Pittsgrove Twp. and Upper Pittsgove Twp. Road Safety Audit

FINAL REPORT

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Submitted by

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CAIT's Transportation Safety Resource Center (TSRC) and New Jersey Local Technical Assistance Program (NJ LTAP) offer a statewide Road Safety Audit (RSA) service at no charge to New Jersey towns and counties. Interested parties can request road surveys conducted by a team of engineers, planners, and law-enforcement officers to help municipalities and counties make cost-effective safety improvements.

A multidisciplinary team of professionals offers assessments on roadway issues such as pedestrian and bicycle safety, intersections, rural roads, human factors, speed management, and sign visibility and retroreflectivity standards.

RSAs include data-driven considerations and analysis of crashes. To determine the best safety solutions, RSA professionals perform incisive crash data evaluations on the target area using Plan4Safety, TSRC's award-winning crash database and software.

The RSA team provides a final report that includes long- and short-term countermeasure recommendations that fit within the requestor's budget. Furthermore, RSAs pay off: According to the Federal Highway Administration (FHWA), countermeasures applied after RSAs can reduce crashes by about 60 percent.

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Table of Contents

Introduction 1

Background 4

Road Safety Audit Process 6

Information Sources 7

RSA Team 8

Crash Data 9

Parvin Mill Road (CR 645) & Alvine Road (CR 655) & Garden Road (CR 674) 11

- RSA Team Findings 11

Centerton Road (CR 610) & Dutch Row Road (CR 611) 13

- RSA Team Findings 13

Centerton Road (CR 610) & Willow Grove Road (CR 639) 18

- RSA Team Findings 18

Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639) 20

- RSA Team Findings 20

Dutch Row Road (CR 611) & Three Bridge Road 22

- RSA Team Findings 22

Glassboro Road (CR 619) & Swedesboro Road (CR 666) 25

- RSA Team Findings 25

Implementing Recommendations 27

Potential Funding Sources 28

RSA Team's Site Conclusion 32

Intersection Ranking Conclusion 32

Appendix A 33

- Raw Crash Data 34
- Crash Diagrams 36

Appendix B 40

- Straight Line Diagram 41

Appendix C 45

- High Risk Rural Road Intersection Ranking Methodology 46

Appendix D 50

Introduction

In the spring of 2011, a partnership was formed between the Rutgers Transportation Safety Resource Center (TSRC) and South Jersey Transportation Planning Organization (SJTPO). SJTPO and TSRC agreed to partner on a Road Safety Audit (RSA) to supplement SJTPO's existing RSA program. SJTPO suggested the conduction of an RSA in the County of Salem with the County of Salem who were also interested in such. The County of Salem did not have any specific high-crash locations identified for an RSA and was interested in having TSRC conduct a network screening to identify high crash locations.

Separately, at the request of the Delaware Valley Regional Planning Authority (DVRPC), TSRC developed a methodology to generate a ranking of high risk rural road intersections. This ranking methodology (outlined in Appendix C) was brought to the NJDOT for consideration, with NJDOT expressing concerns about the focus of intersections for the high risk rural road program (HRRR).TSRC, SJTPO, DVRPC, and Salem County decided to use the RSA process as a way to validate the concept of safety opportunity at high risk rural road intersections. Salem County has approximately 275 miles of rural roadways eligible for HRRR consideration, that is, with a functional classification of major/minor collectors or local roadways. Below are the ranked rural intersections of Salem County.

