COMMUNITY
connectivity program

Waterford

Route 156 and Logger Hill Road – Road Safety Audit

April 6 - 2016

CONNECTICUT DEPARTMENT OF TRANSPORTATION

AECOM

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Acknowledgements:

OFFICE OF INTERMODAL PLANNING
BUREAU OF POLICY AND PLANNING
CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

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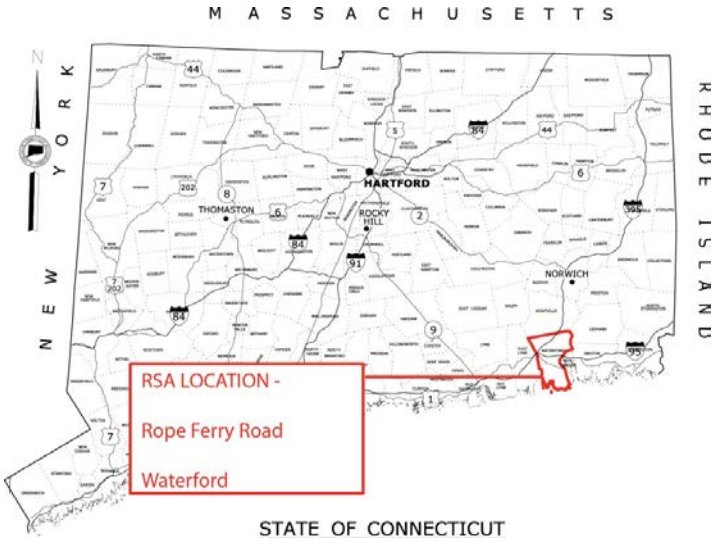
The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this program is conducting Road Safety Audits (RSA's) at selected locations. An RSA is a formal safety assessment of the existing conditions of walking and biking routes and is intended to identify the issues that may discourage or prevent walking and bicycling. It is a qualitative review by an independent team experienced in traffic, pedestrian, and bicycle operations and design that considers the safety of all road users and proactively assesses mitigation measures to improve the safe operation of the facility by reducing the potential crash risk frequency or severity.

The RSA team is made up of CTDOT staff, municipal officials and staff, enforcement agents, AECOM staff, and community leaders. An RSA Team is established for each municipality based on the requirements of the individual location. They assess and review factors that can promote or obstruct safe walking and bicycling routes. These factors include traffic volumes and speeds, topography, presence or absence of bicycle lanes or sidewalks, and social influences.

Each RSA was conducted using RSA protocols published by the Federal Highway Administration (FHWA). For details on this program, please refer to www.ctconnectivity.com. Prior to the site visit, area topography and land use characteristics are examined using available mapping and imagery. Potential sight distance issues, sidewalk locations, on-street and off-street parking, and bicycle facilities are also investigated using available resources. The site visit includes a "Pre-Audit" meeting, the "Field Audit" itself, and a "Post-Audit" meeting to discuss the field observations and formulate recommendations. This procedure is discussed in the following sections.



1 Introduction to the Route 156 and Logger Hill Road, Waterford RSA

The City of Waterford submitted an application to complete an RSA on the Route 156 (Rope Ferry Road) and Logger Hill Road corridor to improve safety for pedestrians and bicyclists. Rope Ferry Road is an important east-west corridor in Waterford and connects commercial districts that border New London, the Town's Civic Triangle, Jordan Village, residential areas and the developing Mago Point district along the Niantic River and adjacent to East Lyme. The entire corridor warrants examination to improve pedestrian and bicycle amenities. However this segment of the corridor is unique in that it is the only section of this arterial road that is almost totally without sidewalks. Shoulders for bicycle travel are narrow or non-existent. It appears that pedestrians do walk the corridor based on exposed dirt paths directly adjacent to the road. The road is straight and on a significant grade, leading to high vehicle speeds. Improving pedestrian and bicycle connectivity is an important feature to address as Waterford continues to invest in revitalizing its historic villages.

The City of Waterford's application contained information on traffic operations and mapping of the corridor. The application and supporting documentation are included in Appendix A.

1.1 Location

The RSA corridor includes Rope Ferry Road from North Road to Gallup Lane (Figure 1) and Logger Hill Road. Rope Ferry Road is classified as a Minor Arterial and Logger Hill Road is classified as a local road. The Rope Ferry Road Average Daily Traffic (ADT) ranges from 7,400 to 7,700 vehicles per day (vpd). These are relatively light volumes for the roadway to process. Figure 2 shows the regional context of the study area.

