



Safe Access to Parks

Upper Tampa Bay Trail Linear Park Pilot Final Existing Conditions

August 2021



Hillsborough TPO
Transportation
Planning Organization





Contents

I.	Introduction.....	3
A.	Park Selection Process.....	3
II.	Park Description	4
III.	Transportation Setting.....	8
A.	Trailhead Access Locations.....	8
B.	Population Characteristics.....	19
C.	Other Area Studies	20
IV.	Travel Characteristics	22
V.	Collision Assessment	29
VI.	Key Findings.....	35



I. Introduction

The Hillsborough Transportation Planning Organization (TPO) is conducting a Safe Access to Parks pilot project (project or pilot) to develop a process that can be replicated at parks throughout the County to implement safety countermeasures with a focus on speed management. A toolbox of safety countermeasures, building on the 2019 *Speed Management Action Plan*, will be developed as part of this process. This pilot project includes three different types of park facilities in Hillsborough County, including a local, regional, and linear park whose context and transportation safety issues broadly represent other facilities in the region, such that the findings from this pilot project can be applied elsewhere in the County.

The project scope includes the following task:

1. Identify parks to include in the pilot project
2. Conduct a detailed existing conditions assessment of each park location
3. Solicit public feedback
4. Develop a toolbox of safety countermeasures
5. Apply countermeasures to each park location

This report documents Task 2, the existing conditions assessment.

A. Park Selection Process

A quantitative process was developed that primarily considered equity and transportation safety metrics to identify candidate parks within Hillsborough County. Additional details provided are provided in a technical memorandum dated [May 3, 2021](#).

The three park locations selected for inclusion in the pilot are Copeland Park (regional), the Upper Tampa Bay Trail (linear), and Sulphur Springs Park (local). There are few linear parks in Hillsborough County, and they

typically follow a natural linear feature, such as a shoreline or other waterway. Walking and bicycling trails are typically provided for the length of the park, with limited active or passive activities.

This report focuses on the Upper Tampa Bay Trail, including a description of the trail, the roadway network and land use context around primary trail access locations, trail travel characteristics, and a collision assessment. This information will be further refined based on a public outreach campaign to identify transportation concerns that are not readily apparent through traditional data collection approaches.



Upper Tampa Bay Trail Trailhead Monument



II. Park Description

The Upper Tampa Bay Trail totals approximately 11.5 discontinuous miles, with the southern section beginning in the southwestern portion of the county near the Bayport Commons shopping center and terminating at Peterson Road Park. A 4.3-mile trail in the north extends from Van Dyke Road along the eastern and northern boundaries of Brooker Creek Headwaters Nature Preserve where it connects to the Suncoast Trail at State Route 589. There are plans to close the 2-mile trail gap between Peterson Park and Van Dyke Road, and the County recently programmed funding to continue with the planning and design process.

This assessment focuses on the southern 7-mile section as there is a higher density of trailheads, roadway crossings and intersections. The extents of this trail section are shown on **Figure 1**.

The trail is open from sunrise to sunset. There are six primary trailheads on the southern portion of the trail that provide parking:

- Memorial trailhead
- Channel Park trailhead
- Wilsky Boulevard trailhead
- Rocky Creek Trails Nature Preserve
- Ehrlich Road
- Peterson Park

There are also numerous neighborhood connections, such as at Dry Creek Drive and Seafairer Drive/Memorial Highway on the southern portion of the trail. The northern portion of the trail is highly permeable from the surrounding community with many street connections.

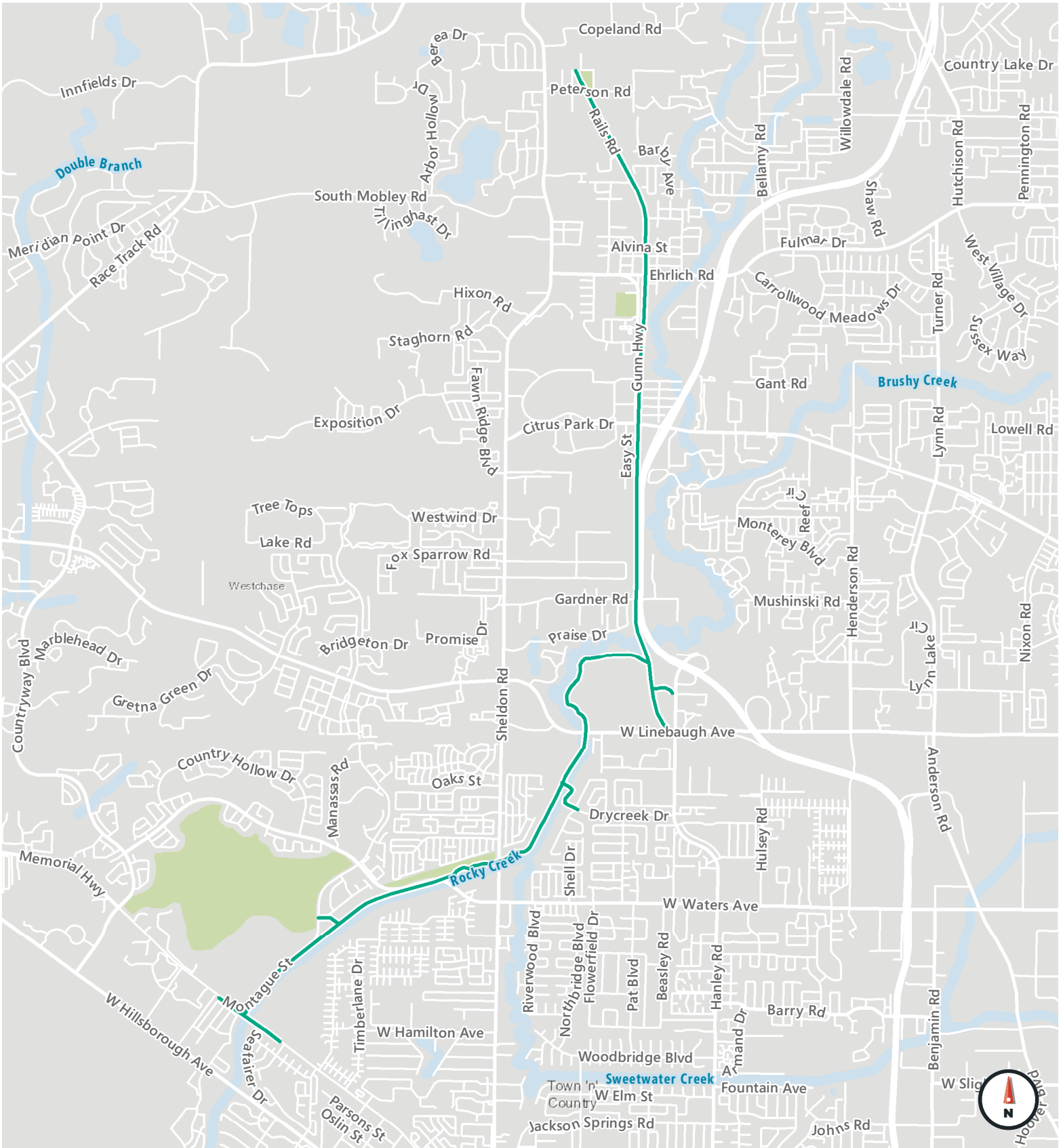


Trailhead with Paid Parking

The trail connects to major roadways including Linebaugh Avenue and Gunn Highway/Citrus Park Drive.

The trail is typically 12-feet wide with unpaved shoulders, although there are portions of the trail that are wider, and some portions of the trail that are narrower due to physical constraints such as waterways, roadways, and railroads. Most of the trail is paved asphalt, through there are some sections with an elevated boardwalk through the Rocky Creek area. Much of the trail is shaded with vegetation.

Most trailheads provide water, and a few include other amenities such as restrooms, drink machines, picnic shelters, a playground, meeting rooms, and/or barbecue grills. Benches and trash cans are also provided along the trail.



— Upper Tampa Bay Trail

Figure 1
Upper Tampa Bay Trail
Study Area



Typical Trail Environment 1 – Shaded Natural Area

The trail passes through a variety of different contexts. Most of the trail runs through natural settings with limited road crossings. Other parts of the trail are in residential or commercial areas. In general, the path has separated facilities (underpasses and a bridge) at major roadway crossings. The condition of at-grade crossings, where the path intersects a roadway, varies. Some crosswalks are well maintained, but many of the crossings are faded. Other crossings are not marked. Several signs and maps along the trail are blocked by overgrown vegetation or have been faded by the sun.

The southern segment of the trail serves over 300,000 people annually, and is the most popular trail in the County. Portions of the trail can become congested with people traveling at a wide variety of speeds and a variety of modes, including people with strollers and dogs. At the current terminus of the southern end of the trail, there is no guidance on how to safely navigate the trail gap.



Typical Trail Environment 2 – Exposed Natural Area



Typical Trail Environment 3 – Residential Street Connections

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SAFE ACCESS TO PARKS - UPPER TAMPA BAY TRAIL



Trail Terminus at Peterson Road Park



Trail Overcrossing at Gunn Highway



Connection to Linebaugh Avenue



Faded Trail Crossing at Peterson Road Park



III. Transportation Setting

This section provides a detailed description of the roadways that provide primary access to the Upper Tampa Bay Trail. It focuses on primary roadways that connect to the major trailheads and street crossings of the trail, population characteristics along the trail and a summary of other on-going transportation improvements in the area. Transit service is not provided directly to any of the trailheads. Hillsborough Area Regional Transit (HART) Route 39 operates on Gunn Highway, Sheldon Road and Waters Avenue in proximity to the trail. No direct trail access via transit is provided. There is also a HART Park and Ride lot and transfer center on Sheldon Road at Waters Avenue that is connected to the trail along Sheldon Road by on-street bike lanes and sidewalks. As transit is not a primary access mode to the trail, transit service in the area is not discussed further. Horses are permitted on large portions of the trail.

A. Trailhead Access Locations

There are six primary trailheads that provide parking and serve as the main staging areas for trail users that are not able to walk or bike to the trail. The location of each of the following trailheads is shown on **Figure 2**.

- Memorial trailhead
- Channel Park trailhead
- Wilsky Boulevard trailhead
- Rocky Creek Trails Nature Preserve
- Ehrlich Road
- Peterson Park Road

Minor trail access locations are discussed in the context of the primary trailhead in closest proximity.

The transportation system that all modes use to access the trail is discussed below.

Memorial Trailhead

The memorial trailhead is at the southernmost end of the trail, with access from Montague Street. Montague Street connects to W Hillsborough Avenue to the south and Waters Avenue to the northwest. In the vicinity of the trailhead, the roadway serves a few subdivisions and a high school, with few other roadway connections. There is a roundabout half a mile west of the trailhead that connects Montague Street with Old Memorial Highway. At this intersection, westbound traffic is forced to make a left to continue on Montague Street. Eastbound traffic from Old Memorial Highway is able to access Montague Street.

