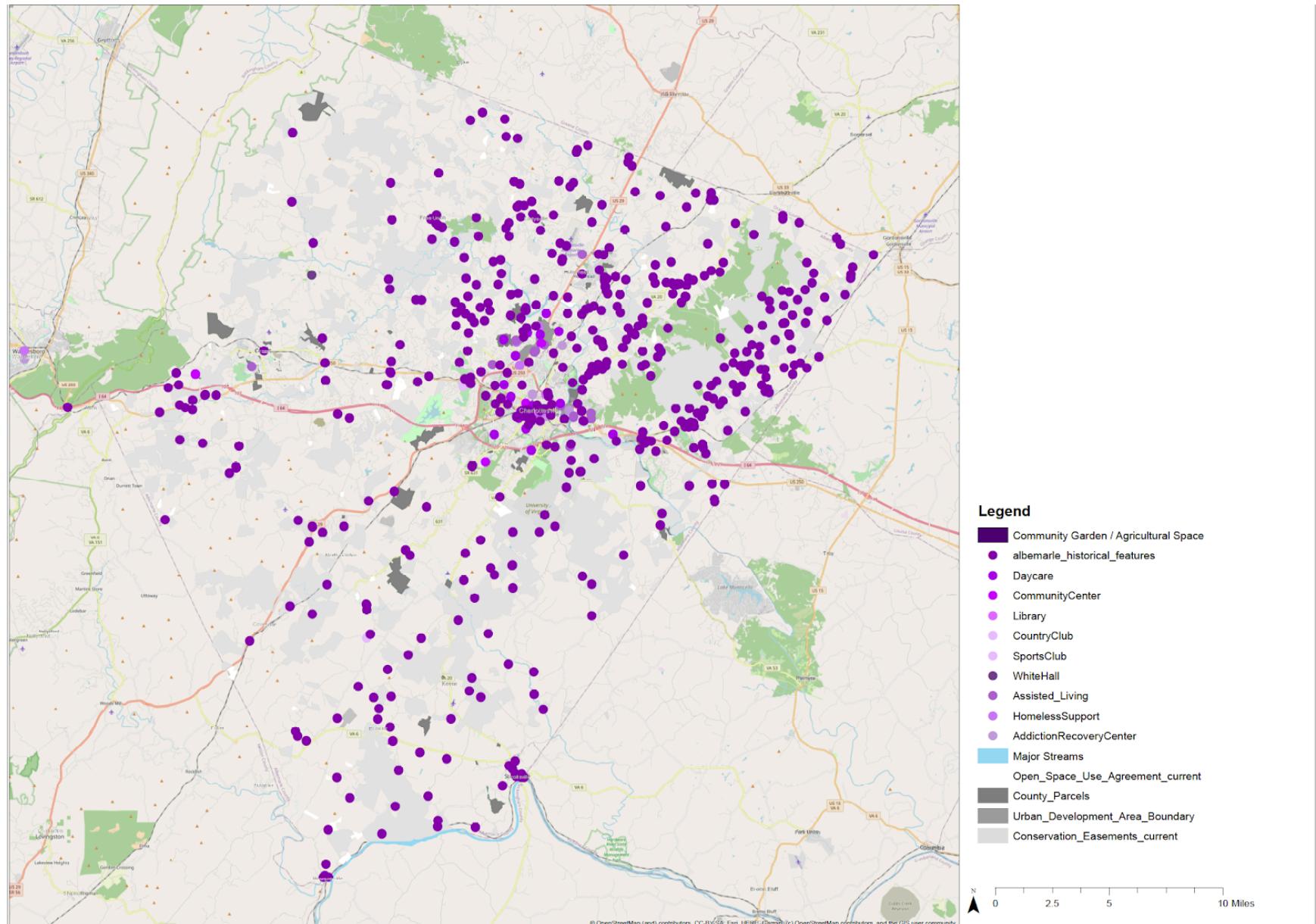
### IMPORTANCE OF COMMUNITY ASSETS

Community assets represent opportunities for trails to create connection to community history, important community social hubs, and non-automobile commuters.