Rank	Roadway Owner	Township	Major	Minor
1	NJDOT	Upper Pittsgrove	Pole Tavern-Bridgeton Road	Shirley Road
2	NJDOT	Upper Pittsgrove	Bridgeton Pike	Glassboro Road
3	NJDOT	Upper Pittsgrove	Harding Highway	Daretown Road
4	NJDOT	Carneys Point	Harding Highway	Pointers Auburn Road
5	County	Upper Pittsgrove	Monroeville Road	Richwood Road
6	NJDOT	Upper Pittsgrove	Harding Highway	Buck Road
7	NJDOT	Upper Pittsgrove	Harding Highway	Dutch Row Road
8	County	Pittsgrove	Jesse Bridge Road	Gershel Avenue
9	County	Mannington	Quaker Neck Road	Action Station Road
10	County	Pittsgrove	Parvin Mill Road	Alvine Road
11	County	Upper Pittsgrove	Glassboro Road	Swedesboro Road
12	County	Alloway	Harmors Mill-Cohansey Road	Cohansey Friesburg Road
13	NJDOT	Carneys Point	Harding Highway	Forest Ln
14	NJDOT	Quinton	Main Street	Telegraph Road
15	County	Upper Pittsgrove	Dutch Row Road	Three Bridge Road
16	County	Alloway	Aldine Shirley Road	Friesburg Aldaine Road
17	Local	Upper Pittsgrove	Three Bridge Road	Taylor Road
18	NJDOT	Upper Pittsgrove	Harding Highway	Commissioners Pike
19	County	Alloway	Alloway Aldine Road	Watson Mill Road
20	NJDOT	Pilesgrove	Harding Highway	Glassboro Road
21	County	Pittsgrove	Centerton Road	Dutch Row Road
22	NJDOT	Mannington	NJ 45	Bypass Road
23	NJDOT	Mannington	NJ 45	Newell Road

A total of 23 intersections were generated utilizing the following methodology: each has equivalent property damage only (EPDO) of 10 or greater[1]. The intersections had a mix of jurisdictional agencies—state, county, and municipal. For ease of conducting an RSA, only county-owned intersections were considered. Prior to conducting the RSA, the RSA facilitation team toured the sites with the county and identified intersections that received significant operational modifications during or after the crash data period. Specifically, the intersections of Monroeville and Richwood Roads (Upper Pittsgrove), Jesse Bridge Road and Gershel Avenue (Pittsgrove), Harmors Mill-Cohansey Road and Cohansey-Friesburg Road (Alloway), and Aldine Shirley Road and Friesburg-Aldaine Road (Alloway) were all upgraded to all-way stop control in the crash data period. Some intersections also received additional flasher upgrades; however, the RSA facilitation team felt these sites may not optimally benefit from HSIP funds, as the current safety operations are expected to be better than the crash data suggests. Of the remaining county-owned intersections, four were selected for audit in the same general geographic area within two adjacent municipalities, Pittsgrove Township and Upper Pittsgrove Township (see map in Appendix C). In order to facilitate local stakeholder participation and transportation between sites and to maximize auditing time, the high risk rural intersections identified in these two municipalities were selected for a Road Safety Audit.

County Ranking							Num Crash						
LRS	All	Status	Roadway Owner	Township	Major	Minor		EPDO	K	A	B	C	O
1	5	Upgraded to All-Way Stop	County	Upper Pittsgrove	Monroeville Road	Richwood Road	12	21	0	0	1	7	4
2	8	Upgraded to All-Way Stop	County	Pittsgrove	Jesse Bridge Road	Gershel Avenue	9	19	1	0	1	4	3
3	9	Geographically Distant	County	Mannington	Quaker Neck Road	Action Station Road	10	17	0	0	3	1	6
4	**10**	**Audited**	**County**	**Pittsgrove**	**Parvin Mill Road**	**Alvine Road**	**11**	**15**	**0**	**1**	**0**	**1**	**9**
5	**11**	**Audited**	**County**	**Upper Pittsgrove**	**Glassboro Road**	**Swedesboro Road**	**11**	**15**	**0**	**0**	**1**	**2**	**8**
6	12	Upgraded to All-Way Stop	County	Alloway	Harmors Mill-Cohansey Road	Cohansey Friesburg Road	9	12	0	0	0	6	3
7	**15**	**Audited**	**County**	**Upper Pittsgrove**	**Dutch Row Road**	**Three Bridge Road**	**7**	**14**	**0**	**0**	**2**	**3**	**2**
8	16	Upgraded to All-Way Stop	County	Alloway	Aldine Shirley Road	Friesburg Aldaine Road	7	13	0	0	3	0	4
9	19	Geographically Distant	County	Alloway	Alloway Aldine Road	Watson Mill Road	7	11	0	0	2	0	5
10	**21**	**Audited**	**County**	**Pittsgrove**	**Centerton Road**	**Dutch Row Road**	**5**	**11**	**1**	**0**	**1**	**0**	**3**

[1] NJDOT EPDO analysis methodology (IIP) uses a minimum value of 1 EPDO per month for consideration as a priority location, which would equate to 36 for a three-year period.