Key characteristics of Montague Street include:

- Collector roadway designation
- 34-foot typical pavement cross section, with one vehicle travel lane in each direction and marked bicycle lanes
- No on-street parking
- Posted speed limit of 30 miles per hour
- No transit service
- Approximately 5,900 vehicles per day on average south of Waters Avenue
- One marked, uncontrolled crossing to Alonso High School collocated with primary drop-off/pick-up exit
- On the roadway section connecting to the trailhead, there were 39 reported collisions over the past 5 years
 - 1 collision involving a vulnerable road user (bicyclist, pedestrian, motorcyclist)

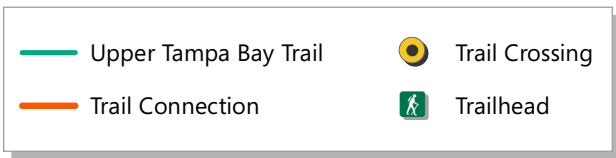
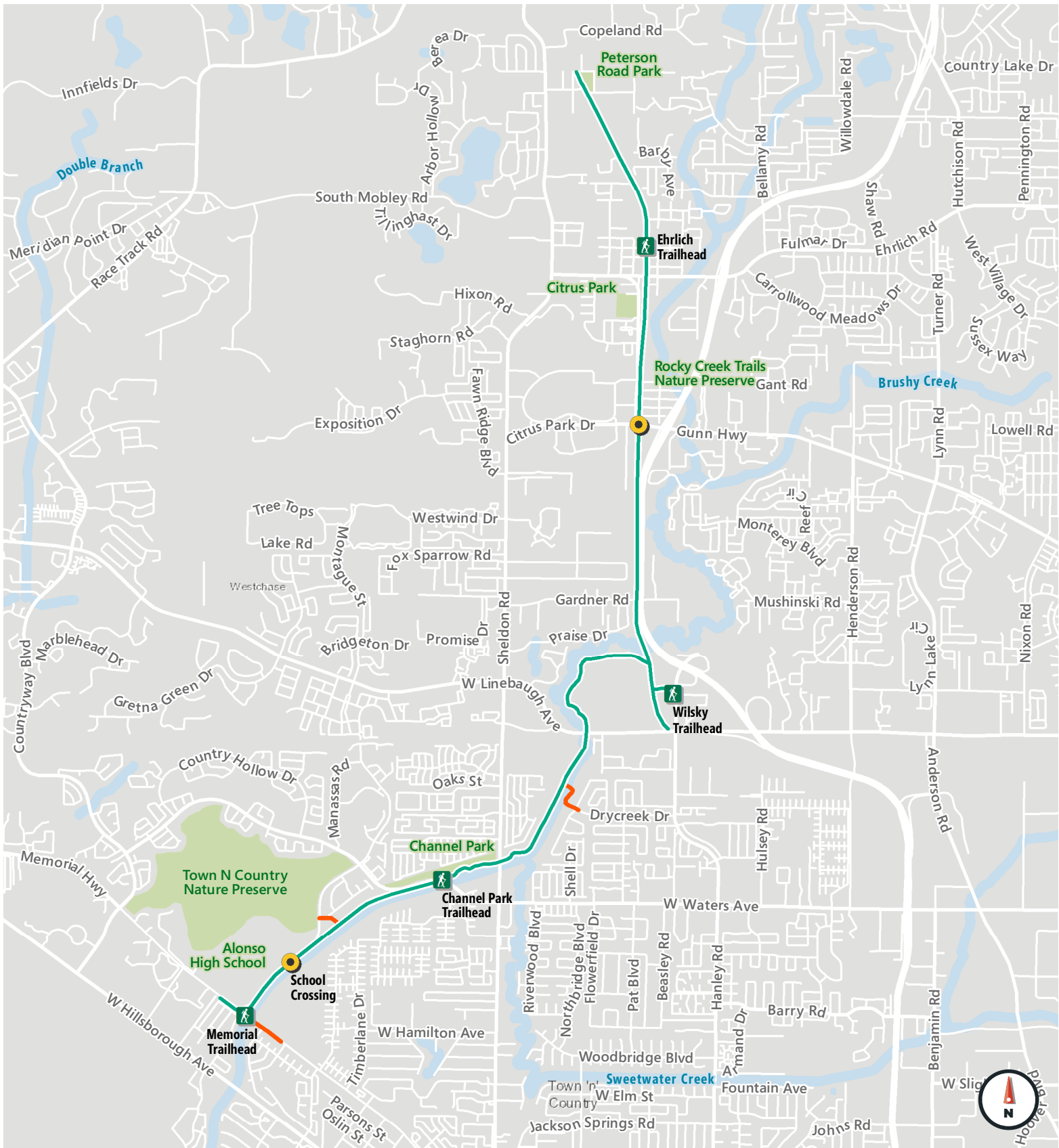


Figure 2
**Upper Tampa Bay Trail
 Trailhead Locations**



During the data collection effort, the following was observed about the condition, design and operation of Montague Street:

- Signalized intersections with protected crossings are located at the intersections of W Hillsborough Avenue and W Waters Avenue, about 2-miles apart. Both of these intersections have crosswalks across Montague Street, pedestrian pushbuttons, and pedestrian signals. There are two other marked, uncontrolled crossings on the roadway. One is about a quarter of a mile northeast of the trailhead and connects the high school to the Upper Tampa Bay Trail. The other is about another quarter of a mile northeast of the high school crossing, connecting the trail to the Town N Country Nature Preserve.
- There are five-foot sidewalks on both sides of the roadway except for a gap on the west side between Mallory Square Drive and the Bayport Commons shopping Center. The sidewalk merges with the Tampa Bay Trail for a small section. There are six-foot (including width of gutter) bicycle lanes in both directions on Montague Street. The stripes for the bike lanes and bicycle markings are faded.
- LED roadway lighting is provided on both sides of Montague Street, but no pedestrian-scale lighting is present. The public outreach campaign will include a question related to the adequacy of street lighting levels in the area, with a focus on pedestrian crossing locations.
- The trailhead entrance is located at a curve in the roadway along Montague Street. Sufficient sight-distance is provided at the driveway for people driving and exiting the trailhead, but not for pedestrians crossing street at this location.
- While the trail wraps around the trailhead to provide pedestrian access, there is no direct pedestrian access from Montague Street.

- Trailhead provides approximately 15 vehicle parking spaces.
- Trailhead has a trail spur that connects across the Channel A waterway, connecting the trail to The Cove residential neighborhood and beyond to the trail.



Memorial Trailhead Entrance



Memorial Trailhead Amenities



Channel Park Trailhead

The Channel Park trailhead, the flagship trailhead of the Upper Tampa Bay Trail, offers a paved parking lot, restrooms, meeting rooms, and houses a parks maintenance and ranger facility. Vehicle access is provided from Waters Avenue. While on the trail, access to the trailhead from the south is provided at a signalized, midblock crossing on Waters Avenue. The trail continues under Waters Avenue. From the north, access is provided from Sheldon Road at a signalized intersection, as well as an underpass. East of Sheldon Road, Waters Avenue is more densely populated and has a mixture of commercial and residential land uses. West of Sheldon Road, the density of development starts to diminish, and vehicle volumes are lower. The land uses are primarily residential, and the driveways are consolidated and spaced farther apart. The Channel Park trailhead is located about half a mile west of Sheldon Road.



Channel Park Trailhead Amenities

Key characteristics of Waters Avenue include:

- Divided Arterial
- 74-foot typical vehicle pavement cross-section at trailhead entrance
- Two vehicle travel lanes in each direction, with a center raised median
- No on-street parking
- Posted speed limit of 45 miles per hour
- On-street bicycle lanes
- While there is no transit access to the trailhead, HART Routes 16, 30, 34, and PSTA Route 812 operate on Waters, to just west of Sheldon Road, and Route 39 operates on Sheldon Road. These routes serve the HART Park & Ride lot and transfer center.

- 10,500 vehicles per day on average, west of Sheldon Road
- 111 collisions over the past 5 years
 - 6 collisions that resulted in a serious injury or fatality (KSI collision)
 - 1 fatal collision
 - 4 collisions involving a vulnerable road user

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SAFE ACCESS TO PARKS - UPPER TAMPA BAY TRAIL



During the data collection effort, the following was observed about the condition, design and operation of streets around the Channel Park trailhead:

- Signalized crossings of the trail near the Channel Park trailhead are located on Waters Avenue and Sheldon Road. Both crossings are midblock crossings with marked crosswalks, advance stop bars pedestrian push buttons, and pedestrian countdown timers. Push buttons at both trail crossings are installed at two heights – one for people walking, bicycling, or in a wheelchair, and one placed higher for people on a horse. The pushbuttons do not appear to meet ADA requirements in that they are not aligned with the direction of travel across the crossing. At the Waters Avenue crossing, people had to wait a fairly significant time to receive the crossing indication, and during that waiting time there were no vehicles on the roadway, which resulted in some people crossing against the signal. At the Sheldon Road crossing, the pedestrian crossing was activated fairly quickly after being pushed and people crossing against the signal was not observed.
- There are five-foot wide sidewalks on both sides of the roadway in the area around the park. There are five-foot bike lanes in both directions on Waters Avenue, but there are no pavement markings or signs identifying this area as a bike lane except at some signalized intersections.
- No roadway lighting is provided in the park vicinity.
- Some signage and crosswalk markings in the area were faded.



Waters Avenue Trail Crossing



Sheldon Road Trail Crossing



- The crossing distance at the driveway to the trailhead is approximately 75-feet. As there is only one lane in each direction, the driveway design encourages higher speeds for people driving and turning into the trailhead parking area.



Trailhead Entrance on Waters Avenue

Wilsky Boulevard Trailhead

The Wilsky Boulevard trailhead is located near the Veterans Expressway and provides an approximately 20-space parking lot with restroom facilities that is connected to the main trail with a spur trail. The driveway serving the parking lot is off-set from Wimpy Lane. In this area, the density of land use development starts to decrease as compared to the southern portion of the trail.

Access to the trail is also provided at the intersection of W Linebaugh Avenue at Wilsky Boulevard, and on W Linebaugh Avenue where it crosses Rocky Creek, west of Stillchase Street.