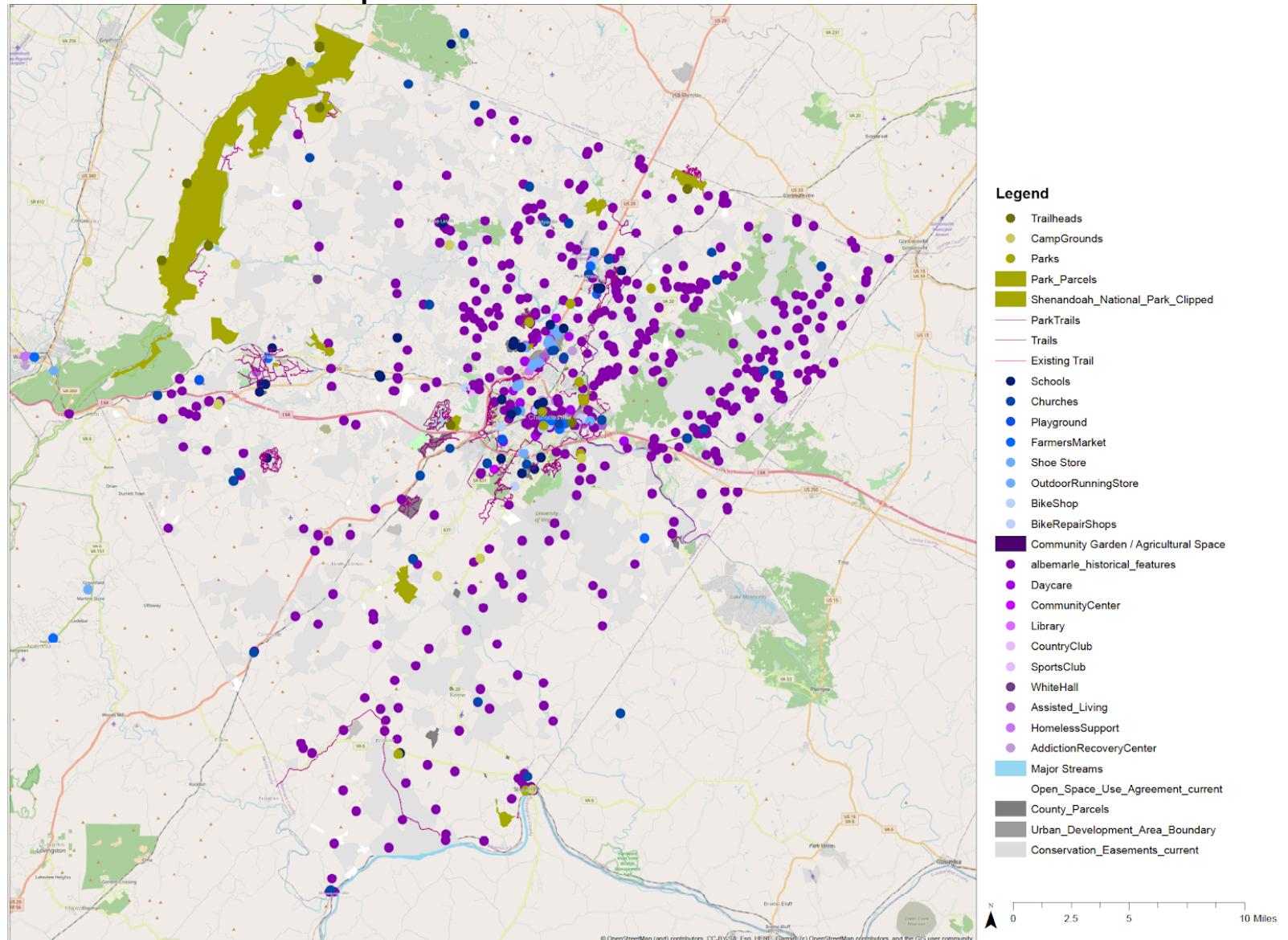
- Community Garden / Agricultural Space
- albemarle\_historical\_features
- Daycare
- CommunityCenter
- Library
- CountryClub
- SportsClub
- WhiteHall
- Assisted\_Living
- HomelessSupport
- AddictionRecoveryCenter



Great Allegheny Passage includes segments of trail that celebrate Railroad history



## MAPPING ANALYSIS | SYNTHESIS MAP



# PROPOSED AREAS SEGMENTS OF INDEPENDENT UTILITY

## CHARACTER OF SEGMENTS

The location of future trails will be influenced by existing land use, trail heads, existing trails, surrounding support facilities and community assets. The character and quality of the trails will also be affected by the land use of the given area. Utilizing community parcels or conservation easements may present an opportunity for acquiring land for future trails.