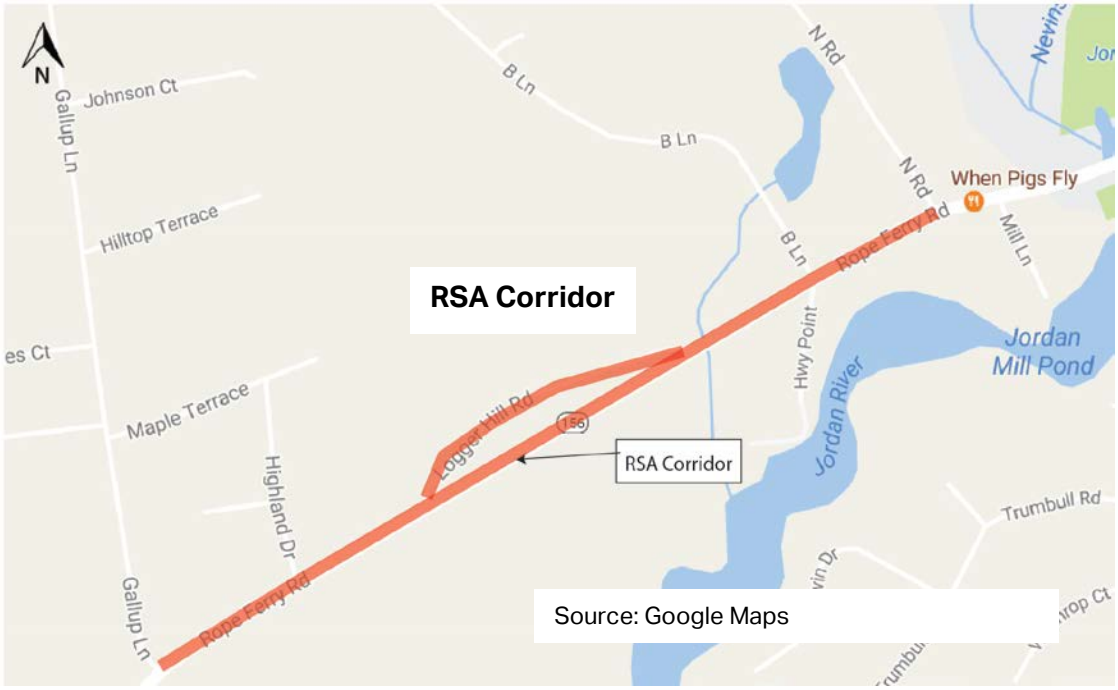


Figure 1. Waterford RSA Corridor

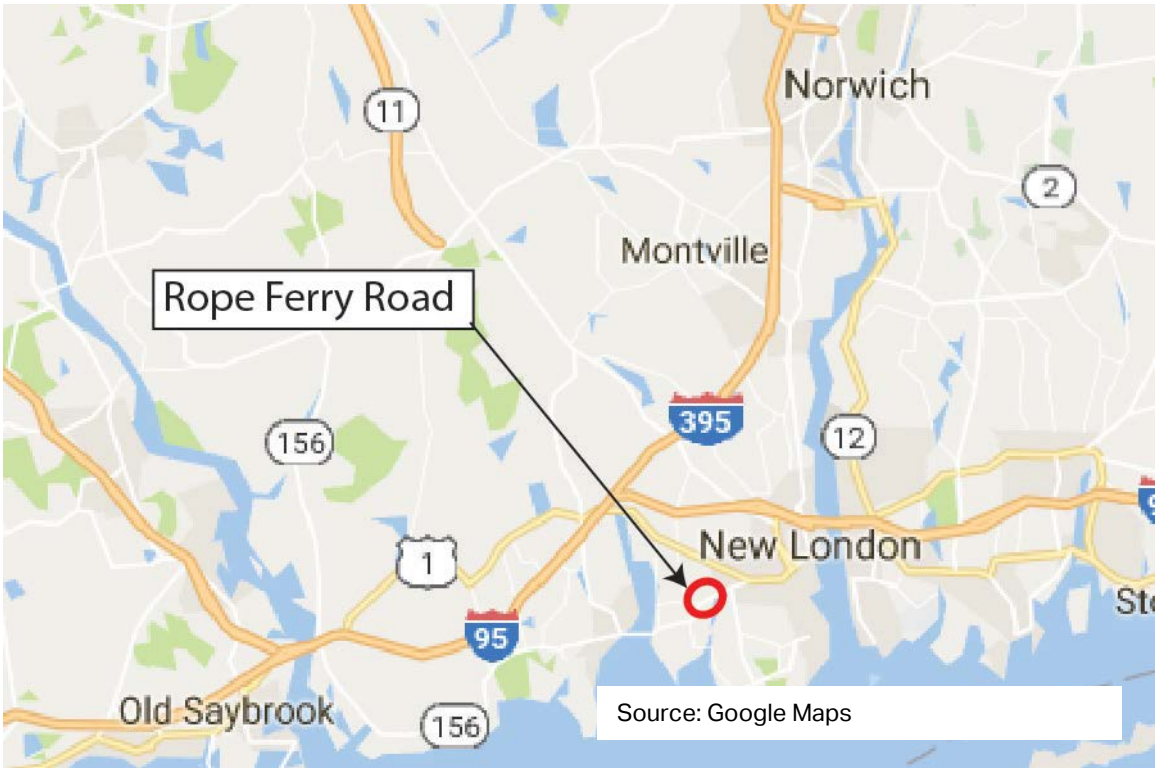


Figure 2. Regional Context

2 Pre-Audit Assessment

2.1 Pre-Audit Information

Between 2012 and 2014 there were 9 crashes in the RSA Area. The majority of crashes (78%) reported in this area resulted in property damage only; however 22% of crashes did result in an injury (Table 1and Table 2). No crashes involved bicyclists or pedestrians. The majority (67%) of crash types reported were rear-end collisions. Figure 3 displays crashes that occurred in this area during 2015. The crash history for year 2015 shows that they are dispersed throughout the corridor, but there is a concentration at the western Logger Hill Road / Rope Ferry Road Intersection, indicating a need for further evaluation of this location.

Severity Type	Number of Accidents	
Property Damage Only	7	78%
Injury (No fatality)	2	22%
Fatality	0	0%
Total	9	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Accidents	
Unknown	0	0%
Sideswipe-Same Direction	0	0%
Rear-end	6	67%
Turning-Intersecting Paths	1	11%
Turning-Opposite Direction	0	0%
Fixed Object	2	22%
Backing	0	0%
Angle	0	0%
Turning-Same Direction	0	0%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	9	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

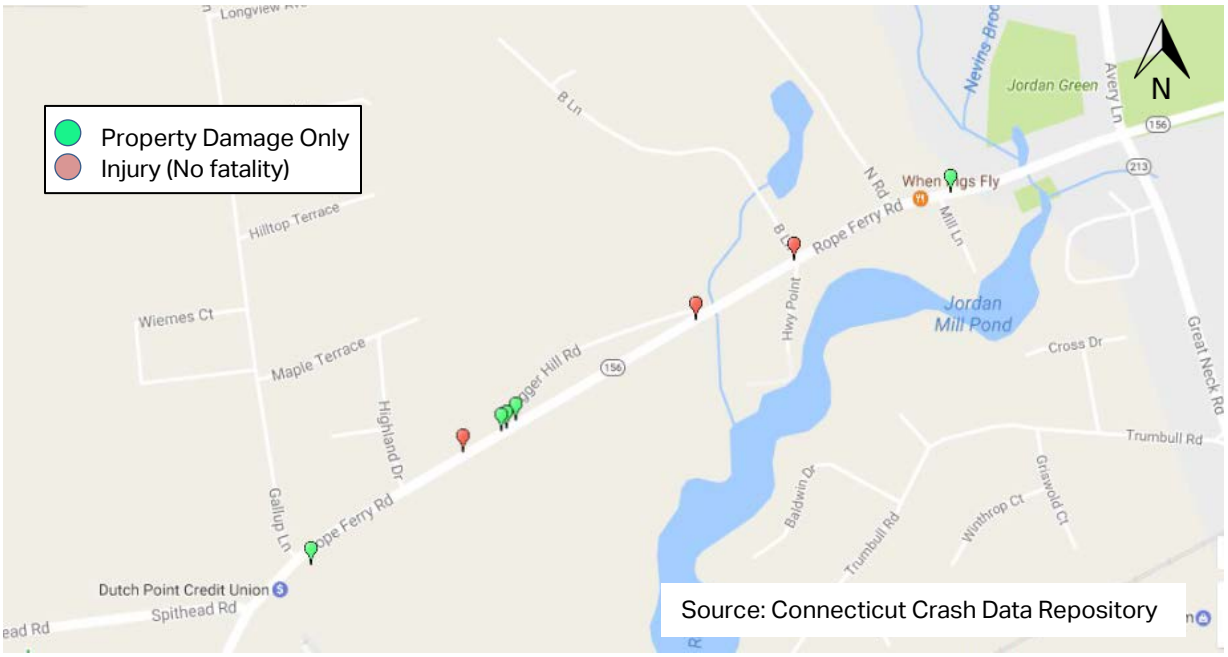


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Rope Ferry Road/Route 156 is a two lane, state-owned roadway with a speed limit of 35 mph, and a 7% down grade heading east. Logger Hill Road is a two lane, local road with a speed limit of 25 mph and no sidewalks. There is a sidewalk along the north side of Rope Ferry Road, east of B Lane, but between B Lane and Gallup Lane there is no sidewalk. The sidewalk begins again west of Gallup Lane on the north side of Rope Ferry Road. There is one crosswalk in the study area across Rope Ferry Road at the North Road intersection. None of the cross streets in the study area have crosswalks, and there are no signalized intersections in the study area. The nearest signal is approximately 1,200 feet to the east of North Road at the intersection of Rope Ferry Road and Avery Lane. The geometry of the corridor is shown in Figure 4 and described in Table 3.