Key characteristics of Wilsky Boulevard Avenue include:

- Collector Roadway
- 30-foot vehicle pavement cross-section at trailhead entrance
- One vehicle lane in each direction
- No on-street parking
- Posted speed limit of 35 miles per hour
- No bicycle facilities
- No transit
- Sidewalks on eastside of roadway, opposite entrance to trailhead
- 15,000 vehicles per day on average, north of Linebaugh Avenue
- 123 collisions over the past 5 years
 - 2 collisions with a severe injury, 1 fatal collision
 - 2 collisions involving a vulnerable road user

Key characteristics of W Linebaugh Avenue include:

- Arterial Roadway
- 120-foot typical vehicle pavement cross-section at Wilsky Boulevard
- Two vehicle lanes in each direction, with a center raised median
- No on-street parking
- Posted speed limit of 45miles per hour
- On-street bicycle lane
- No transit
- 39,900 vehicles per day on average, west of the trail undercrossing
- 184 collisions over the past 5 years
 - 4 collisions where someone was killed or seriously injured
 - 4 collisions involving a vulnerable road user

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During the data collection effort, the following was observed about the condition, design and operation of streets around the Wilsky Boulevard trailhead:

- Upper Tampa Bay Trail crosses under W Linebaugh Avenue, west of Stillchase Street. Ramps from Linebaugh Avenue connect to the trail on both the north and southsides of the street.
- Signalized crossings near the Wilsky Boulevard trailhead are located on W Linebaugh Avenue at both Wilsky Boulevard and Stillchase Street. At Wilsky Boulevard, pedestrian crossings are provided at all intersection approaches. At Stillchase Street, there is no crossing of the east leg of the intersection. Long cycle lengths contribute to high levels of delay for people waiting to cross the street.
- There is no pedestrian entry to the Wilsky Boulevard trailhead, and no marked crossing for people who might come from the surrounding neighborhood to the trailhead.
- Driveways along Wilsky Boulevard have large turn radius that allows people to turn at high rates of speed across a marked crosswalk. The large turn radius also increases the pedestrian crossing distance and exposure.
- Trailhead is located in close proximity to Veterans Expressway on and off-ramps
- No roadway lighting is provided in the trailhead vicinity.
- The volume and speed of people driving on W Linebaugh Avenue make it uncomfortable for bicyclists and pedestrians.



Bike Lane and Sidewalk on Linebaugh Avenue



Trailhead Entrance on Wilsky Boulevard; Veterans Expressway Ramps in Distance

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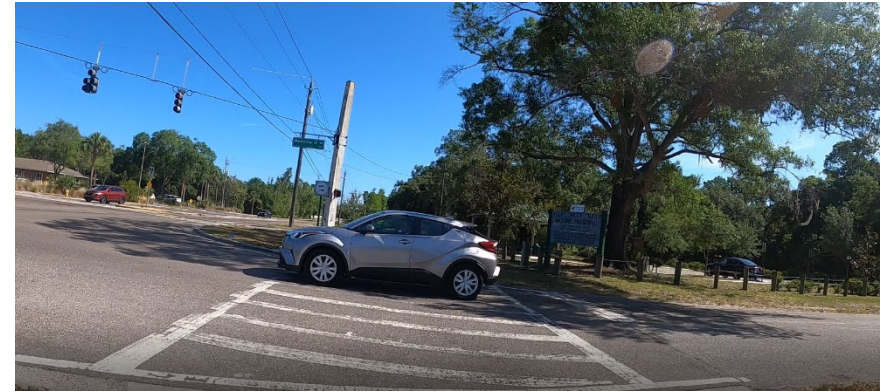
SAFE ACCESS TO PARKS - UPPER TAMPA BAY TRAIL



- There is a neighborhood connection to the trail from Drycreek Drive, approximately ¼ mile from Linebaugh Avenue, connecting the Pinehurst Community to the trail.

Rocky Creek Trails Nature Preserve

Between the Wilsky Boulevard and Rocky Creek Trails Nature preserve, there are several at grade crossings of the trail and a pedestrian overpass at Gunn Highway/Citrus Park Drive. At grade crossings are located at Gardner Road, Edgemere Road and Manhattan Drive. There are also several retail driveways. In addition to a grade separated crossing of Gunn Highway/Citrus Park Drive, there is also an at-grade crossing.



Entrance to Rocky Creek Trails



Edgemere Road Crossing



Gardner Road Crossing

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Gardner Road is a two-lane local roadway with a posted speed limit of 25 miles per hour. During the data collection period, people driving were observed to have a high rate of yielding to people crossing the trail. This is likely because many people who travel on Gardner Road are aware of the trail crossing. The trail crossing markings and signs are fading and there are other opportunities to enhance this crossing. Many of the uncontrolled trail crossings have stop signs for people on the trail, which may give people driving the impression that they do not need to yield to pedestrians or cyclists in the crosswalk.

Gunn Highway transitions to Citrus Park Drive at the trail. These roadways in the vicinity of the trail crossing are 4 to 6 lane arterial roadways with almost 30,000 vehicle trips per day. The at grade crossing includes pedestrian actuation although the push buttons are not fully ADA compliant as not all are oriented in the direction of travel. The ramps for the pedestrian bridge start about 650 feet south and about 550 feet north of the intersection.

Edgemere Road is a minor one block residential street that, in combination with Manhattan Drive, connects a small neighborhood to Gunn Highway. As part of the original trail construction, connections from other streets in the neighborhood to Gunn Highway were eliminated to minimize conflict locations along the corridor. The intersection of Manhattan Drive is signalized. The location of the pedestrian push button is out of the path of travel for people walking and bicycling, and many were observed not to wait for the pedestrian crossing indication.

Rocky Creek Trails Nature Preserve, located along the north side of Manhattan Drive, is not an official Upper Tampa Bay Trail trailhead, but people were observed to park there and walk a portion of the trail.



Driveway Crossings and Pedestrian Bridge – Gunn Highway/Citrus Park Drive



Rocky Creek Trails Nature Preserve Amenities



Ehrlich Road

A formal trailhead is located off Ehrlich Road, east of Gunn Highway. Vehicle access is restricted to right-in/right out from Ehrlich Road, and is located in close proximity to several restaurants and retail establishments. At the Ehrlich Road crossing of the trail, the crossing is approximately 150 feet west of the trail, requiring out of direction travel.

Key characteristics of Ehrlich Road include:

- Divided Arterial
- 78-foot typical vehicle pavement cross-section in trailhead vicinity
- Two vehicle lanes in each direction, with a center raised median
- No on-street parking
- Posted speed limit of 45 miles per hour
- On-street bicycle lanes
- No transit service
- 23,000 vehicles per day on average
- 153 collisions over the past 5 years
 - 6 collisions that resulted in a severe injury
 - 2 fatal collisions
 - 4 collisions involving a vulnerable road user

During the data collection effort, the following was observed about the condition, design and operation of streets around the Ehrlich Road trailhead:

- People walking along the natural continuation of the trail as opposed to crossing at the signalized crossings.
- Cycle length of signalized crossing was excessive for traffic conditions resulting in people crossing against the signal
- Wayfinding to direct people to crossing was not clear
- Condition and width of pavement connecting the trail to the crossing is poor



Crossing Ehrlich Road along Trail Desire Line

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Peterson Park Road

Between Ehrlich Road and Peterson Park Road, there are several at grade crossings of the trail at minor residential streets, Almark Street and Alvina Street. Both crossings have stop signs for trail users and no traffic control for people driving. Installation of stop-control for people on the trails can result in people driving to think they do not need to yield to people in the crossing, both at this trail crossing and others in the community.

Where the trail parallels Rails Road, there are several residential driveways that cross the trail.

Peterson Park Road is the current terminus of the southern section of the trail. Aside from a noted trail gap on the monument sign, there is not signage indicating that the trail ends in this area. The crosswalk markings are also faded on the approach to Peterson Park Road.



Almark Street Crossing



Peterson Park Road Monument Sign



Alvina Street Crossing

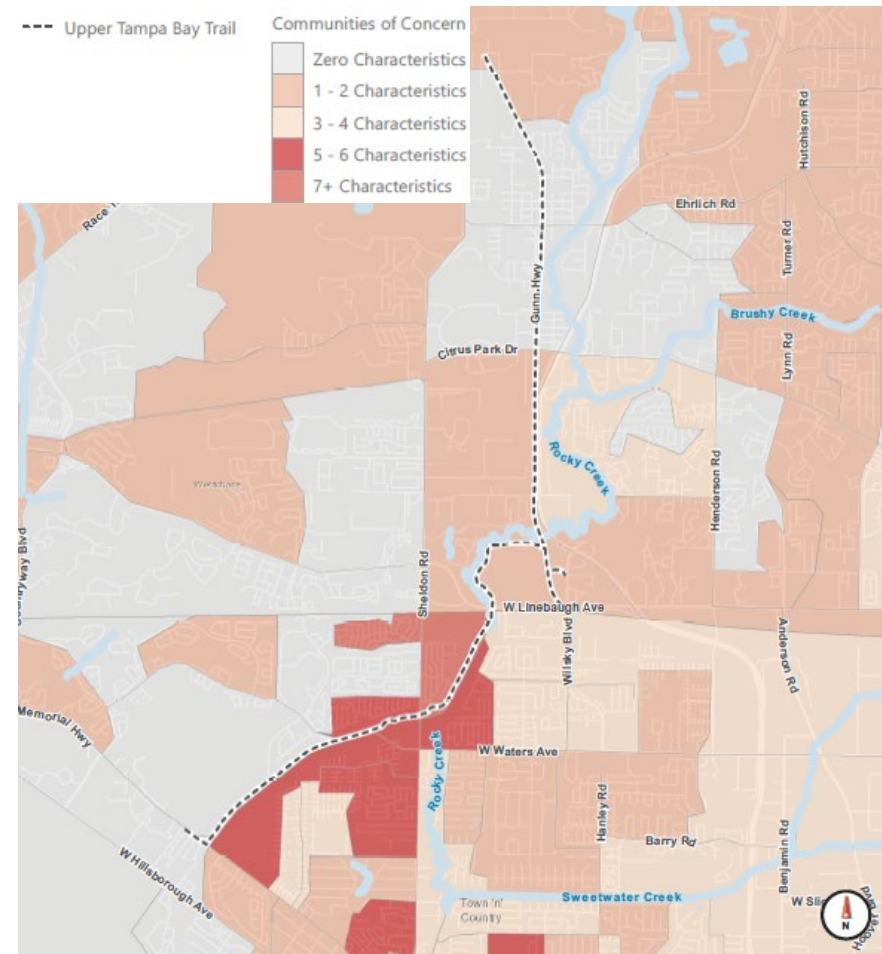


B. Population Characteristics

The park selection process focused heavily on equity metrics as defined by the Hillsborough Community of Concern definitions, with some of the areas around the Upper Tampa Bay Trail meeting criteria in various categories being at least one standard deviations above the County median.

- Percent minority population
- Limited English proficiency households
- Low Income Households
- Households living with a disability
- Zero vehicle households
- Percent of residents who are under 18-years old
- Percent of residents who are over 65-years old

The TPOs Vision Zero Action Plan and other recent studies have shown the people living in communities of concern are significantly more likely to be involved in a traffic collision that results in a severe injury or a fatality. As this area has a higher-than-average population of households without a vehicle, and a high population of people under the age of 18, the park is likely a major walk/bike destination for people residing in the surrounding vicinity and improving the safety of roadways in the area with a focus on people walking and bicycling can help improve safety outcomes for the area.



Communities of Concern in Study Area
Source: Hillsborough TPO



C. Other Area Studies

Hillsborough County, the Florida Department of Transportation (FDOT), the Hillsborough TPO, and HART have prepared plans for transportation network improvements in Upper Tampa Bay Trail catchment area. FDOT is currently undertaking a corridor evaluation of Hillsborough Avenue from Memorial Highway to I-275. The study is evaluating the corridor for capacity issues, traffic operations, safety, access management, freight movements, transit, bicycles, and pedestrian movements. As Hillsborough Avenue serves as a major roadway connection to the Memorial trailhead, potential improvements to the roadway could improve access to the trail.