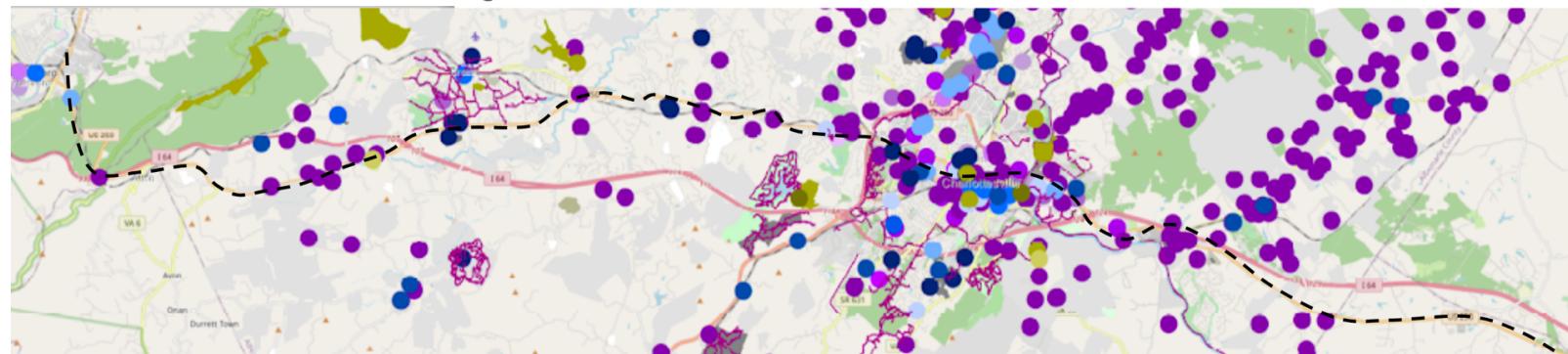
### 1 Commercial Urban



### 2 Natural - conservation easements



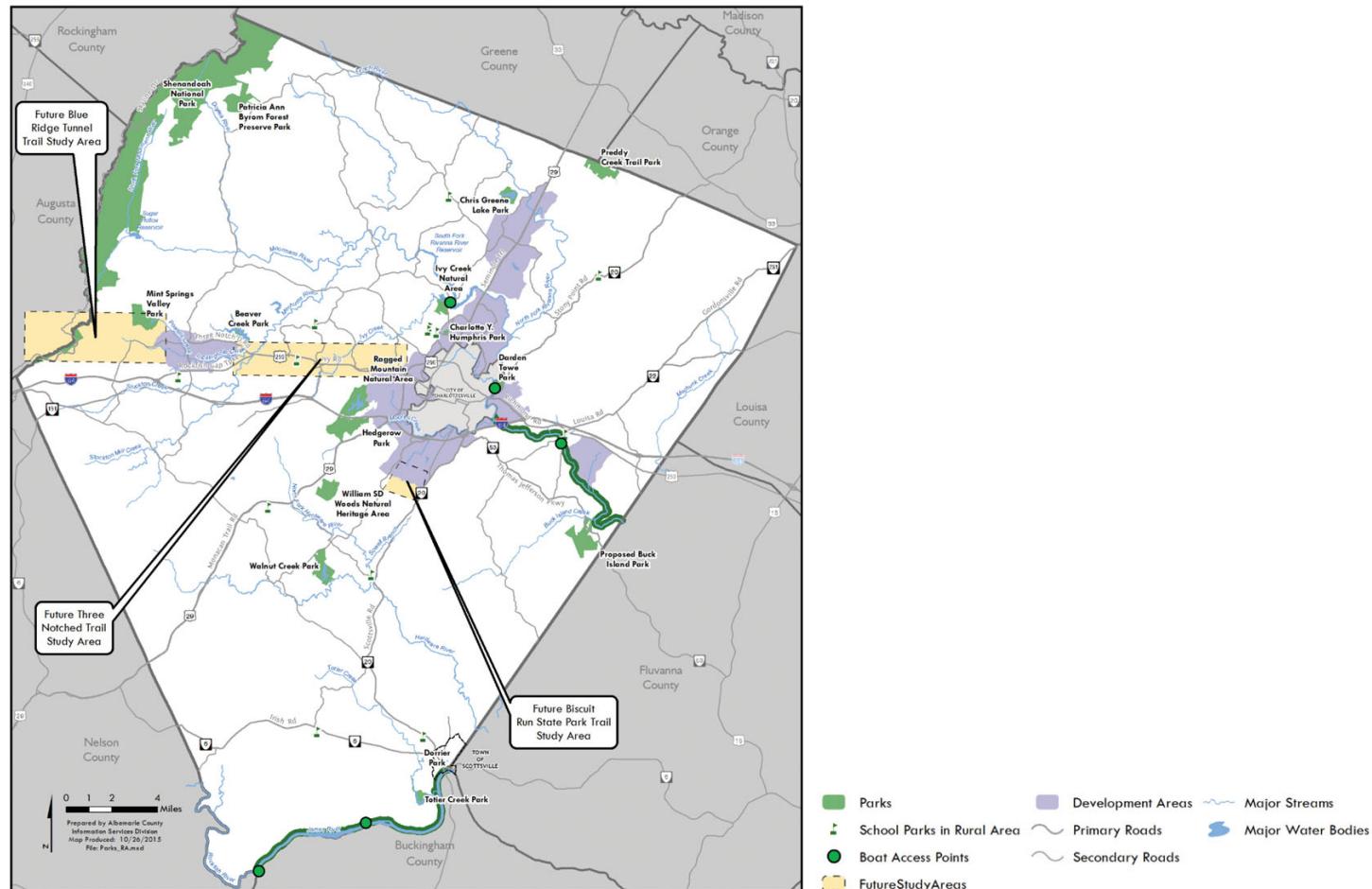
### 3 Multimodal - Rail and Trail, Along Route 250