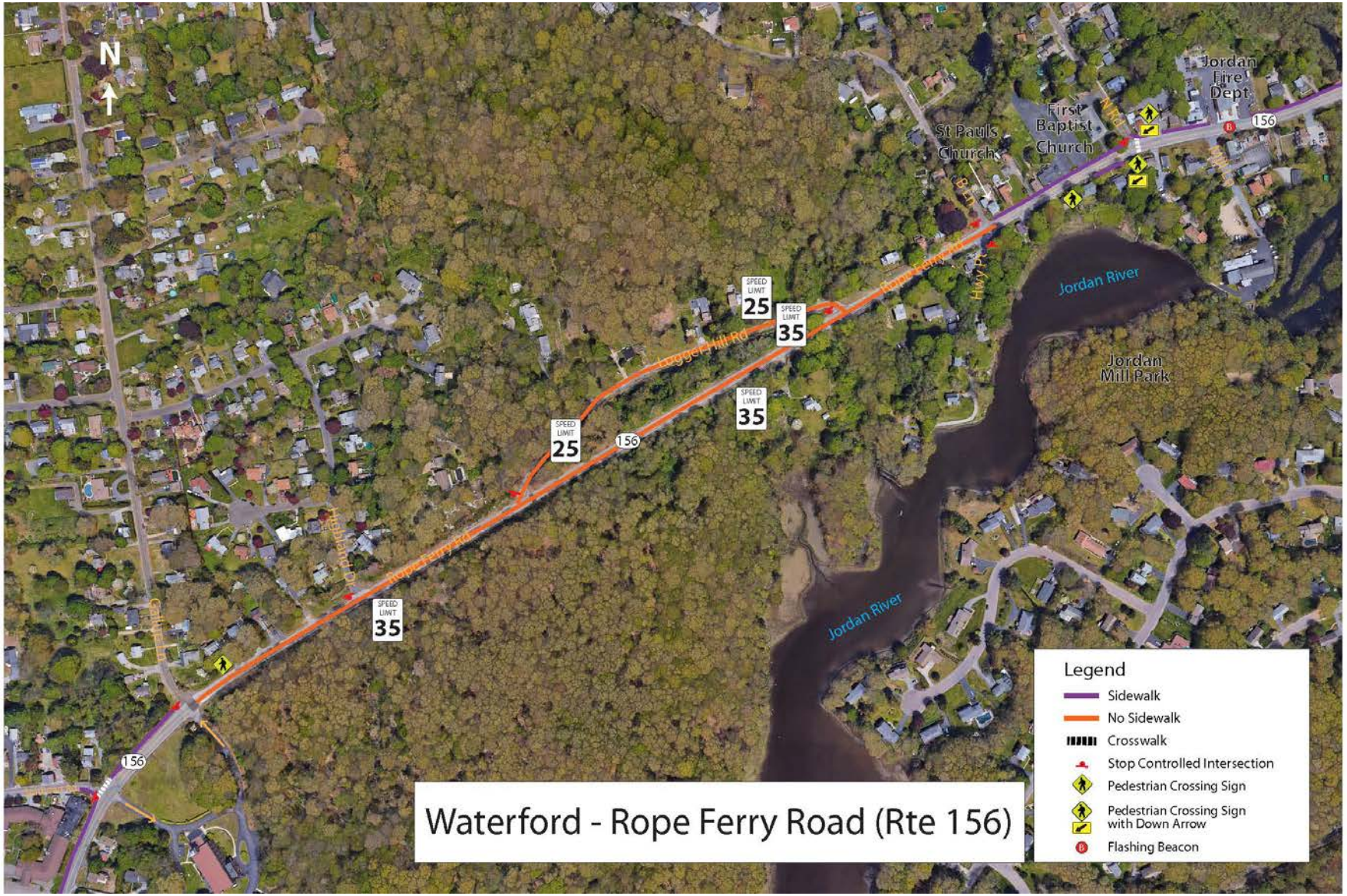


Figure 4. Rope Ferry Road Geometrics

Waterford - Rope Ferry Road

Street Inventory

From	To	Distance	Lane Width	Sidewalk				Curb	Shoulder	Ramps	
				Side	Type	Width	Condition			Exist	Compliant
N Rd	B Ln	500 feet	12'	EB	N/A	N/A	N/A	No	3'	N/A	N/A
			12'	WB	Asphalt	4'	Poor	Asphalt	N/A	Yes	No
B Lane	Logger Hill Road	500 feet	12'	EB	N/A	N/A	N/A	No	3'	N/A	N/A
	East end		12'	EB	N/A	N/A	N/A	Granite	3'	N/A	N/A
Logger Hill Road	Gallup Lane	0.4 miles	12'	EB	N/A	N/A	N/A	Granite	1'-3'	N/A	N/A
East end			12'	WB	N/A	N/A	N/A	Granite	1'-3'	N/A	N/A

Waterford - Logger Hill Road

Street Inventory

Road	Distance	Road Width	Sidewalk				Curb	Shoulder	Ramps	
			Side	Type	Width	Condition			Exist	Compliant
Logger Hill Road	1,200 Feet	18'-20'	EB	N/A	N/A	N/A	Concrete	No	N/A	N/A
			WB	N/A	N/A	N/A	No	No	N/A	N/A

***CONDITION – "Good" is Serviceable Condition that meets current design standards. "Fair" is generally serviceable, but may need minor repairs, or may not completely align with current design standards. "Poor" is not serviceable, and generally inadequate for continued long-term use.**

Table 3. Street Inventory

2.2 Prior Successful Efforts

Waterford completed the Waterford Town Center Vision and Strategic Plan in 2014. It focuses on economic development strategies and enhancement of Waterford's center. This area includes Jordan Village, which connects to this segment of Rope Ferry Road. The Plan of Conservation and Development was amended to include recommendations from the Strategic Plan. The Town also developed design guidelines for Jordan Village in 2014, and is in the process of revamping their zoning regulations based on the Strategic Plan.

This segment of Rope Ferry Road is specifically identified in the 2014 plan as being a priority area for pedestrian improvements and addressing traffic speeds and safety (Waterford Town Center Vision and Strategic Plan, 2014, p. 22). The area is also noted in the 2012 Plan of Conservation and Development as being a desirable pedestrian link (See Sidewalk Plan, Waterford, CT. p. 73 f the Plan of Preservation, Conservation, and Development).

2.3 Pre-Audit Meeting

The RSA was conducted on April 4th, 2017. The Pre-Audit meeting was held at 8:30 AM in the Waterford Town Hall located at 15 Rope Ferry Road in Waterford

The RSA Team was comprised of staff from CTDOT and AECOM, and representatives from several town departments and organizations including Public Works, Police Department and the Planning department. The complete list of attendees can be found in Appendix B. Materials distributed to the RSA Team, including the agenda, audit checklist, ADT counts, crash data and road geometrics, can be found in Appendix C.

RSA Team members from Waterford presented relevant information for the audit, including:

- Between B lane and Gallup Lane there is no sidewalk but worn paths are present, indicating pedestrian use.
- Rope Ferry Road has a significant downgrade heading eastbound, which encourages speeding. The crest of the Hill is at Highland Drive.
- Waterford chose this area for an RSA in order to improve regional pedestrian connectivity. At the east end is Jordan Village and vehicles heading eastbound, down the hill, approach the village at high speeds resulting in a potentially unsafe condition for pedestrians. They would like to slow vehicles down before they reach the village.
- During the summer months this road is used by cyclists riding to Niantic.
- Logger Hill Road is a possible alternative to detour pedestrians and cyclists off Rope Hill Road but is a narrow road with pinch points at the western end due to rock walls.
- Waterford is working on revamping their zoning regulations to create village districts. In the future they envision increased development in Jordan Village with revitalization, and new streetscaping.

- Sidewalk maintenance, such as snow removal, is currently done town wide by the Department of Public Works.
- The right-of-way along Logger Hill Road needs to be determined.
- Sidewalks along this corridor have been identified as a need in the Plan of Preservation, Conservation and Development.
- There is one crosswalk across Rope Ferry Road at North Road, but it does not connect to sidewalk on the south (eastbound) side of the road.
- There is no street lighting along the RSA corridor.
- The Town estimates that the road has not been repaved or striped in at least 12 years. As such, roadway markings are beginning to fade.
- CTDOT installed riprap along Rope Ferry Road to assist with drainage control but scouring is still evident.
- There are concerns regarding speeding down Rope Ferry Road as vehicles enter Jordan Village. The posted speed limit is 35 MPH, but vehicles go much faster than this as the come from the steep downhill grade.
- There are concerns about sight distance at the western Logger Hill Road and Rope Ferry Road intersection.

3 RSA Assessment

3.1 Field Audit Observations

Rope Ferry Road

- The roadway has 12 foot wide travel lanes, with shoulders that vary between one and three feet wide. The shoulders are widest at Jordan village, and narrow approaching the hill.
- The grade of the roadway is steep. (Figure 5).
- Sidewalks are on the north side of the road between North Road and B Lane. They are asphalt, without a buffer, ramps, or tactile warning strips. The eastern section has granite curbing with a low curb reveal, the western has bituminous curbing.
- East of B Lane there is no shoulder striping on the north (westbound) side of the road, there is shoulder striping on both sides in all other locations.

Figure 5. Rope Ferry Road Looking West

- There is a very short segment of sidewalk along the south (eastbound) side of Rope Ferry Road across from the First Baptist Church. It is concrete and in poor condition.
- The crosswalk signs are faded and not retroreflective.
- East of the Jordan Village sign there is no curbing on the south (eastbound) side of the Road. Between Logger Hill Road and 125 feet west of B lane the curbing on the north (westbound) side of the road is Asphalt.
- The houses on the north side of the road are set back a distance and vehicles use this space to park off the street (Figure 6).
- The mail boxes east of Logger Hill Road are set to the curb line.
- Utility poles are on the south (eastbound) of the road.
- There are guiderails along both sides of the hill heading into Jordan Village. The guiderail on the south (eastbound) is set back approximately 8.5 feet from the curb. The guiderail on the north (westbound) is set at the curb.
- Worn foot paths are evident along Rope Ferry Road (Figure 7).
- There is an erosion and drainage issue on the north (westbound) side of the road west of Logger Hill Road. It is evidently due to scouring.
- Several catch basin grates were full of debris and trash, preventing proper drainage (Figure 8).

Figure 6. Area Where Vehicles Park Due to Large Set Back

Figure 7. "Worn Foot Paths Along Roadway"

Figure 8. Clogged Catch Basin

- The sidewalk west of Gallup Lane is positioned behind the guide rail. There are no tactile warning strips at the ramp (Figure 9).

- The radii at Gallup Lane are large, allowing for vehicles to take the turns at higher speeds.

Figure 9. Lack of Tactile Warning Strip on Sidewalk Ramp

Logger Hill Road

- The roadway width varies between 18 and 20 feet and there are no pavement markings or striping.

- Utility poles are along the south (eastbound) side of the road.

- The catch basin grates are of the older style.

- The road is heavily cracked.

- There are concrete curbs on the north (westbound) side of the road and no curbing on the south (eastbound).

- At the west end of the road there is a pinch point created by steep side slopes and rock. Widening the roadway here would require blasting (Figure 10).

Figure 10. Pinch Point Along Logger Hill Road

- Sight distance is poor for vehicles trying to turn left on onto Rope Ferry Road due to the crest in the road.