A review of the Hillsborough Area Regional Transit (HART) Transit Development Plan from 2017 indicates that employment and residential densities are not expected to be sufficient to support transit investments west of Sheldon Avenue through 2027.

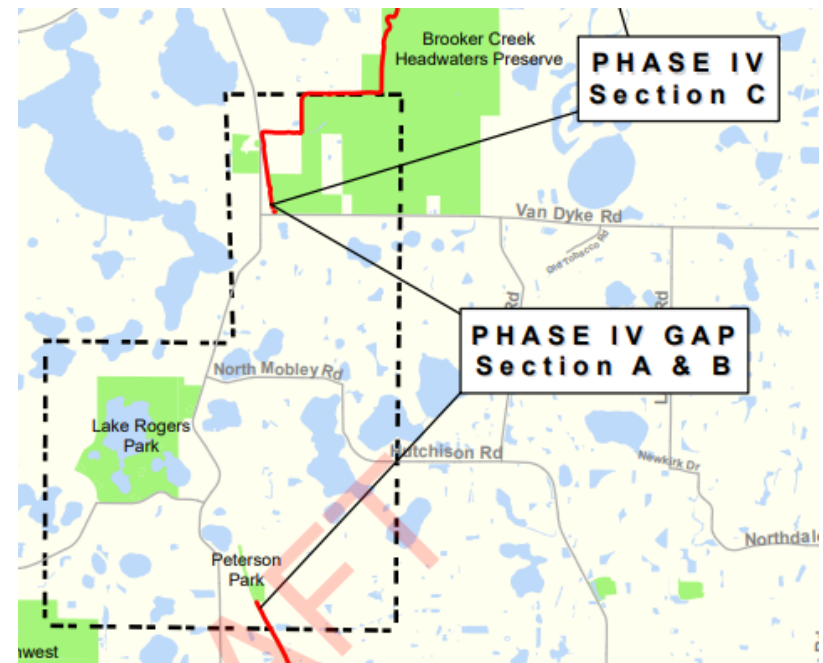
[Hillsborough County](#) has several projects in the planning and design in the trail catchment area, including:

- Completing the roundabout at the intersection of Montague Street at Memorial Highway with a new westbound movement for people driving, and bicycle and pedestrian improvements. Construction is expected to be completed in 2022
- Extension of the trail between Peterson Park Road and Van Dyke Road. Closure of this trail gap would provide an uninterrupted path from the Memorial Highway trailhead to Hernando County by connecting the southern portion of the trail to the Suncoast Trail. A preferred alignment was identified in 2020. On July 28, 2021, the County Commission agreed to provide \$1,000,000 in funding to keep the project moving forward. A two-lane 45-miler per hour section of Gunn Highway,

without continuous sidewalks or bicycle facilities, is currently used to bridge the gap.

The [Hillsborough TPO Transportation Improvement Plan](#) identifies two planned improvements connecting to the trail, including:

- Lutz Lake Fern Road Trail Connector, Still Wood Drive to Upper Tampa Bay Trail – Sidewalk construction (FPN 436713 1)
- Hillsborough Ave (Memorial Hwy/Sheldon Rd to W of Church Ave) – Walk/Bike Safety Project (FPN 437641 1)



Trail Gap Study
Source: Hillsborough County, 2020

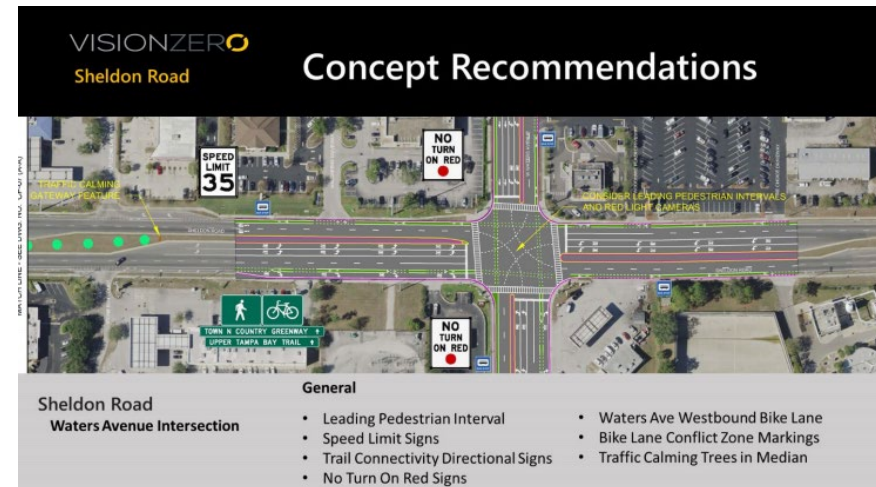
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SAFE ACCESS TO PARKS - UPPER TAMPA BAY TRAIL



The Hillsborough TPO recently completed a corridor study for the [Sheldon Avenue Corridor](#) between Hillsborough Avenue and Waters Avenue. The study identified a number of systemic improvements to be implemented along the corridor, including high visibility crossings, curb radii reductions, narrowing of traveling lanes, increasing width of bike lanes, and improving street lighting. Specific recommendations were also identified along the corridor, such as at Sheldon Avenue at Waters Avenue where recommendations included leading pedestrian intervals, no right-turn on red signs, and improved bike lane markings.

The Upper Tampa Bay Trail runs through a portion of the [Citrus Park Village Plan](#) area, which is generally west of Veterans Expressway, north of Gunn Highway/Citrus Park Drive, east of Sheldon Avenue and south of South Mobley Road. This plan identifies a range of allowable land uses and densities that are supportive of trail use.



Concept Recommendations at Sheldon Road at Waters Avenue, Source: Hillsborough County, 2020

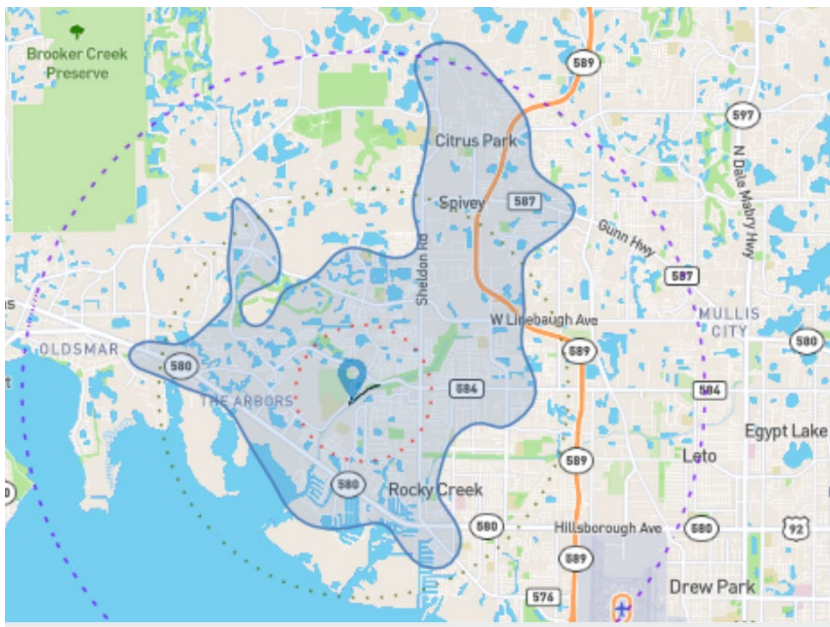


IV. Travel Characteristics

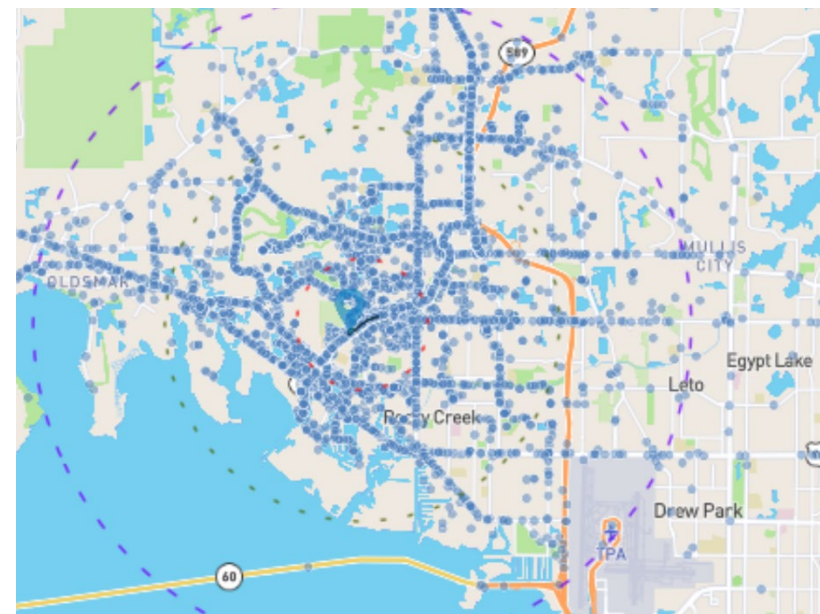
Data from a wide variety of sources was reviewed to help create a profile of travel characteristics to and from the Upper Tampa Bay Trail to aid in the identification of transportation safety concerns and potential counter measures. Location based mobile data was used to identify the catchment area of trail visitors. While most park visitors are within a three-mile radius (green circle below) of the park, the park also attracts a fair number of regional trips, with many people coming from eastern Hillsborough County, Pasco County and Pinellas County.

While there are a number of neighborhood connections to the trail that allow people to walk or bike to the trail, many do not live in proximity to non-motorized facilities that would connect them to the trail, and many people drive to a trailhead.

A review of common routes that people take to access the park shows that many regional trail visitors use the regional and local roadway network to access the park including a high density of people using W Hillsborough Avenue, W Waters Avenue, Montague Street, Sheldon Avenue, and Linebaugh Avenue.



*Geographic Area Where Majority of UTBT Visitors are Generated
(Source: Near, formerly UberMedia)*



*Typical Travel Routes of UTBT Visitors to Waters Avenue Trailhead
(Source: Near, formerly UberMedia)*



The Upper Tampa Bay Trail receives a fairly consistent number of visitors throughout the week. The most popular days are Saturday and Sunday, and least visited days are Thursday and Friday. The park sees steady levels of activity between 6 AM and 7PM, with the highest levels of activity occurring in the evening (4 PM to 7 PM) and in mid-day (10 AM to 1 PM). These patterns indicate that the trail is primarily used for recreational travel.

Data from [wejo](#), reflective of the time period October 2019, was obtained to document average and 85th percentile travel speeds on roadways connecting to the park, and to identify hot spots where hard braking routinely occurs. This data was obtained from on-board vehicle sensors, including devices that are built into the vehicle that provide data to the vehicle manufacturer and devices that are installed by the vehicle owner, such as for monitoring fleet vehicles, and from insurance companies for use in monitoring driver behavior and providing insurance discounts/setting premiums. While this data set is limited to those who have such devices on their vehicles, it does provide multiple months of data that can be evaluated by time of year, day of week and time of day. The dataset used in this analysis is based on 16,765,000 observations, reflective of 3,039,990 individual trips. All data is anonymous and cannot be traced back to any individual driver.