## PRIORITIZING SEGMENTS

The suggested areas below represent areas for trails that could function as segments with independent utility. Segment development may benefit from utilizing county owned parcels and urban development areas to facilitate land acquisition

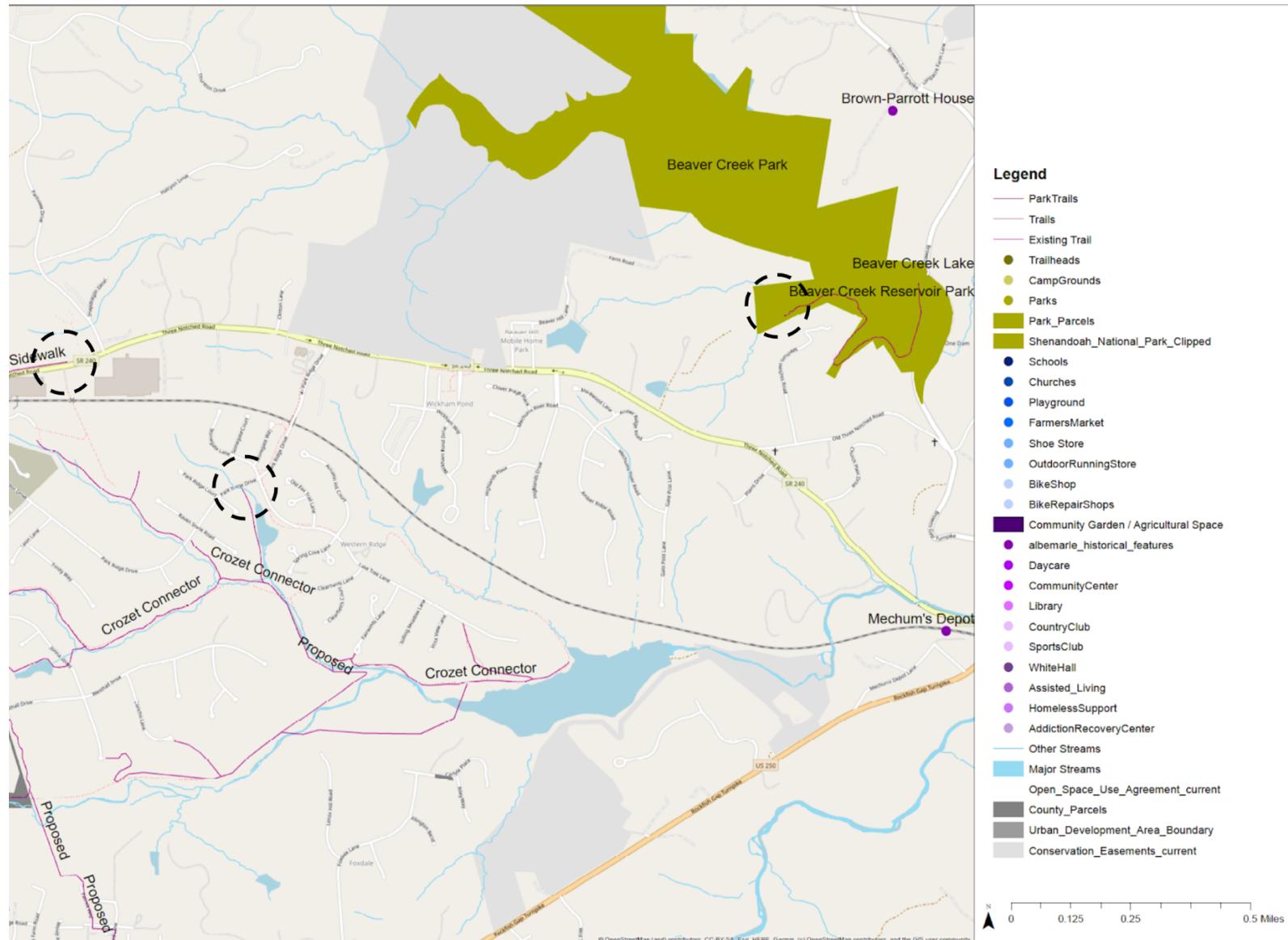
for trails and density of users. Prioritizing segments of independent utility within the proposed Blude Ride Tunnel Trail Study area would be a beneficial focus area to begin implementing segments between Crozet and Charlottesville.