- The stop sign at the east end is set back from the stop bar, and the stop bar is faded (Figure 11).

Figure 11. Stop Sign Set Back From Bar

3.2 Post-Audit Workshop - Key Issues

There are insufficient visual cues for motorists that are approaching the village zone and should slow down. Options discussed included lowering the speed limit through the village, gateway signing, narrowing the travel lanes, streetscaping, and using alternative pavement colors.

- Rope Ferry Road shoulder lanes narrow as you head westbound and this is a concern for bicyclists' safety.

- Several options were discussed to connect Jordan Village with Gallup Lane; the town would like to have short, medium and long term solutions to improving the bicycle and pedestrian connectivity.

- Potential long term options for installing a sidewalk include establishing it along Rope Ferry Road either along or behind the guiderail, converting Logger Hill Road and adding a pedestrians and bicyclists path, or closing the western end of the road and creating a cul-de-sac with a pedestrian path. The third option would reduce vehicle speeds and eliminate the previously identified sightline-constrained left turns from the western end of Logger Hill Road.

- The road striping is faded but it is not a high traffic road and truck traffic is not notably high.

- The water coming off the ledge on Rope Ferry Road causes erosion. If the pavement was extended or a sidewalk installed drainage would need to be explored to prevent icing.

4 Recommendations

From the discussions during the Post-Audit meeting, the RSA team compiled a set of recommendations that are divided into short-term, mid-term, and long-term categories. For the purposes of the RSA, **Short-term** is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of way acquisition). **Mid-term** recommendations may be more costly and require establishment of a funding source, or they may need some additional study or design in order to be accomplished. Nonetheless, they are relatively quick turn-around items, and should not require significant lengths of time before they can be implemented. Generally, they should be completed within a window of eighteen months to two years if funding is available. **Long-term** improvements are those that require substantial study and engineering, and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more when funding is available.

Notes:

- All proposed signs and pavement markings shall comply with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD).
- For the existing crosswalk, the stopping sight distances should be verified.
- All proposed sidewalk ramps within the State's Right of Way should be constructed in accordance with the Department of Transportation's (Department) latest Standard

Specifications and Sidewalk Detail Sheets. To conform to ADA requirements, pedestrian curb ramps with detectable warning strips should be installed where the sidewalk meets the roadway at crossing locations.

- An encroachment permit will be required for any work done within the State's Right of Way
- Pedestrian warning signs along State roads will be replaced under State project No. 0172-0438 which is currently in construction.

4.1 Short Term

1. Investigate right-of-way along Rope Ferry Road.
2. Apply to the Office of State Traffic Administration CTDOT to remove the 35 MPH speed sign as you approach the village and reduce the speed to 25 mph from the west end of Jordan Village to the intersection of Route I and 156.
3. Raise the height of the steep grade sign to meet MUTCD standards.
4. Conduct a Branding and Gateway Plan for Jordan Village which includes wayfinding within the village and to ancillary locations. This should be coordinated with any state wayfinding plans and updates including the supplemental Destination Guide Signs-Connecticut booklet
5. Create a bicycle and pedestrian plan for Waterford.
6. To reduce sign clutter, create a signage plan that integrates local and state signs.
7. Restripe Rope Ferry Road to 11 foot travel lanes.
8. Clean out catch basin.

Figure 13 depicts these recommendations.

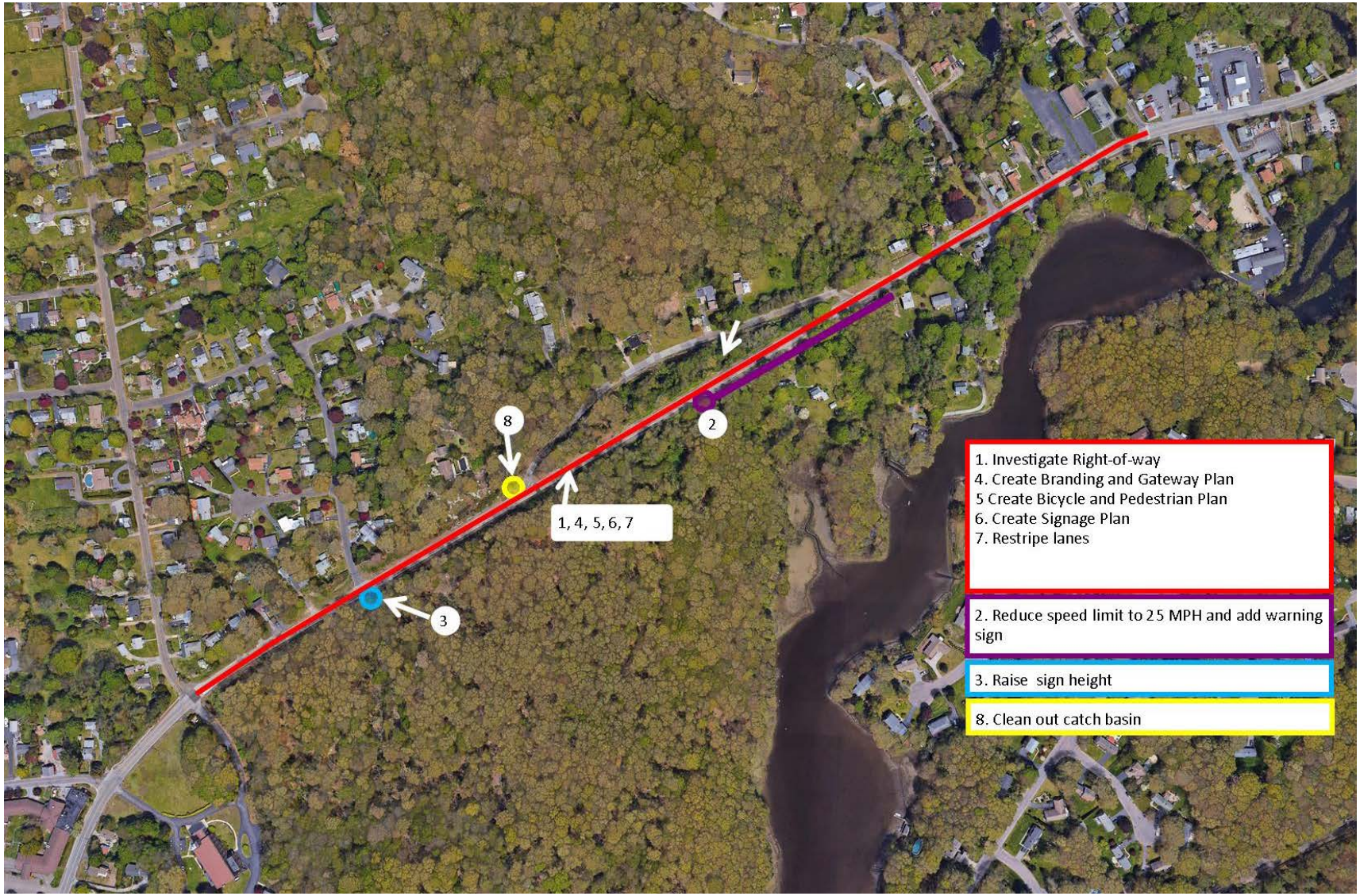


Figure 12. Short Term Recommendations

4.2 Medium Term

1. Reconstruct the existing sidewalk sections in Jordan Village using a pavement which stands out from the roadway and delineates it as a pedestrian area (Figure 14.)
2. Install a flashing sign warning motorists that there is a steep grade and that a village area is ahead and the speed limit will drop. It should be located after vehicles come over the hill crest traveling eastbound. (Figure 15).
3. Conduct a drainage study for Rope Ferry Road.
4. Conduct a study to determine possible sidewalk/pedestrian connections along the segments that are missing sidewalk. Alternatives include:
    a) Sidewalk along Rope Ferry Road.
    b) Convert Logger Hill Road to a one-way.
    c) Convert Logger hill Road to a cul-de-sac.
5. Upgrade sidewalks to be ADA compliant with detectable warning strips (Figure 16).

Figure 13. Example of Sidewalk Which Stands Out From Road

Figure 14. Steep Grade Flashing Beacon Sign

Figure 18 depicts these recommendations.