The speed data can be used to determine if there are specific roadway segments where people routinely drive in excess of the posted speed limit, and if prevailing travel speeds are more likely to result in a serious or fatal injury if the collision involves a vulnerable roadway user. A pedestrian struck by a vehicle being driven at 20 miles per hour has more than a 90 percent chance of survival, while the same pedestrian struck by a vehicle being driven at 40 miles per hour has a less than a 10 percent survival rate.

The wejo data shows that the **85th percentile** daily travel speeds on many roadways with trail crossings and connections is around 40 miles per hour, including Linebaugh Avenue, Waters Avenue, Wilsky Boulevard, and Gunn Highway. At many of the smaller trail crossings within neighborhoods, such as Manhattan Drive and Gardner Road, average and 85th percentile speeds across the trail are 25 miles per hour or less. This is likely due to some of these roadway segments being short, such that people driving do not have sufficient distance to travel at higher speeds, and many of these crossings are in residential neighborhoods where people who live there know to drive slowly and look for people crossing on the trail.

The wejo data was also reviewed to identify what percentage of people drove 10 or more miles per hour above the speed limit. People driving on Linebaugh Avenue (speed limit of 45 mph) and Wilsky Boulevard (speed limit of 35 miles per hour) were more prevalent than on other roadways to travel at least 10 or more miles above the speed limit. At those high vehicle travel speeds, a collision is more likely to result in a serious injury or a fatality.

On some of the arterial streets, the average, and in some cases (and especially during peak hours) the 85th percentile travel speed is less than the posted speed limit. The wejo speed data takes into consideration overall travel along the corridor, including the delay experienced at intersections, having to slow when a person driving in front of you turns into a driveway, and overall congestion. This indicates that there may be opportunities to reduce the speed limit in combination with other roadway network changes, such as retiming signals for speed management, and not appreciably change the overall travel time experienced by someone driving.

Hard braking is an event in which a driver applies more force than is typically needed to slow or stop a vehicle using the vehicle's **brake**



system, defined as reducing your speed by more than 6.5 miles per hour per second. Hard breaking can reduce a driver's ability to respond to other roadway hazards and can result in rear-end crashes if other people driving are not prepared for the hard-breaking event.

The hard-breaking data shows that there are hot-spots of hard breaking on Sheldon Avenue, Waters Avenue, and Gardner Road at the trail crossings. The hard-breaking locations can be indicative of locations with potential sight distance limitations, or other roadway design elements that do not provide consistent feedback to people driving to alert them to potential hazards in advance of making an evasive maneuver. At Sheldon Avenue and Waters Avenue, the crossings are signalized, and the observed hard breaking could be indicative of people driving in excess of the speed limit and needing to break hard when the light turns red on their approach. On Gardner Road, the trail crossings are uncontrolled, and the pavement markings are faded. The east-west orientation of the roadway could also result in the sun limiting visibility during sunrise and sunset.

The speed data is summarized on **Figure 3** for the daily condition and **Figure 4** for the peak hour condition. The hard-breaking data is summarized on **Figure 5**.

Available traffic count data was reviewed for roadways that provide primary access to trailheads and cross the Upper Tampa Bay Trail, as summarized in **Table 1** along with the number of travel lanes, roadway classification, speed limit and observed 85th percentile speed. The volume of vehicle traffic on most roadways within the area is within the expected volume range for the facility type and number of travel lanes. The portion of Waters Avenue, west of Sheldon Avenue has excess capacity, and pending planned growth in the area, could be a candidate for a lane elimination to provide enhanced bicycle facilities to better connect neighborhoods to the trail.

The data was also reviewed to assess what percent of daily travel was at least 10 miles per hour in excess of the posted speed limit. Linebaugh Avenue experiences the most people driving more than 10 miles over the speed limit, with more than 8 percent of AM peak hour travel and over 2.5 percent of daily travel at speeds 10 miles per hour or more in excess of the posted speed limit. Excessive speeds are also prevalent on Wilsky Boulevard and some of the smaller neighborhood streets that provide access to the trail.

Based on the existing traffic volumes and vehicle speeds, the [FHWA Bikeway Selection Guide](#) would not recommend bicycle lanes on any of the roadways where they are currently provided, including Linebaugh Avenue, Waters Avenue, Sheldon Avenue, Ehrlich Road and Montague Street based on the volume and speed of people driving. On major streets in the area, a separated bike lane or shared use path would be appropriate given the traffic volumes and prevailing speed for people driving. On Montague Street, provision of a striped buffer would be recommended based on FHWA guidance.

The Hillsborough TPO prepared a [Bicycle Facility Selection Toolkit](#) in 2018 which identifies appropriate bicycle facilities given prevailing travel speeds and volumes, as well as the surrounding land use context. Based on this guidance, separated bike lanes or shared use paths are the most appropriate bicycle facility type on major roadways in the area.

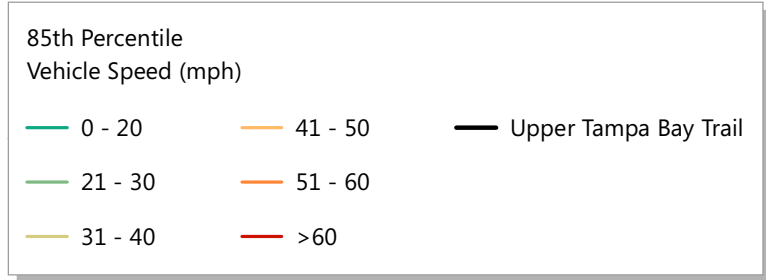
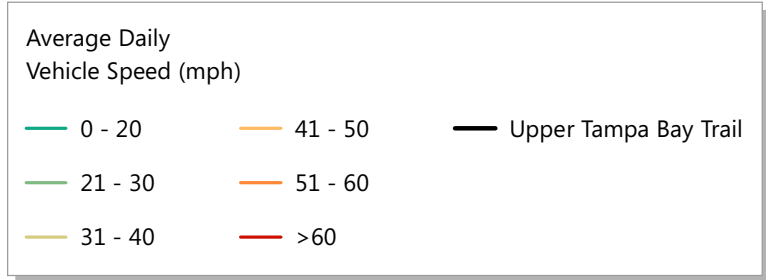
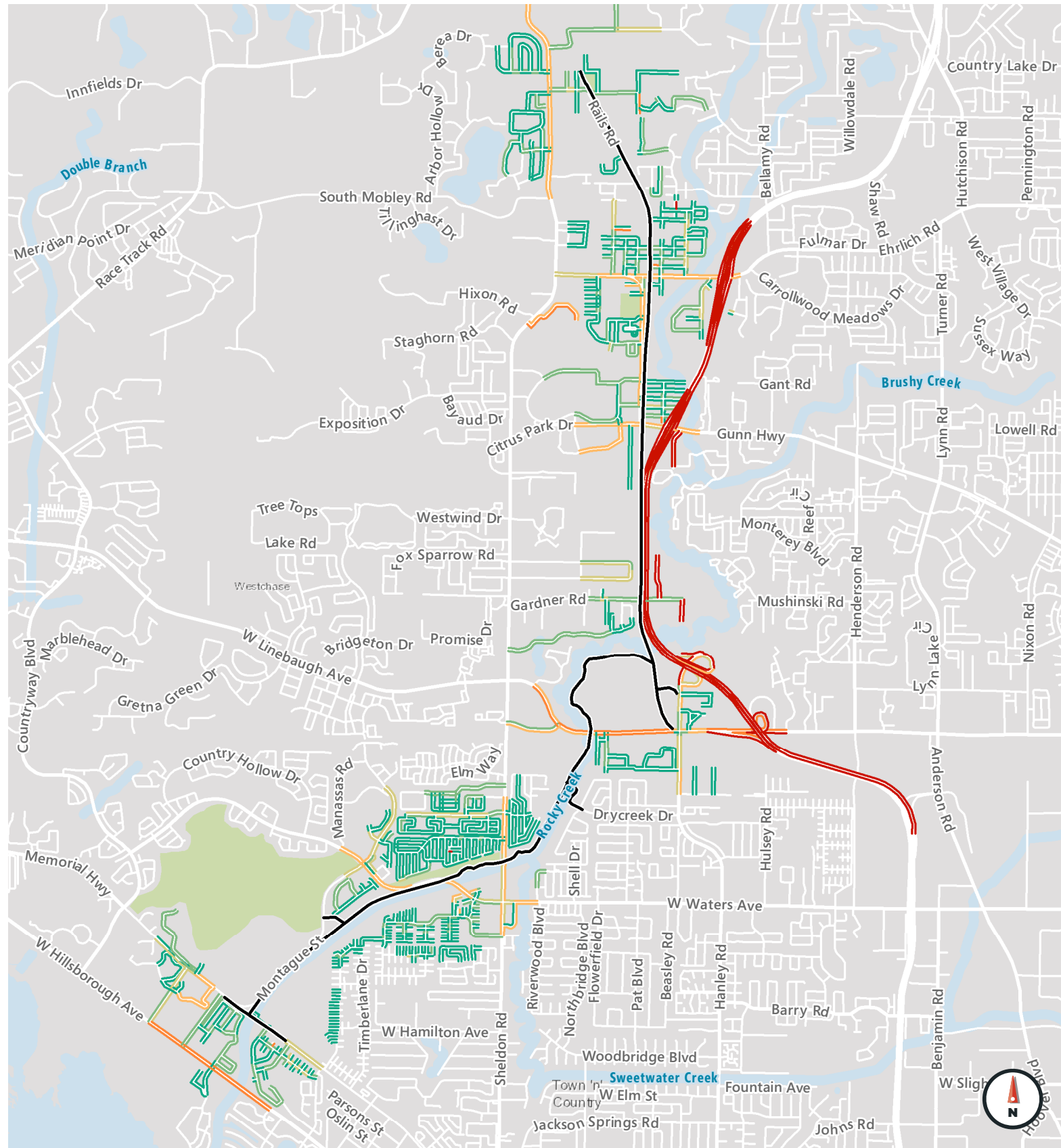
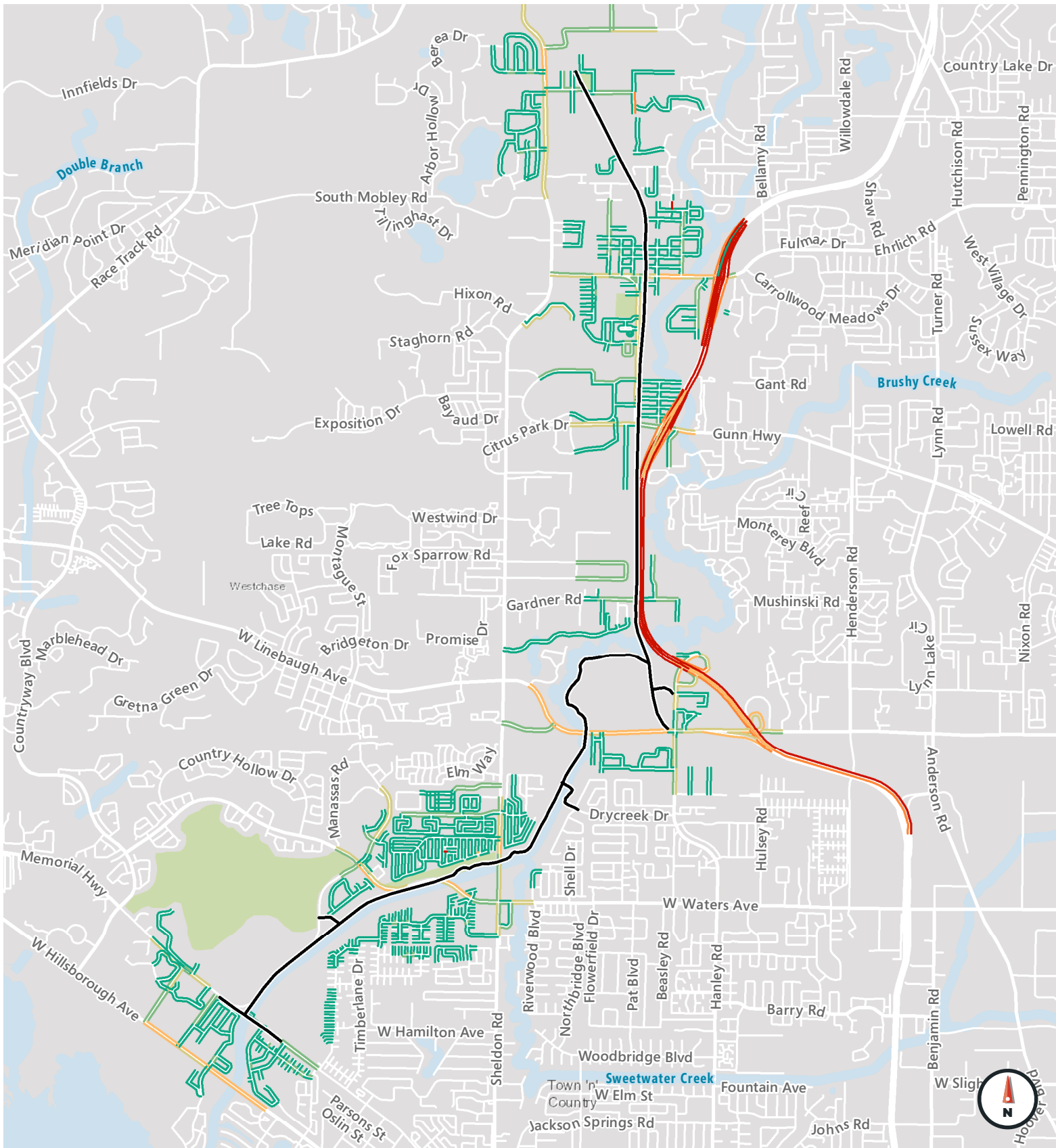