In addition to the four audited intersections listed in the above table, the intersections of Centerton Road (CR 610) & Willow Grove Road (CR 639) and Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639) were also included in the RSA due to the close proximity to the intersection of Centerton Road & Dutch Row Road.

The goal of the RSA was twofold: (1) to validate the existence of safety opportunities of rural intersections as identified by the high risk rural road intersections model, and (2) to identify and justify the need for specific countermeasures that can improve safety at the audited Salem County intersections.

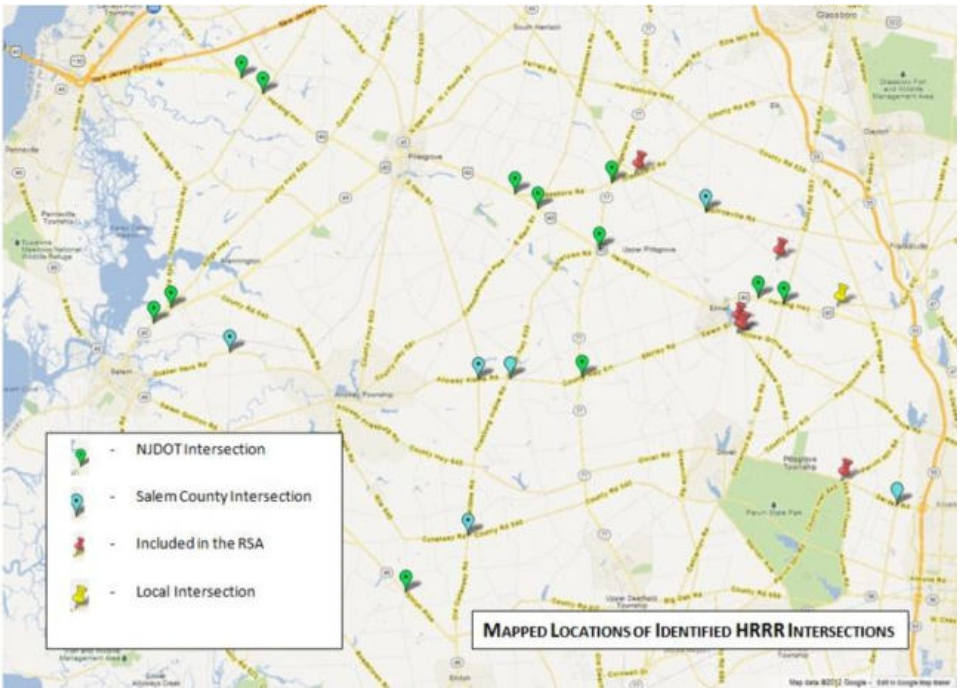

Figure 1– Salem County high risk rural intersection map (full size appears in Appendix C)

In addition to the normal data sources for an RSA, when conducting a pre-audit visit of potential audit intersections with the roadway owner, pavement friction was qualitatively identified as a potential contributing factor for crashes at some intersections. The Rutgers Pavement Resource Program (PRP) at CAIT was consulted and provided guidance regarding quantitatively measuring and assessing pavement friction through skid testing and skid numbers. The PRP was able to arrange a partnership between the NJDOT, Rutgers PRP, and Salem County to measure skid numbers at approaches to the audited intersections. This data was verbally provided to the RSA team and is made available as Appendix D in this report.

This report documents the findings and recommendations made by the RSA team.

Background

As previously indicated, the audit focused on a total of six intersections as shown in Figure 1 above, located within Pittsgrove and Upper Pittsgrove Townships including:

- Parvin Mill Road (CR 645) & Alvine Road (CR 655)& Garden Road (CR 674) a.k.a. Six Points
- Centerton Road (CR 610) & Dutch Row Road (CR 611)
- Centerton Road (CR 610) & Willow Grove Road (CR 639)
- Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639)
- Dutch Row Road (CR 611) & Three Bridge Road
- Glassboro Road (CR 619) & Swedesboro Road (CR 666)