Figure 15. Example of Detectable Warning Strips

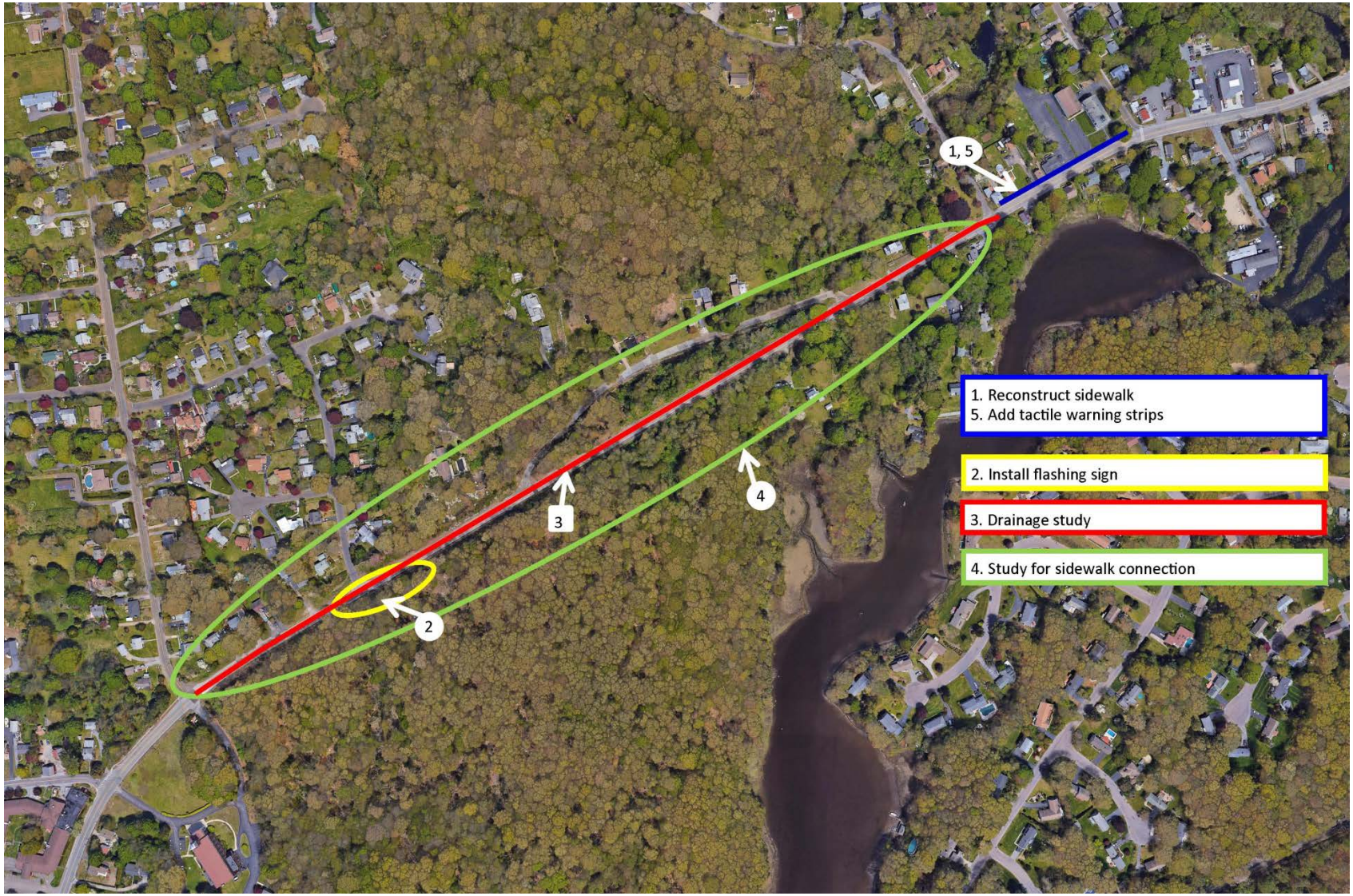


Figure 16. Medium Term Recommendations

4.3 Long Term

1. Establish sidewalk connection between Gallup Lane and North Lane on Rope Ferry Road and/or Logger Hill Road.
2. Determine a location and route for a pedestrian or multi-use path off Rope Ferry Road, to improve connectivity to Jordan Village, Gallup Lane and points east and west of the RSA study area.
3. Widen Rope Ferry Road to increase shoulder width.

Figure 18 depicts these recommendations.

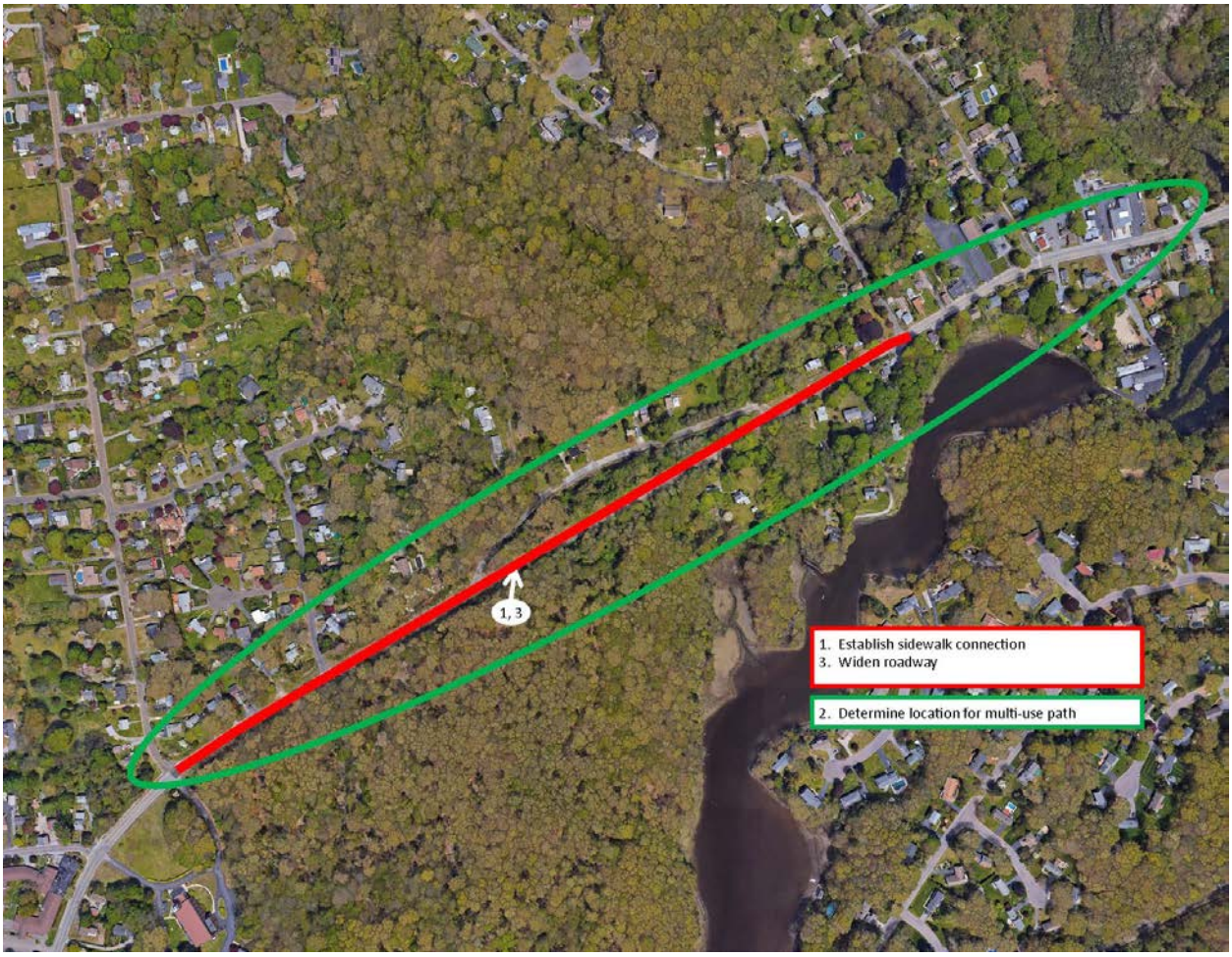


Figure 17. Long Term Recommendations

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the Town of Waterford RSA and provides Waterford with an outlined strategy to improve the transportation network along Rope Ferry Road for all road users, particularly focusing on pedestrians and cyclists. Moving forward, Waterford may use this report to prepare strategies for funding and implementing the improvements, and as a tool to plan for including these recommendations into future development along Rope Ferry Road.

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Appendix A

Built to deliver a better world

Welcome to the Community Connectivity Program Application

Please fill in the following information to provide the Audit team leaders with a comprehensive description of the area contained in this application.