Figure 3
Upper Tampa Bay Trail
Vehicle Speed Data

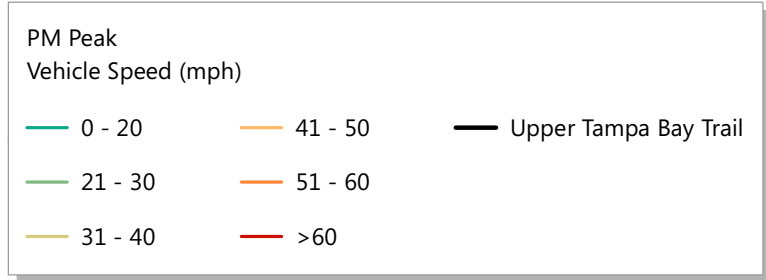
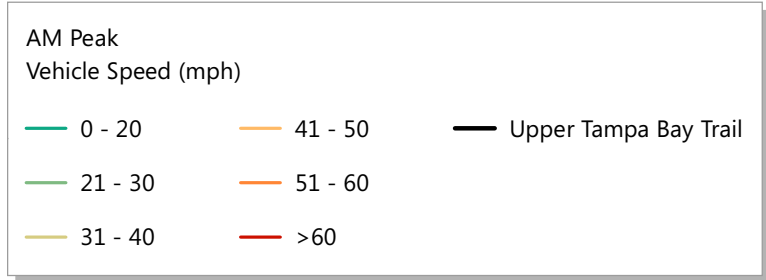
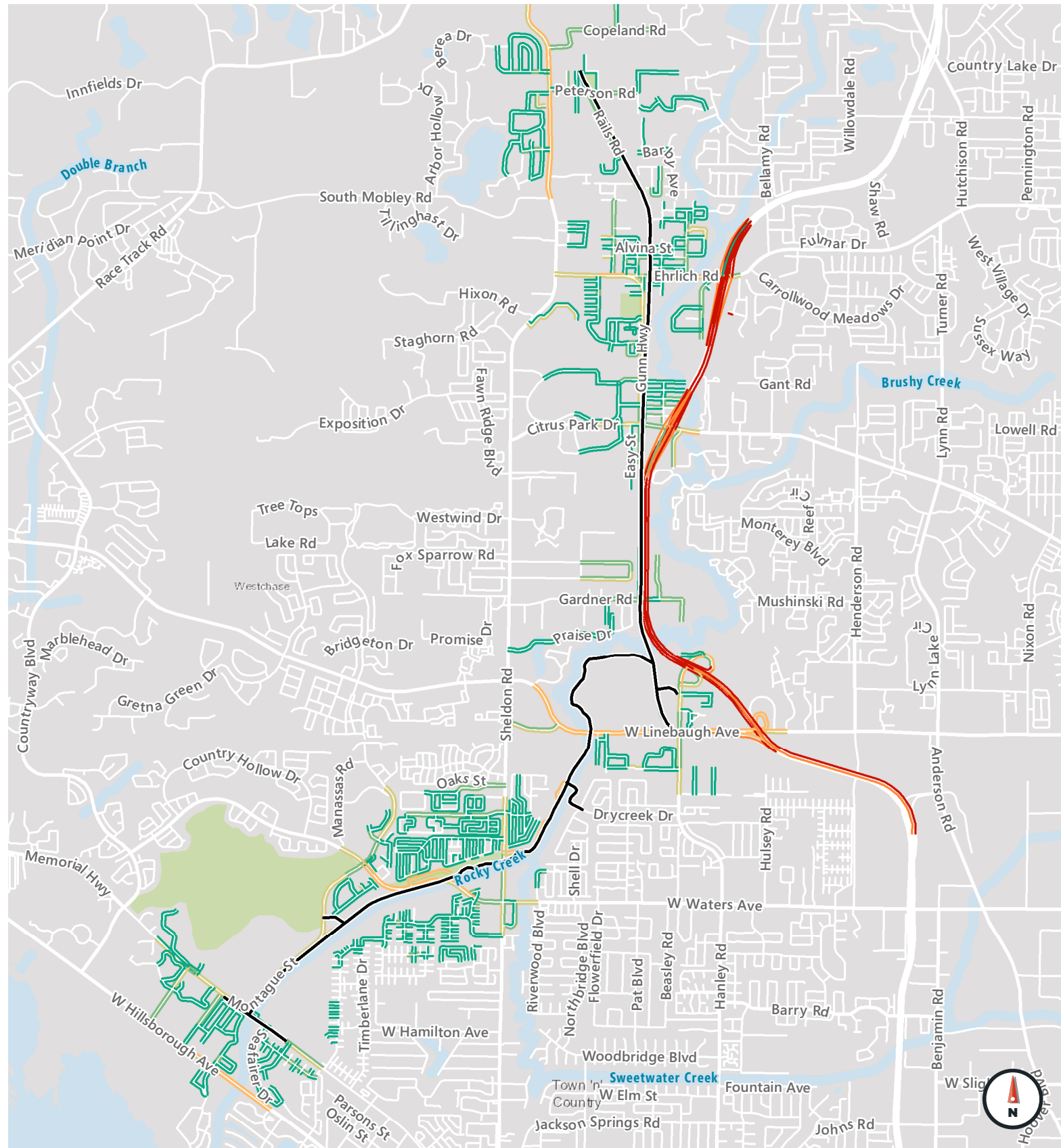
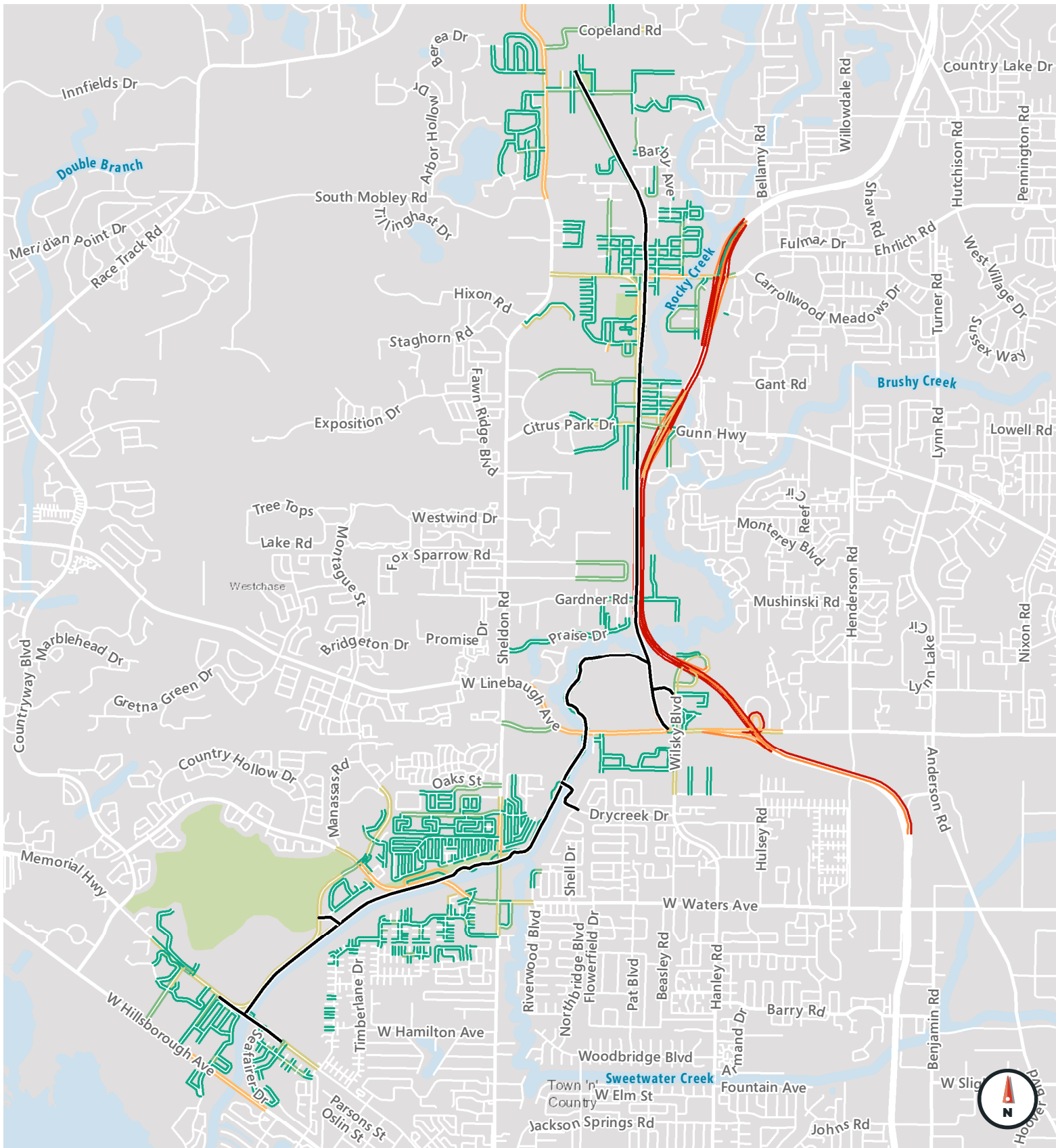