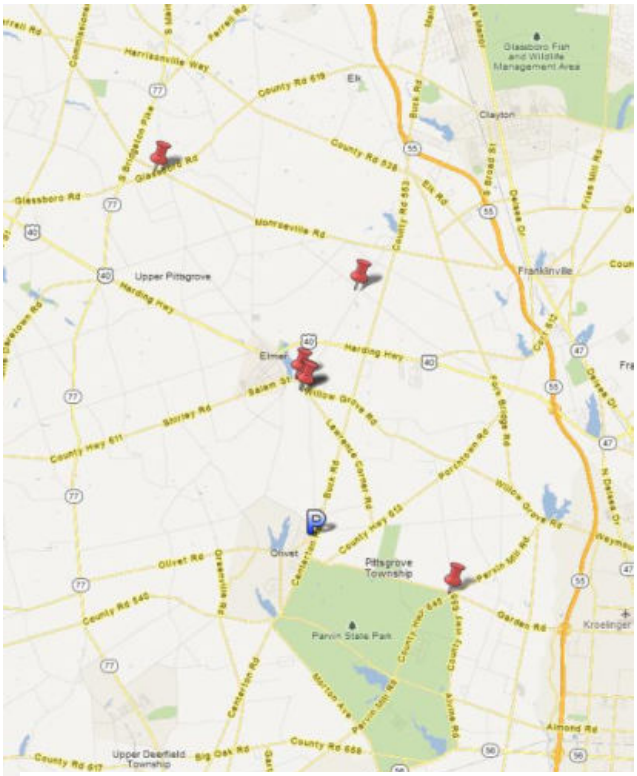

Figure 2–Map of studied locations

All of the studied intersections are in the rural areas of Salem County with the primary land uses in the area of the intersections being residential or agricultural in nature. There are no NJ Transit bus routes servicing any of the studied intersections. Additionally, no public schools are located in the immediate area of the intersection contained within the RSA.

The intersection of **Parvin Mill Road (CR 645), Alvine Road (CR 655), and Garden Road (CR 674)** is known as six-points because of its unique geometry as a six-legged intersection under stop control. The two approaches of Garden Road (eastbound/westbound) are the major street movements with no control. An overhead flashing beacon supplements the "Stop" signs on the Parvin Mill Road and Alvine Road approaches. A single lane is provided on all approaches. Transverse rumble strips are provided along Parvin Mill Road. Garden Road is a heavily traveled truck route, running approximately 5 miles from its interchange with Route 55 to Olivet Road (CR 690), wholly contained within Pittsgrove Township. All approaches are classified as local roadways.

Figure 3–Parvin Mill Road (CR 645), Alvine Road (CR 655), and Garden Road (CR 674)

Figure 4–Centerton Road and Dutch Row Road (CR 611)

The intersection of **Centerton Road and Dutch Row Road (CR 611)** is a three-legged intersection with "Stop" sign control along the westbound approach of Dutch Row Road, which is classified as a minor collector. Aside from the northbound Centerton Road approach, which has a channelized right turn, provided the other legs have a single-lane approach. Centerton Road is classified as a major collector.

The intersection of **Centerton Road (CR 611) and Willow Grove Road (CR 639)** is located to the south of Centerton Road and Dutch Row Road along County Route 611. The intersection is a T-end type intersection with "Stop" sign control along Willow Grove Road. A single-lane approach is provided on all legs to the intersection. Willow Grove Road is classified as a major collector, while Centerton Road is classified as a minor collector.

Figure 5–Centerton Road (CR 611)/Willow Grove Road (CR 639) and Lawrence Corner Road (CR 621)/Willow Grove Road (CR 639)

Lawrence Corner Road (CR 621) intersects Willow Grove Road (CR 639) approximately 265 feet from its intersection with Centerton Road. The intersection is a three-legged, unsignalized intersection with "Stop" sign control along Lawrence Corner Road. A single lane is provided on all approaches to the intersection. Willow Grove Road is classified as a major collector with Lawrence Corner Road classified as a local route.

Figure 6–Dutch Row Road (CR 611) and Three Bridge Road

The intersection of **Dutch Row Road (CR 611) and Three Bridge Road** is a four-legged, unsignalized intersection with "Stop" sign control provided along Three Bridge Road. A single-lane is provided on all approaches to the intersection. Dutch Row Road is classified as a minor collector. Three Bridge Road, which is under the jurisdiction of Upper Pittsgrove Township, is classified as a local roadway.