1. Applicant contact information

Name	Abby Y. Piersall, AICP
Title	Director of Planning and Development
Email Address	apiersall@waterfordct.org
Telephone Number	(860) 444-5813

2. Location information

Address	122 Rope Ferry Road-170 Rope Ferry Road
Description	Section of arterial road with no pedestrian amenities.
City / Town	Waterford

3. Roadway type
(Please select all that apply)

- [x] **State road**
- [ ] **Local road**
- [ ] **Private Road**
- [ ] **Other (please specify)**

4. Zoning
(Please select all that apply)

- [ ] **Industrial**
- [x] **Residential**
- [ ] **Commercial**
- [ ] **Mixed Use**
- [ ] **Retail**
- [ ] **N/A (not applicable)**
- [x] **Other (please specify)**

5. Approximate mile radius around the location

1/8 mile

Other (Please Specify)

6. Community Sites
(Please select all that apply)

- [ ] **Community Centers**
- [x] **Business Districts**
- [ ] **Restaurant/Bar Districts**
- [x] **Churches**
- [ ] **Housing Complexes**
- [ ] **Proximity to Schools**
- [ ] **Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc...)**
- [ ] **N/A (not applicable)**
- [ ] **Other (please specify)**

7. Employment Facilities
(Retail, Industrial, etc...)

- [x] **Yes**
- [ ] **No**

If Yes please describe (please specify)

The eastern limit of the area is in Jordan Village, which includes a child care facility restaurant, hair salon, churches and fire station.

8. Educational facilities
(Please select all that apply)

- [ ] **Public, Parochial, Private Schools (more than 1 school within a ½ mile)**
- [ ] **University / Community Colleges**
- [ ] **N/A (not applicable)**
- [x] **Other (please specify)**

Childcare center

9. Transit facilities
(Please select all that apply)

- [ ] **Bus**
- [ ] **Rail**
- [ ] **Ferry**
- [ ] **Airport**
- [ ] **Park and Ride Lot**
- [x] **N/A (not applicable)**
- [ ] **Other (please specify)**

10. Safety Concerns
(Please select all that apply)

- [x] **Traffic (volumes & speed)**
- [ ] **Collisions**
- [x] **Sidewalks**
- [ ] **Traffic Signals**
- [ ] **Traffic Signs**
- [ ] **Parking Restrictions / Additions**
- [x] **Drainage**
- [x] **ADA Accommodations**
- [ ] **Agricultural & Live Stock crossing**
- [ ] **Maintenance issues (cutting grass, leaves, snow removal)**
- [ ] **N/A (not applicable)**
- [ ] **Other (please specify)**

11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

Yes

If Yes please describe and list all projects.

Waterford completed the Waterford Town Center Vision and Strategic Plan in 2014, which focuses on economic development strategies and enhancement of Waterford's center. This area includes Jordan Village, which connects to the segment of Rope Ferry Road for which a Road Safety Audit is requested. The Plan of Conservation and Development was amended to include recommendations from the Strategic Plan. The Town also developed design guidelines for Jordan Village in 2014.

The segment of Rope Ferry Road is specifically identified in the 2014 plan as being a priority area for pedestrian improvements and addressing traffic speeds and safety. (Waterford Town Center Vision and Strategic Plan, 2014, p. 22). The area is also noted in the 2012 Plan of Conservation and Development as being a desirable pedestrian link (See Sidewalk Plan, Waterford, CT. p. 73 f the POCD).

12. Environmental Concerns:

Wildlife Conservation

If Yes please describe and list.

A portion of the area near B Lane is within the Natural Diversity Database Review area. There is ledge along the corridor that may pose construction challenges, most prominently near the western intersection with Logger Hill Road.

13. Please explain why this location should be considered for an RSA

Rope Ferry Road is an important east-west corridor in Waterford and connects commercial districts that border New London, the Town's Civic Triangle, Jordan Village, residential areas and the developing Mago Point district along the Niantic River and adjacent to East Lyme. The entire corridor warrants examination to improve pedestrian and bicycle amenities, however this segment of the corridor is unique in that there are no sidewalks constructed.

The selected segment of Rope Ferry Road is the only section of this arterial road without sidewalks. Shoulders for bike travel are narrow and do not exist in some places. It appears that pedestrians do walk the corridor based on exposed dirt paths directly adjacent to the road. The road is straight and on a significant hill, leading to high vehicle speeds.

Improving this segment of Rope Ferry would improve pedestrian access to Jordan Village and the town's Civic Triangle for adjacent residents. It would also connect existing pedestrian facilities to allow for non-motorized travel along the entire corridor, from New London to the redeveloping village at Mago Point. Improving pedestrian and bicycle connectivity is an important feature to address as Waterford continues to invest in revitalizing its historic villages.

14. Are there plans to expand the area?
(Transportation Oriented Development, Economic Development, housing, etc...)

Yes

The Waterford Town Center Vision and Strategic Plan identifies strategies to invest in the area, including developing designs for improved streetscapes, traffic calming and wayfinding. Waterford intends to pursue these improvements through grant-funded projects and partnerships with the CT Department of Transportation.

15. Any other pertinent information that is unique to this location?

N/A not applicable

Thank you for completing the Community Connectivity application.

Please click on the "submit button" below and include the following attachments

1. Location map (google, GIS) **(Required)**
2. Collision data (If available)
3. Traffic data (ADT or VMT) (If available)
4. Pedestrian/bicycle data (If available)

Submit Application

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Appendix B

Built to deliver a better world

Road Safety Audit

Town: Waterford
RSA Location: Rope Ferry Road (Rte 156)
Meeting Location: Waterford Town Hall
Address: 15 Rope Ferry Road, Waterford, CT 06385
Date: 4/6/2017
Time: 8:30:00 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Krystal Oldread	Aecom
Michael Wulforst	Aecom
Daniel Matheson	TOW DPW
Todd O'Connell	WPD
Abby Piersall	Town Planning
Mark Wujtewicz	Town Planning
Anna Bergeron	CTDOT

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Appendix C

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Road Safety Audit – Waterford

Meeting Location: Waterford Town Hall
Address: 15 Rope Ferry Road, Waterford, CT 06385
Date: 4/6/17
Time: 8:30 AM

Agenda

Type of Meeting: **Road Safety Audit – Pedestrian Safety**

Attendees: **Invited Participants to Comprise a Multidisciplinary Team**

Please Bring: **Thoughts and Enthusiasm!!**

8:30 AM **Welcome and Introductions**

- Purpose and Goals
- Agenda

8:45 AM **Pre-Audit**

- Definition of Study Area
- Review Site Specific Data:
  - Average Daily Traffic
  - Crash Data
  - Geometrics
- Issues
- Safety Procedures

10:00 AM **Audit**

- Visit Site
- As a group, identify areas for improvements

12:00 PM **Post-Audit Discussion / Completion of RSA**

- Discussion observations and finalize findings
- Discuss potential improvements and final recommendations
- Next Steps

2:30 PM **Adjourn for the Day – but the RSA has not ended**

Instruction for Participants:

- Before attending the RSA, participants are encouraged to observe the intersection and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.

Audit Checklist

Pedestrians and Bicycles	Comment

Pedestrian Crossings
• Sufficient time to cross (signal)
• Signage
• Pavement Markings
• Detectable warning devices (signal)
• Adequate sight distance
• Wheelchair accessible ramps
  o Grades
  o Orientation
  o Tactile Warning Strips
• Pedestrian refuge at islands
• Other	

Pedestrian Facilities
• Sidewalk
  o Width
  o Grade
  o Materials/Condition
  o Drainage
  o Buffer
• Pedestrian lighting
• Pedestrian amenities (benches, trash receptacles)
• Other	

Bicycles • Bicycle facilities/design • Separation from traffic • Conflicts with on-street parking • Pedestrian Conflicts • Bicycle signal detection • Visibility • Roadway speed limit • Bicycle signage/markings • Shared Lane Width • Shoulder condition/width • Traffic volume • Heavy vehicles • Pavement condition • Other	

Roadway & Vehicles	
• Speed-related issues o Alignment; o Driver compliance with speed limits o Sight distance adequacy o Safe passing opportunities	
• Geometry o Road width (lanes, shoulders, medians); o Access points; o Drainage o Tapers and lane shifts o Roadside clear zone /slopes o Guide rails / protection systems	

• Intersections o Geometrics o Sight Distance o Traffic control devices o Safe storage for turning vehicles o Capacity Issues	

• Pavement
  o Pavement Condition (excessive roughness or rutting, potholes, loose material)
  o Edge drop-offs
  o Drainage issues
• Lighting Adequacy	