Figure 4
Upper Tampa Bay Trail
AM & PM Peak Vehicle Speed

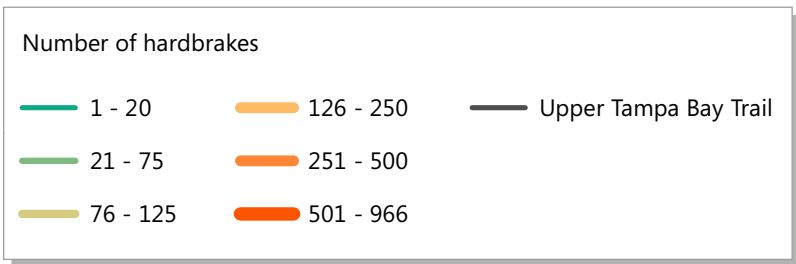
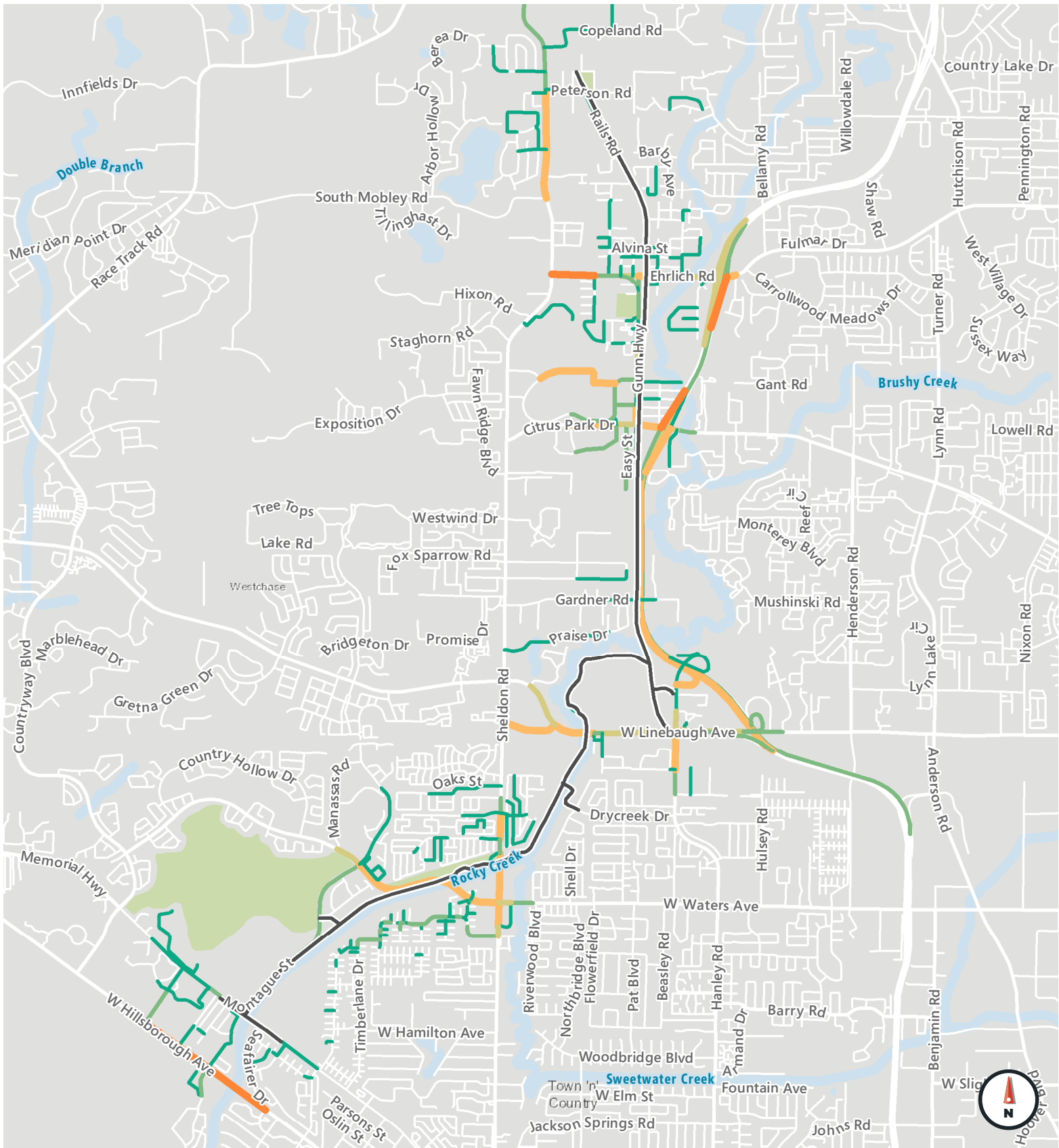


Figure 1
**Upper Tampa Bay Trail
 Hard Braking**



Table 1: Roadway Volume and Speed Summary

Roadway	Classification	Lanes	AADT	Speed Limit	Average Speed	85 th Percentile Speed	Percent of Daily trips at speeds ≥ 10 miles above speed limit
Montague Street	Collector	2	5,900	30	Data not available due low sample size		
W Waters Avenue (west of Sheldon Avenue)	Arterial	4	10,500	45	31	40	0.10%
Wilsky Boulevard	Collector	2	15,000	35	26	34	2.6%
Ehrlich Road	Arterial	4	23,000	45	30	40	0.04%
Peterson Road	Local	2	N/A	25	20	25	0.00%
Gunn Highway (North of Citrus Park Drive)	Arterial	2-4	26,000	40	31	40	0.39%
Manhattan Drive	Local	2	N/A	25	11	16	1.61%
Edgemere Road	Local	2	N/A	25	11	16	1.61%
Gunn Highway (East of Citrus Drive)	Arterial	4	26,000	45	31	40	0.39%
Gardner Road	Local	2	N/A	25	21	25	0.30%
W Linebaugh Avenue	Arterial	4	39,900	45	37	49	2.84%
Sheldon Avenue	Arterial	4	29,000	45	28	38	0.20%
Citrus Park Drive (West of Gunn Highway)	Arterial	6	22,400	45	29	40	0.20%

Source: Hillsborough TPO, City of Tampa, FDOT (Volume and classification). Speed data from wejo, representing typical travel behavior in October 2019, as summarized by Fehr & Peers.



V. Collision Assessment

A collision assessment was conducted for the roadways within a half mile radius of each trailhead and within a few hundred feet of the following trail crossings:

- Gunn Highway (North of Citrus Park Drive)
- Manhattan Drive
- Edgemere Road
- Gunn Highway (East of Citrus Park Drive)
- Gardner Road
- W Linebaugh Avenue
- Sheldon Avenue

Reported collisions are from the past five years, with a summary of all collisions shown in **Table 2**, collisions that resulted in a severe injury in **Table 3**, and collisions that resulted in a fatality are shown in **Table 4**. The general location of collisions is shown on **Figure 6**.

Over the 5-year period a total of 1,271 reported collisions occurred within the vicinity of an Upper Tampa Bay Trail trailhead or trail crossing. Of these, 6 collisions (0.5 percent of total collisions) resulted in a fatality, and an additional 26 collisions (1.2 percent of collisions) resulted in a severe injury. There is not a consistent trend in the number of collisions each year between 2016 and 2019. In 2020, the number of collisions decreased by around 30 percent. However, with fewer people

driving during the COVID-19 pandemic, collisions were lower in 2020 nationwide. It is unclear if this decrease is the start of a downward trend as Hillsborough County, the City of Tampa, the Hillsborough TPO and Florida Department of Transportation have been placing a focus on transportation safety, or statistical variation. The number of collisions resulting in someone being killed or severely injured (KSI collisions) increased in 2020, which is consistent with other local, regional and national data.

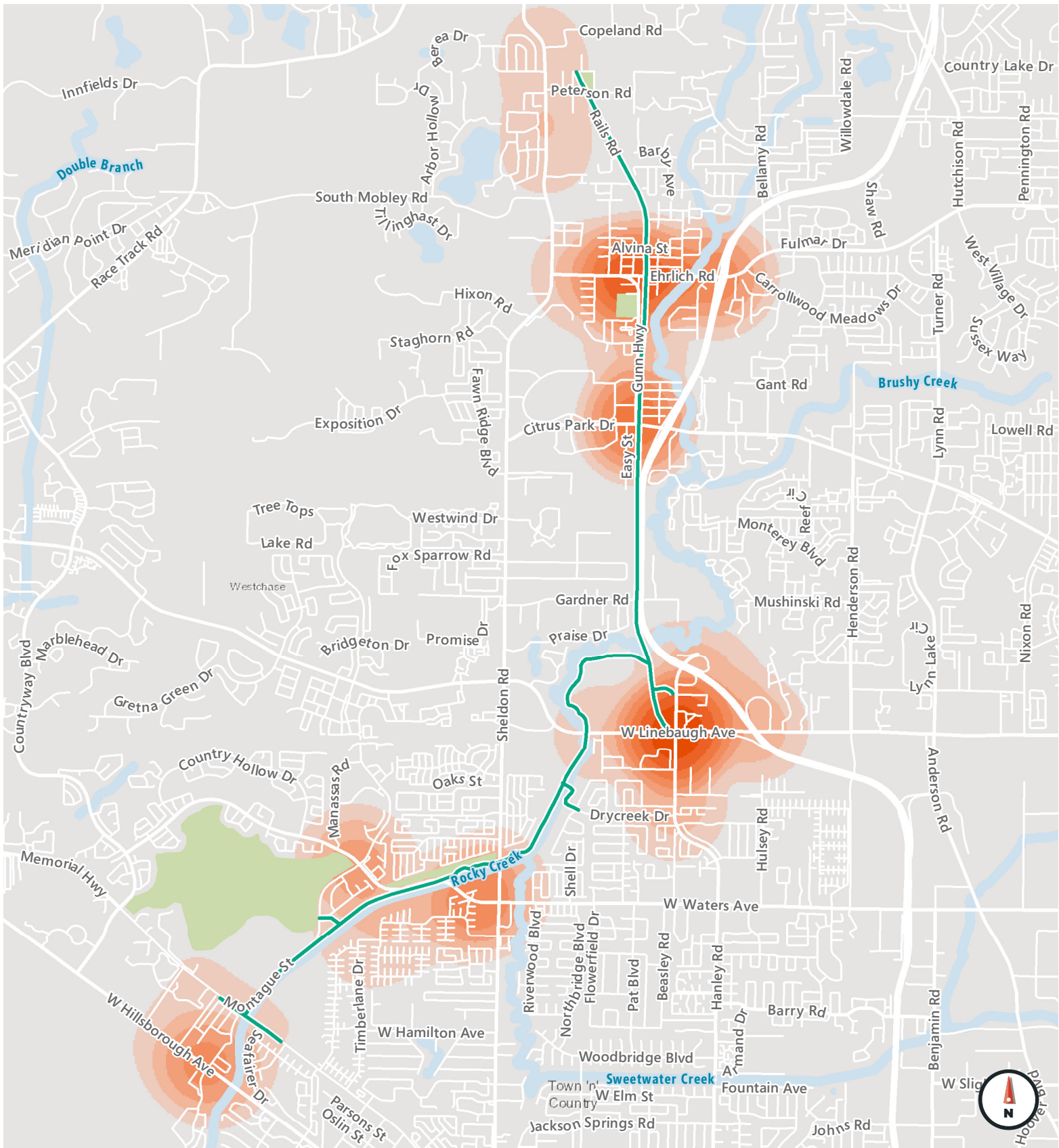
There were three KSI collisions at the intersection of Waters Avenue and Montague Street that involved a person in a vehicle making the westbound left-turn movement that struck or was struck by a person driving eastbound through the intersection. One of these collisions resulted in a fatality. The traffic signal phasing is permitted/protected, meaning that people turning left are provided a green arrow (protected) and opposing traffic is not allowed to proceed, as well as a green ball where people turning left are permitted to turn when there is a gap in opposing traffic. Based on the curve of the roadway and the design of the left-turn pockets, there may not be sufficient sight distance to see an oncoming vehicle if there is a vehicle in the opposing left-turn lane or if someone is driving in excess of the posted speed limit. Changing the signal phasing to protected only in combination with speed reduction measures and provision of a left-turn off-set could reduce the frequency of this collision type.