The final intersection investigated as part of the RSA, **Glassboro Road (CR 619) and Swedesboro Road (CR 666),** is located within Upper Pittsgrove Township with both roadways classified as local roadways. The four-legged intersection has "Stop" sign control along Swedesboro Road, with control supplemented by an overhead flashing beacon on a K-pole. A single lane is provided on all approaches to the unsignalized intersection.

Figure 7–Glassboro Road (CR 619) and Swedesboro Road (CR 666)

Road Safety Audit Process

The Pittsgrove Township and Upper Pittsgrove Township RSA followed a process that began with data collection, a crucial task that served as the backbone for recommendations for improvement. At the selected sites, crash data was collected using Plan4Safety, a crash data analysis tool, and consisted of crash types, locations, years, road conditions, and contributing circumstances. Using the crash data, a collision diagram, shown in Appendix A, was produced showing crash types and locations.

Figure 8–RSA team conducting site visit

The Road Safety Audit occurred on Friday, October 28, 2011. The day began with a pre-audit meeting that involved the definition of an RSA and an overview of the intersections. A presentation showing details of the crash analysis and aerial images of the different sites followed. Then site visits were conducted where all participants were given a chance to inspect the sites and utilize their various backgrounds to brainstorm recommended improvements. After the site visits, the team was brought back together to discuss the issues observed and recommendations to remedy the issues.

Information Sources

Several sources of information were used in the RSA process. Specific resources used in the analysis include:

- NJDOT crash database (2008–2010)
- Plan4Safety crash data analysis tool
- NJDOT straight line diagrams
- Google Earth
- Rutgers PRP / NJDOT / Salem County—skid test analysis

RSA Team

The RSA team consisted of 14 members, including police officers, engineers, and planners from different agencies across the state.

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Crash Data

As of the date of this report, the crash data reported by the NJDOT shows a total of 113 crashes occurring during the three-year period from 2008 to 2010. The following tables show detailed statistics of the crash data analyzed.

General Crashes

The intersections within the Townships of Pittsgrove and Upper Pittsgrove selected for further analyses based on crash data are as follows:

- Parvin Mill Road (CR 645) & Alvine Road (CR 655)& Garden Road (CR 674) a.k.a. Six Points
- Centerton Road (CR 610) & Dutch Row Road (CR 611)
- Centerton Road (CR 610) & Willow Grove Road (CR 639)
- Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639)
- Dutch Row Road (CR 611) & Three Bridge Road
- Glassboro Road (CR 619) & Swedesboro Road (CR 666)

Cross Street	Crashes	Common Crash Type
Parvin Mill Road (CR 645) & Alvine Road (CR 655)& Garden Road (CR 674)	11	Right Angle
Centerton Road (CR 610) & Willow Grove Road (CR 639); Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639)	2	Fixed Object
Ceterton Road (CR 610) & Dutch Row Road (CR 611)	6	Fixed Object
Dutch Row Road (CR 611) & Three Bridge Road	6	Right Angle
Glassboro Road (CR 619) & Swedesboro Road (CR 666)	3	Same Direction- Rear End, Encroachment, & Fixed Object

Table 1–Common crash type data (2008–2010)

Type of Crash	Percentage of Total Number of Crashes
Right Angle	50.0
Opposite Direction - Head On/Angular	7.1
Fixed Object	25.0
Same Direction - Rear End	10.7
Encroachment	3.6
Same Direction - Side Swipe	3.6

Table 2–Types of crashes data (2008–2010)

Lighting Condition	Percentage of Total Number of Crashes
Dark (Street Lights Off)	3.6
Dark (Street Lights On/ continuous)	10.7
Dark (No Street Lights)	14.3
Daylight	71.4

Table 3–Crash lighting data (2008–2010)

Parvin Mill Road (CR 645) & Alvine Road (CR 655) & Garden Road (CR 674)

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: Geometric	Safety Risk	
Description: This is a six-legged non signalized intersection with tight turning radius. Vehicles along the northbound Parvin Mill Road approach and Alvine Road approach were observed to have stopped twice due to limited sight distance.	High	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
1 Investigate the feasibility of converting the intersection into a mini roundabout.	Medium-High	High