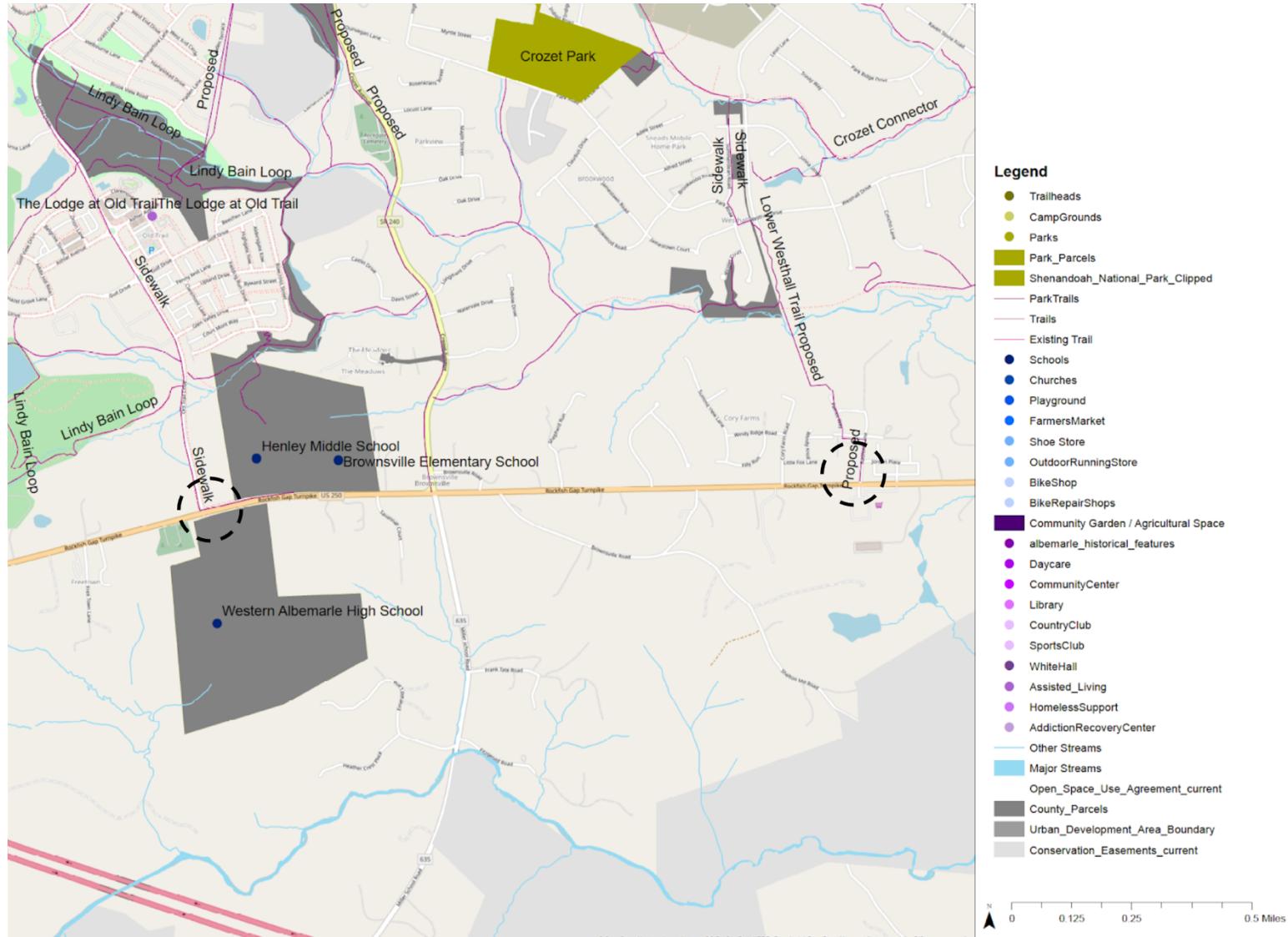
xix

Proposed segments are prioritized based on possible phasing that focus on strengthening connection within Crozet, extending to West Charlottesville then extending outward from East Charlottesville. The following maps represent suggested areas for segments of independent utility 1) extending the TNT 2) connecting 250 to the TNT 3) extending trails from Charlottesville to Crozet, and 4) intersecting 250 East of Charlottesville.