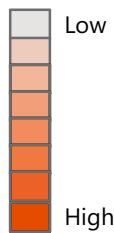
Table 2: Collision Summary

Year	All Collisions		Motorcycle		Bicyclist		Pedestrian	
	Collisions	% Change	Collisions	% Change	Collisions	% Change	Collisions	% Change
2016	261		5	-	4	-	1	-
2017	244	-7%	3	-40%	7	75%	1	0%
2018	288	18%	2	-33%	3	-57%	3	200%
2019	283	-2%	5	150%	9	200%	2	-33%
2020	195	-31%	2	-60%	3	-67%	2	0%
Total	1,271	-	17	-	26	-	9	-

Source: CDMS, 2021



Collision Density



— Upper Tampa Bay Trail

Figure 6

Upper Tampa Bay Trail Collisions



Table 3: Severe Injury Collision Summary

Year	All Travel Modes		Motorcycle		Bicyclist		Pedestrian	
	Collisions	% Change	Collisions	% Change	Collisions	% Change	Collisions	% Change
2016	10	-	0	-	0	-	1	-
2017	5	-50%	0	0%	2	0%	0	-100%
2018	4	-20%	0	0%	0	-100%	0	0%
2019	6	50%	3	0%	1	0%	0	0%
2020	8	33%	0	-100%	0	-100%	1	0%
Total	33	-	3	-	3	-	2	-

Source: CDMS, 2021

Table 4: Fatal Collision Summary

Year	All Travel Modes		Motorcycle		Bicyclist		Pedestrian	
	Collisions	% Change	Collisions	% Change	Collisions	% Change	Collisions	% Change
2016	0	-	0	-	0	-	0	-
2017	2	0%	0	0%	1	0%	0	0%
2018	1	-50%	0	0%	0	-100%	0	0%
2019	1	0%	1	0%	0	0%	0	0%
2020	2	100%	0	-100%	0	0%	1	-
Total	6	-	1	-	1	-	1	-

Source: CDMS, 2021



Vulnerable users (motorcyclists, bicyclists, and pedestrians) are involved in only 4 percent of total collisions, but they are involved in 24 percent of KSI collisions and 50 percent of fatal collisions. Therefore, a focus on safety countermeasures in the area that improve safety outcomes for people walking, riding a bike or driving a motorcycle will be a critical component of improving accessibility to the trail for all travel modes.

The time-of-day collisions occur was also reviewed, as summarized in **Table 5**. Vehicle only collisions tend to be more prevalent during the mid-day and evening peak periods, with those nine hours between 10 AM and 7 PM accounting for approximately 59 percent of all collisions. Collisions that result in a severe injury or fatality are overrepresented during the overnight and early morning hours.

Table 5: Collisions by Time of Day

Time of Day	Total Collisions		KSI Collisions		Fatal Collisions	
	Collisions	%	Collisions	%	Collisions	%
Overnight (7PM-6AM)	241	18%	7	21%	1	17%
Morning Peak (6AM-10AM)	294	23%	15	45%	3	50%
Midday (10AM-3PM)	340	27%	7	21%	2	33%
Evening Peak (3PM-7PM)	396	32%	4	12%	0	0%
Total	1,271	100%	33	100%	6	100%

Source: CDMS, 2021



The types of crashes that are occurring on the roadway system were also reviewed, as different roadway treatments can address different crash patterns. The data is summarized in **Table 6**.

Table 6: Crash Type Summary

Crash Type	Crash Type - All Collisions		Crash Type - KSI Collisions	
	Collisions	%	Collisions	%
Angle	182	14%	3	9%
Sideswipe	139	11%	2	6%
Pedestrian	8	1%	2	6%
Rear End	601	47%	7	21%
Hit Non-Fixed Object	11	1%	1	3%
U-Turn	25	2%	0	0%
Single Vehicle	18	1%	4	12%
Left Turn	85	7%	6	18%
Head On	13	1%	0	0%
Hit Fixed Object	142	11%	5	15%
Bike	25	2%	3	12%
Run Off Road	1	0%	0	0%
Right Turn	15	1%	0	0%
Unknown	6	0%	0	0%
Total	1,271	100%	33	100%

Source: CDMS, 2021

Rear-end collisions are the most prevalent near trail crossings, accounting for 47 percent of total collisions and 21 percent of collisions that result in a severe injury or fatality. Left-turn movements, hitting a fixed-object, and collisions with a person bicycling were other primary collision types in the trail catchment area that resulted in a severe injury or fatality.

People walking were involved in 1 percent of all collisions, and 6 collisions that resulted in a severe injury or fatality. People bicycling were involved in 2 percent of all collisions, and 12 collisions that resulted in a severe injury or fatality.

Based on the collision reports, the top 3 contributing actions to a collision in the study area are:

- Operated motor vehicle in Careless or Negligent Manner (26 percent)
- Failed to Yield Right-of-Way (14 percent)
- Followed too Closely (9 percent)

As the focus of countermeasures will be on those that address potential conflicts with people driving and vulnerable roadway users (people walking, people bicycling and people riding a motorcycle), the specific locations of collisions that resulted in a severe injury or fatality for a vulnerable roadway user were also reviewed, with most occurring on Gunn Highway, Linebaugh Avenue, Hillsborough Avenue, and Montague Street.

The age (**Table 7**) and sex (**Table 8**) of people involved in collisions in the area was also reviewed and compared to the area and County demographics to see if people in a specific age group or sex are disproportionately affected by collisions. Overall, people aged 15-24 are overrepresented as both people driving and non-motorists in collisions.



People aged 25-44 are disproportionately affected by collisions as drivers and represent a smaller percentage of non-motorist collisions.

While a collision is less likely to involve people over 60 and under 15 as both a driver and a non-motorist, this may be due to a lack of continuous walking and bicycling facilities that suppress demand, rather

than a lack of desire to walk or bicycle. Males are significantly more likely to be involved in a collision as a non-motorist than females, but only slightly more likely to be involved in a collision as a driver.

Table 7: Age of People Involved in Collisions

Age	Drivers		Non-Motorists		Total		Hillsborough County, Florida	
	#	%	#	%	#	%	#	%
<15	0	0%	3	12%	3	0%	265,858	19%
15-24	365	22%	10	38%	375	22%	182,607	13%
25-44	680	41%	5	19%	685	40%	411,674	29%
45-59	395	24%	5	19%	400	23%	282,194	20%
60-74	195	12%	3	12%	198	12%	200,103	14%
75+	42	3%	0	0%	42	2%	79,842	6%
Total	1,677	100%	26	100%	1,703	100%	1,422,278	100%

Source: American Community Survey, CDMS, 2021

Table 8: Sex of People Involved in Collisions

Category	Male	Female
Drivers	51%	49%
Non-Motorist	78%	22%
Hillsborough County	49%	51%

Source: American Community Survey, CDMS, 2021



VI. Key Findings

Based on the review of the existing conditions assessment for the Upper Tampa Bay Trail, we identified several transportation themes for consideration in the application of safety countermeasures with a focus on speed management:

- The trail is a regional amenity with some park users originating from neighborhoods along the trail, but many trail users coming from far distances. Therefore, trail safety countermeasures should focus on all roadways connecting to trailheads, and all trail crossings.
- Uncomfortable bicycling facilities on major roadways connecting to the trail, such as Ehrlich Road, Linebaugh Avenue, Waters Avenue, Sheldon Avenue, and Montague Street may deter people from cycling to the trail.
- There are opportunities to reevaluate posted speed limits in combination with engineering countermeasures to moderate peak vehicle speeds while maintaining existing travel times along corridors.
- Existing pavement width could allow for bicycle lanes to be provided on Wilsky Boulevard in combination with other treatments, including a marked crossing connecting the adjacent neighborhood to the trail.
- There are opportunities to provide enhanced trail crossing treatments at uncontrolled trail crossings such as Montague Street to Alonso High School, Gardner Road, Edgemere Road, Almark Street, Alvina Street and Peterson Park Road, and to improve the Ehrlich Road crossing where out-of-direction travel is required.

- There are opportunities to improve controlled crossing locations, such as along Linebaugh Avenue, Waters Avenue and Sheldon Road to improve non-motorized access to the trail.
- Existing pavement markings and signage along the trail is poorly maintained, which could limit their effectiveness.
- Collision profiles indicate that people walking, bicycling and motorcycling are more likely to be killed or severely injured on roadways surrounding the park, and safety counter measures should focus on these modes.
- Men and people aged 15-24 are disproportionately affected by collisions in the trail catchment area, with motorists aged 25-44 also disproportionately affected by collisions.

During the public engagement process, feedback related to the following should be sought:

- What are drainage issues that affect travel to and from the trail, and along the trail during and after periods of rain?
- What lighting issues affect your travel?
- What do you think are the transportation challenges in your neighborhood, specially related to accessing the trail and other public facilities in the area?
- Where do you feel unsafe walking or bicycling and why?
- Where do you think marked street crossings should be added?
- What transportation improvements would you like to see in your neighborhood and connecting the Upper Tampa Bay Trail?
- Would you or your family walk, bike and take transit more if facilities were improved?