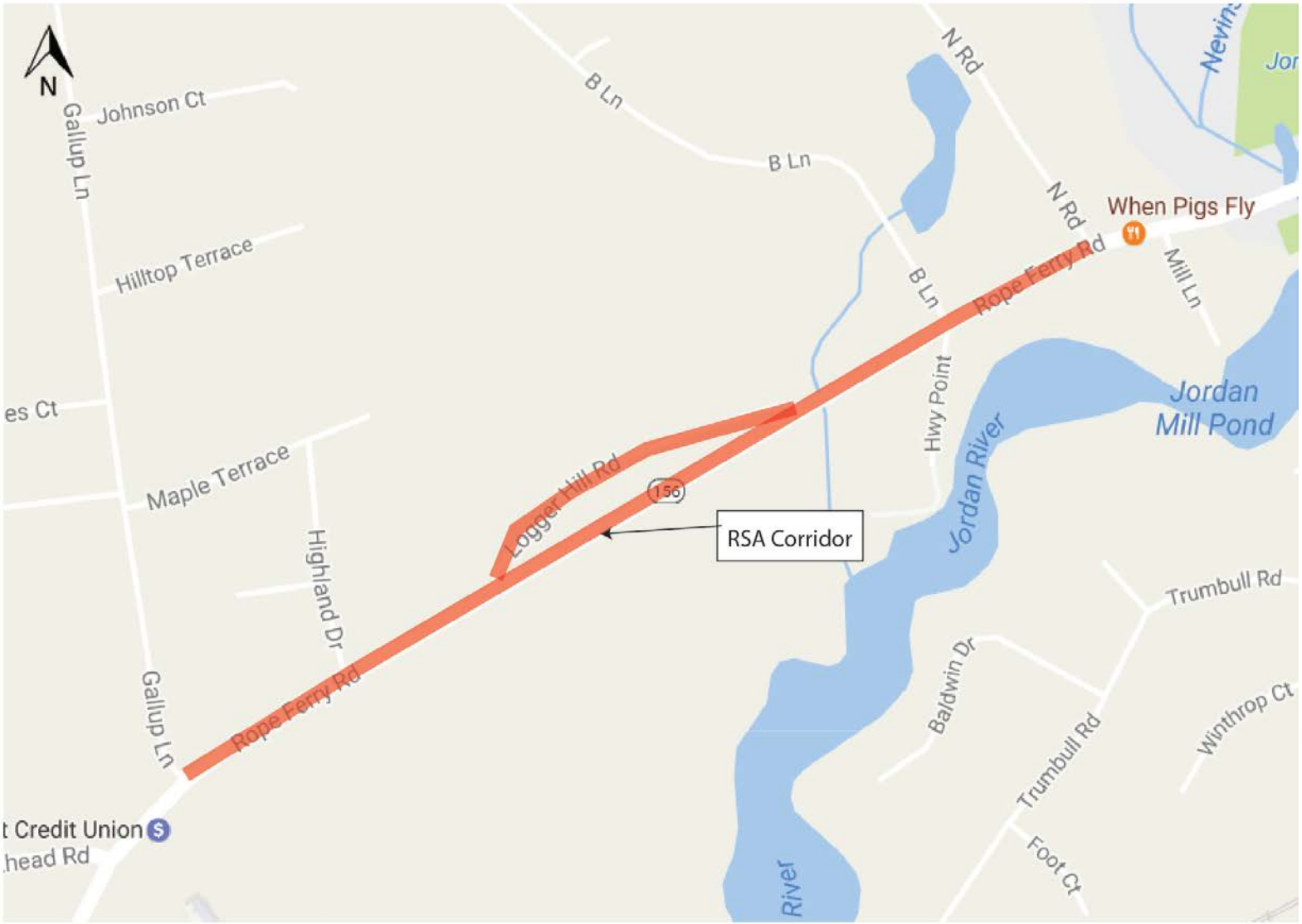
• Signing
  • Correct use of signing
  • Clear Message
  • Good placement for visibility
  • Adequate retroreflectivity
  • Proper support	

• Signals
  o Proper visibility
  o Proper operation
  o Efficient operation
  o Safe placement of equipment
  o Proper sight distance
  o Adequate capacity	

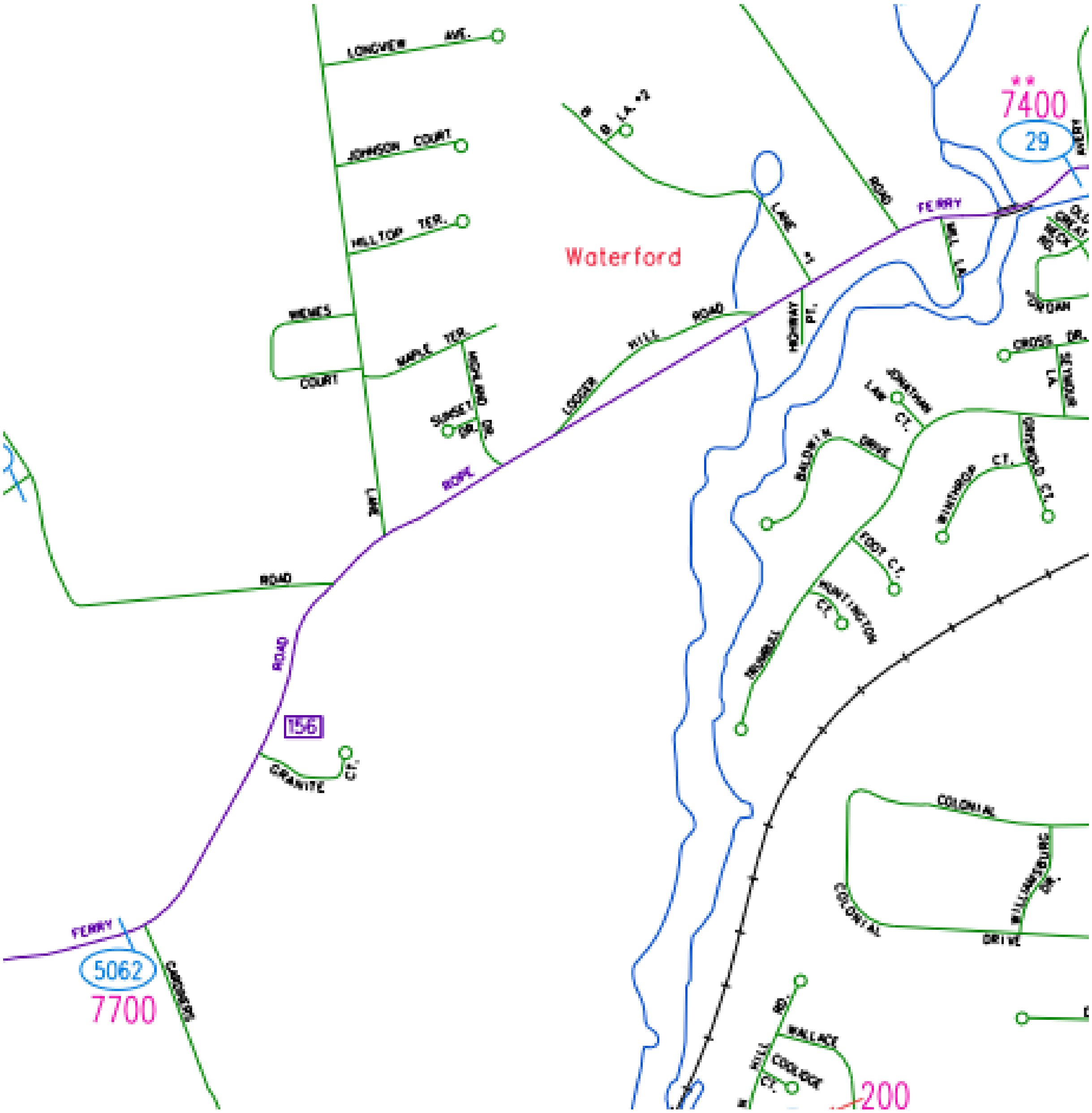
• Pavement Markings
  o Correct and consistent with MUTCD
  o Adequate visibility
  o Condition
  o Edgelines provided	

• Miscellaneous
  o Weather conditions impact on design features.
  o Snow storage	