## THREE NOTCHED ROAD SEGMENT

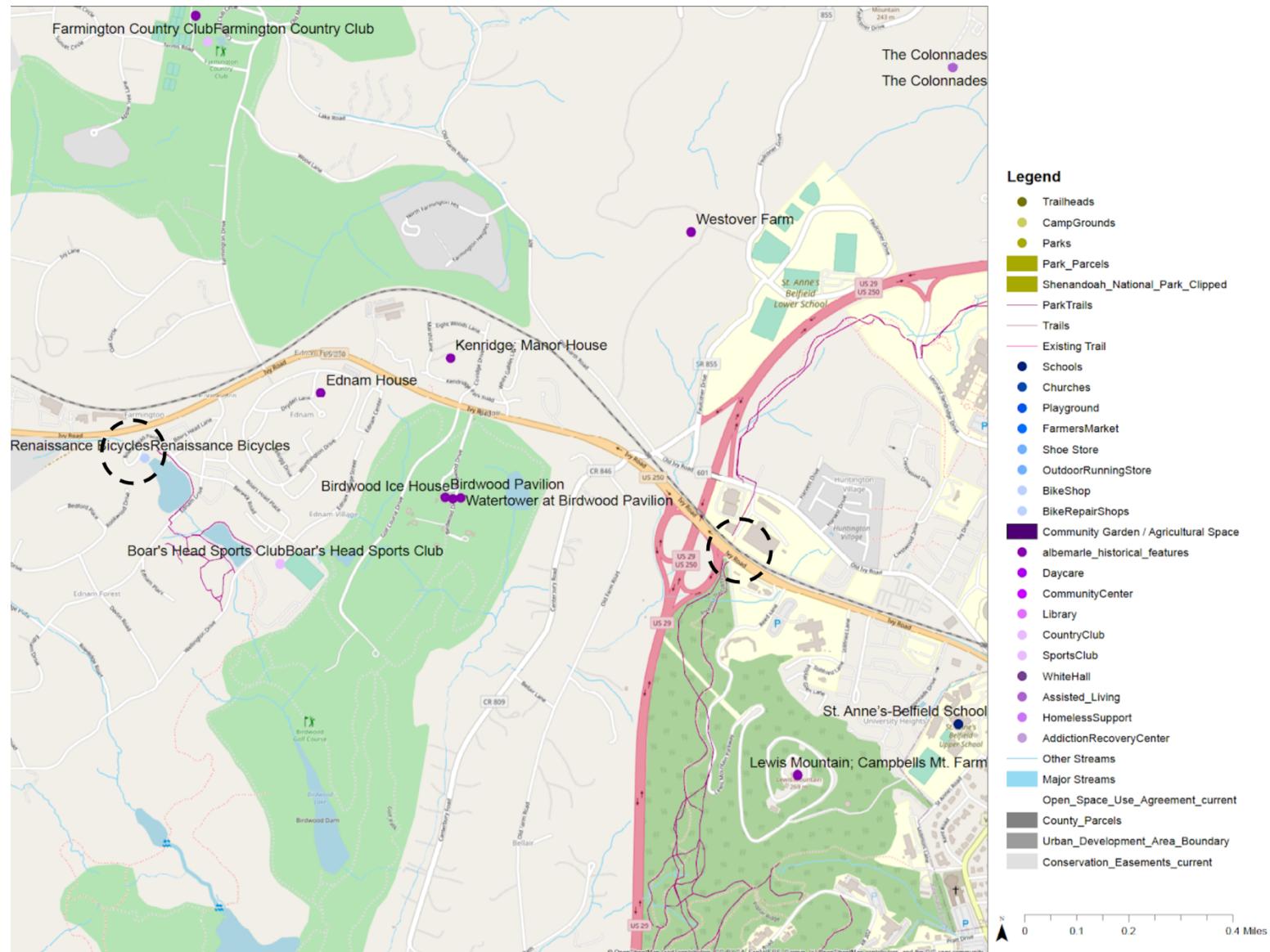


## US ROUTE 250 CROZET SEGMENT

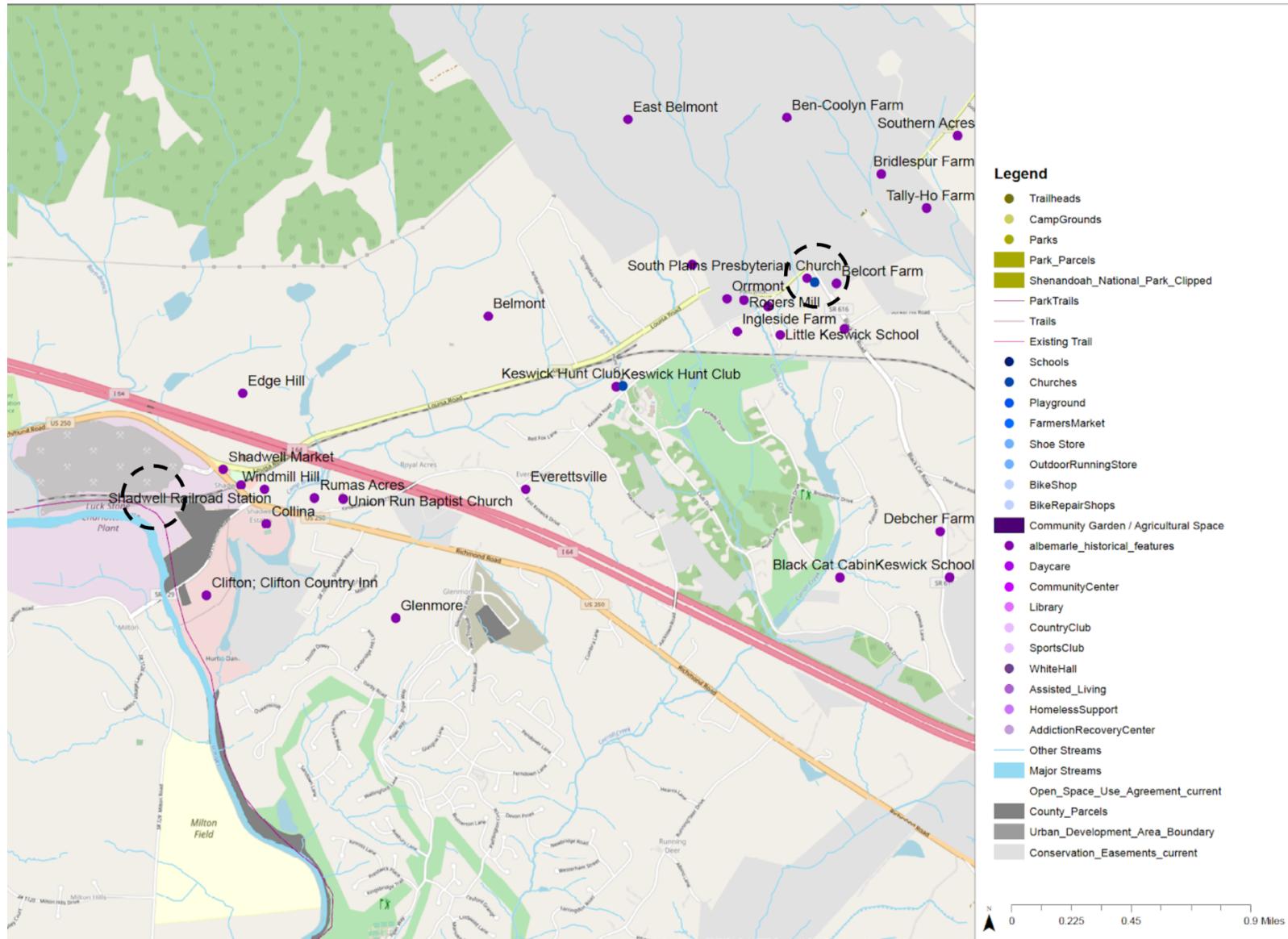


Segment along US Route 250 creates connection between proposed Lower Westhall Trail and three schools which are important support facilities and community assets

## WEST CHARLOTTESVILLE SEGMENT



## EAST CHARLOTTESVILLE SEGMENT



Path links cluster of community assets creating connection between East Charlottesville to US 250 towards Richmond.

# RECOMMENDATIONS

## APPLICABILITY OF SEGMENTS OF INDEPENDENT UTILITY

- 1) Ideal for larger multigenerational projects
- 2) Projects are designed and constructed to be able to function alone
- 3) Has benefit regardless of whether other phases of project are implemented
- 4) Continues movement and action towards larger goals
- 5) Opportunity to build and strengthen connection to community assets