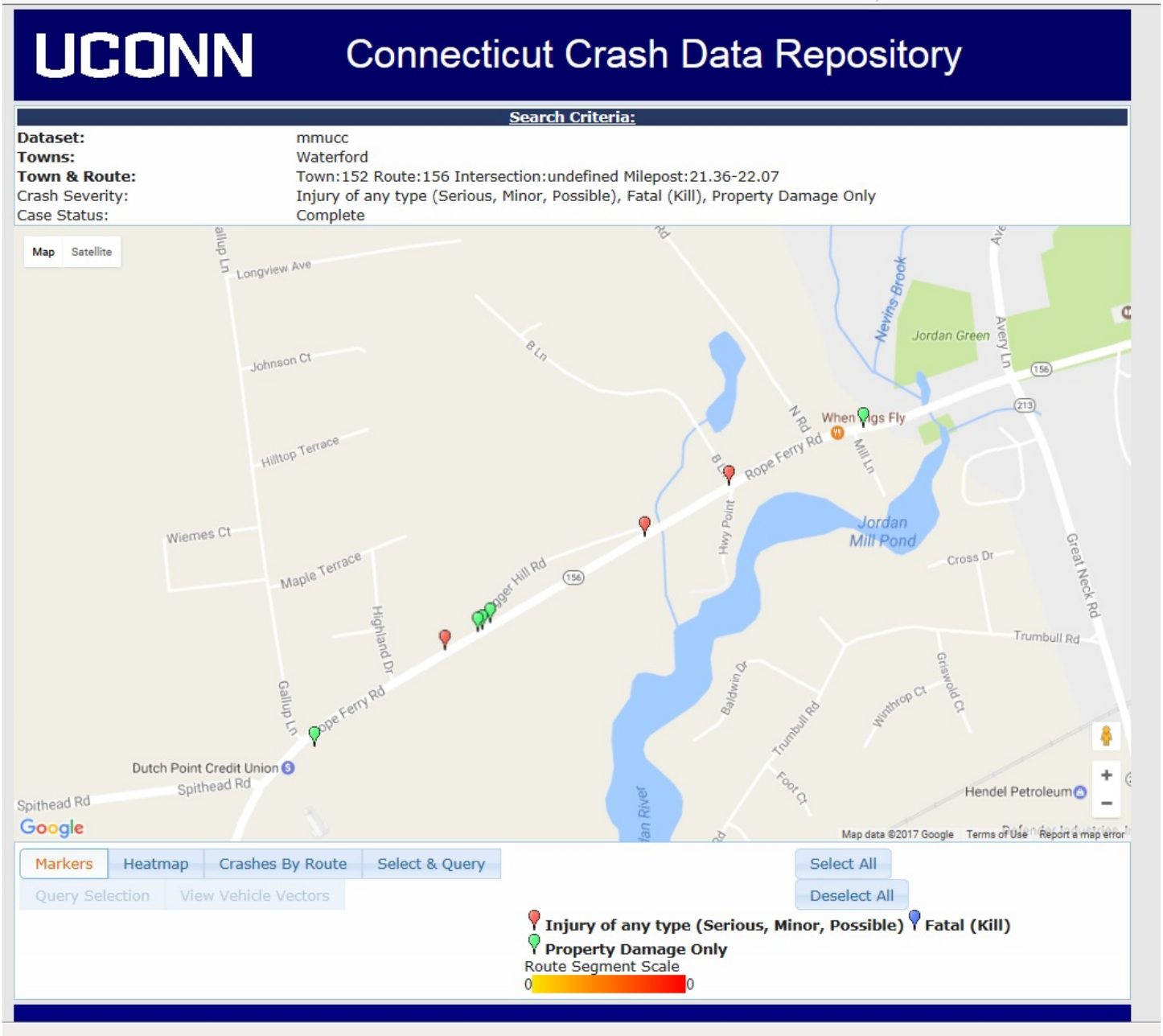
Location Map



ADT Map


Waterford
7400
29
5062
7700
156
200
LONGVIEW AVE.
JOHNSON COURT
HILLTOP TER.
COURT
MAPLE TER.
SUNSET DR.
LOGGER HILL ROAD
ROAD
ROPE
FERRY
LANE
ROAD
GRANITE CT.
FERRY
HIGHWAY PT.
CROSS DR.
JORDAN
BALDWIN
DRIVE
WINTHROP CT.
GRISWOLD CT.
FOOT CT.
HUNTINGTON CT.
TRUMBULL
COLONIAL
COLONIAL
DRIVE
WILLIAMSBURG DR.
WALLACE
COOLIDGE CT.

2015 Crashes



Road Safety Audit – Waterford

Crash Summary

Data: 3 years (2012-2014)

There were no crashes that involved pedestrians.

There were no crashes involving bicyclists.

Severity Type	Number of Crashes	
Property Damage Only	7	78%
Injury (No fatality)	2	22%
Fatality	0	0%
Total	9	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	0	0%
Rear-end	6	67%
Turning-Intersecting Paths	1	11%
Turning-Opposite Direction	0	0%
Fixed Object	2	22%
Backing	0	0%
Angle	0	0%
Turning-Same Direction	0	0%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	9	

Weather Condition	Number of Crashes	
Snow	1	11%
Rain	0	0%
No Adverse Condition	8	89%
Unknown	0	0%
Blowing Sand, Soil, Dirt or Snow	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	9	

Light Condition	Number of Crashes	
Dark-Not Lighted	1	11%
Dark-Lighted	2	22%
Daylight	6	67%
Dusk	0	0%
Unknown	0	0%
Dawn	0	0%
Total	9	

Road Surface Condition	Number of Crashes	
Snow/Slush	2	22%
Wet	2	22%
Dry	5	56%
Unknown	0	0%
Ice	0	0%
Other	0	0.0%
Total	9	

Time		Number of Crashes	
0:00	**0:59**	0	0%
1:00	**1:59**	0	0%
2:00	**2:59**	0	0%
3:00	**3:59**	0	0%
4:00	**4:59**	0	0%
5:00	**5:59**	1	11%
6:00	**6:59**	0	0%
7:00	**7:59**	0	0%
8:00	**8:59**	1	11%
9:00	**9:59**	0	0%
10:00	**10:59**	0	0%
11:00	**11:59**	0	0%
12:00	**12:59**	1	11%
13:00	**13:59**	0	0%
14:00	**14:59**	1	11%
15:00	**15:59**	1	11%
16:00	**16:59**	1	11%
17:00	**17:59**	2	22%
18:00	**18:59**	0	0%
19:00	**19:59**	0	0%
20:00	**20:59**	0	0%
21:00	**21:59**	0	0%
22:00	**22:59**	0	0%
23:00	**23:59**	1	11%
Total		9	

Waterford - Rope Ferry Road (Rte 156)

DRAFT

N

St Pauls Church

First Baptist Church

Jordan Fire Dept

N Rd

Mill Ln

B Ln

Hwy Pt

Rope Ferry Rd

Logger Hill Rd

Highland Dr

Gallup Ln

Spithead Rd

Jordan River

Jordan Mill Park

156

SPEED LIMIT 25

SPEED LIMIT 35

SPEED LIMIT 35

SPEED LIMIT 25

SPEED LIMIT 35

Legend

- Sidewalk
- No Sidewalk
- Crosswalk
- Stop Controlled Intersection
- Pedestrian Crossing Sign
- Pedestrian Crossing Sign with Down Arrow

Post-Audit Discussion Guide

Safety Issues

- Confirmation of safety issues identified during walking audit

Potential Countermeasures

- Short Term recommendations

- Medium Term recommendations

- Long Term recommendations

Next Steps

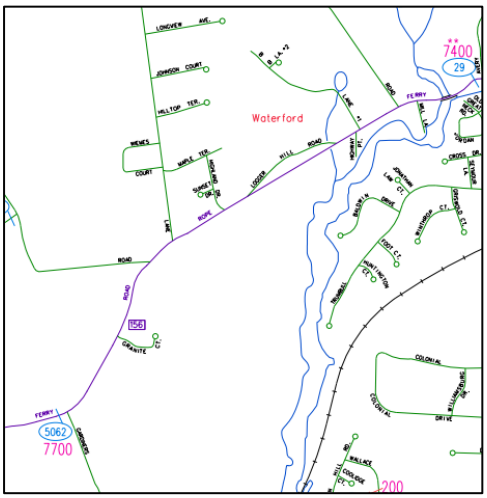
- Discussion regarding responsibilities for implementing the countermeasures (including funding)

Road Safety Audit – Waterford

Fact Sheet

Functional Classification:

- Rope Ferry Road is classified as a Minor Arterial
- Logger Hill Road is classified as a local road



ADT

- ADT on Rope Ferry Rd is 7,400-7,700

Population and Employment Data (2014):

- Population: 19,499
- Employment: 11,211

Urbanized Area

- Waterford is in the Norwich-New London Urbanized Area

Demographics

- The statewide average percentage below the poverty line is 10.31%. No parts of Waterford are below the state average.

- The statewide average percentage minority population is 30.53%. No parts of Waterford are below the state average.

Air Quality

- Waterford's CIPP number 621
- Waterford is within the Greater CT Marginal Ozone Area
- Waterford is within a CO Attainment Area