## IMPLEMENTATION

It would be beneficial to begin implementing segments of independent utility between Crozet and Charlottesville because they function as major urban anchors that provide higher population density of potential users. Identifying areas for segments of independent utility should align with long term goal of connecting from the Blue Ridge to Richmond.

### Identify funding sources

- Fundraising
- Trail advocacy
- Grants
- VDOT funding

### Further study area assessment

- Assess population density
- Stakeholder analysis for potential users of trails
- Evaluate areas for possible multimodal trails
- Evaluate potential land use availability

### Community engagement

- Identify and connect with community leaders and potential supporters such as schools and churches
- Identify important intersections with main roads that could serve as trail heads
- Evaluate existing barriers of connectivity
- Generate input on desired trail locations and need for connections

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<sup>i</sup> “Rivanna Trails Foundation - Welcome.”

<sup>ii</sup> Carroll, “Three Notched Trail Greenway in Early Stages | Crozet Gazette.”

<sup>iii</sup> “Environmental Review Toolkit.”

<sup>iv</sup> “The Economic Benefits of Infrastructure Investment, Part II.”

<sup>v</sup> “2018-04-18-PEL-Final-Report-Chapter-7-Implementati.Pdf.”

<sup>vi</sup> “2018-04-18-PEL-Final-Report-Chapter-7-Implementati.Pdf.”

<sup>vii</sup> “2018-04-18-PEL-Final-Report-Chapter-7-Implementati.Pdf.”

<sup>viii</sup> “Www.PeakTraffic.Org Segmentation and Logical Terminii.”

<sup>ix</sup> “Asset\_upload\_file248\_138481.Pdf.”

<sup>x</sup> “Palouse to Cascades Trail Coalition - Palouse to Cascades Trail Coalition.”

<sup>xi</sup> “America’s Friendliest Long-Distance Rail-Trail - GREAT ALLEGHENY PASSAGE.”

<sup>xii</sup> “C&O/GAP Info.”

<sup>xiii</sup> “Wabash Trace Nature Trail.”

<sup>xiv</sup> “DRPT Rail Database.”

<sup>xv</sup> “GIS Data | Albemarle County, VA.”

<sup>xvi</sup> “Google Earth.”

<sup>xvii</sup> “Trails near Crozet – Crozet Trails Crew.”

<sup>xviii</sup> “City-Trails-Map-PDF.Pdf.”

<sup>xix</sup> Carroll, “Three Notched Trail Greenway in Early Stages | Crozet Gazette.”