Issue: Guide Signage	Safety Risk	
Description: There is little to no guide (e.g., roadway name) signage at the intersection.	Medium-Low	
Some of the signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
2 A sign study should be conducted by professional engineering staff to upgrade the signage and add needed signs to the intersection.	Medium-Low	Medium

Issue: Lighting	Safety Risk	
Description: There is no street lighting at this intersection.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
3 An engineer should be consulted to review and perform a lighting study for this intersection in accordance with current New Jersey design manuals. The lighting study should consider the needs of all the roadway users.	Medium-High	Medium

Issue: Flashing Beacon	Safety Risk	
Description: The flashing beacon on Parvin Mills Road has a misaligned lens.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
4 Correctly align lens.	Low	Medium

Centerton Road (CR 610) & Dutch Row Road (CR 611)

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: General Signage	Safety Risk
Description: Signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium
Too many signs cause driver confusion.	Medium

RSA Team's Recommendation	Cost	Potential Safety Benefit
5 An engineer should conduct a full sign study to update existing signs, replace missing signs, ensure signage meets current standards, and reduce clutter. If the exiting intersection configuration is maintained (see recommendations 7, 8), chevrons should be considered as an alternative to the W1-6.	Medium-Low	Medium

Issue: Lighting	Safety Risk	
Description: There is no street lighting at this intersection.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
6 An engineer should be consulted to review and perform a lighting study for this intersection. The lighting study should consider the needs of all the roadway users.	Medium-High	Medium

Issue: Geometry	Safety Risk
Description: The intersection is located on a horizontal curve with limited sight distance for approaching vehicles along eastbound Centerton Road, particularly if a vehicle is waiting to execute a left turn onto Dutch Row Road.	High
Drivers tend to execute a left turn onto Dutch Row Road at excessive speeds, without yielding the right-of-way.	High

RSA Team's Recommendation	Cost	Potential Safety Benefit
7 Realign southbound Centertown Road with Dutch Row Road such that northbound Centertown Road intersects as a stop-controlled T-intersection, and modify pavement markings and signage accordingly.	Medium-Low	High
8 Investigate the feasibility of converting the intersection into a mini roundabout.	Medium-High	High

Issue: Island	Safety Risk
Description: There is an island to channelize the right turns onto Dutch Row Road, object markers on the island show evidence of being knocked down.	Medium

RSA Team's Recommendation	Cost	Potential Safety Benefit
9 Conduct engineering study to determine if the island is needed.	Medium-Low	Medium
10 If the island is needed, strip high visibility paint around the island to improve visibility.	Low	Medium

Issue: Missing Yield Sign	Safety Risk
Description: There is a missing yield sign for the channelized right turn onto Dutch Row Road.	Low

RSA Team's Recommendation	Cost	Potential Safety Benefit
11 Install missing yield sign	Low	Medium-Low

Issue: Tree	Safety Risk	
Description: A large tree exists on the southbound side of Centerton Road, immediately after the horizontal curve creating a potential hazard to drivers.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
12 The owner of the property is supportive of removing the tree. Get written consent from property owner, and remove the tree.	Medium-Low	Medium

Issue: Fixed Objects Off-roadway	Safety Risk	
Description: There is a large field of bamboo growing on the northwest side of Centerton Road, in addition to other fixed objects such as utility poles and trees. One fatal accident had occurred here.	Low	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
13 An engineer should be consulted to review and perform a guiderail study for this intersection. If needed, install guiderail to protect drivers from fixed objects.	Medium-High	Low

Issue: Worn Pavement Markings	Safety Risk
Description: Pavement markings are old and worn resulting in limited visibility.	Medium-High

RSA Team's Recommendation	Cost	Potential Safety Benefit
14 Replace worn pavement marking with new reflective markings.	Low	Medium-High

Centerton Road (CR 610) & Willow Grove Road (CR 639)

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: General Signage	Safety Risk	
Description: Signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
15 An engineer should conduct a full sign study to update existing signs and replace missing signs to meet current standards.	Medium-Low	Medium-Low

Issue: Edge Drop-off	Safety Risk
Description: Edge drop-off along southbound Centerton Road is a potential safety hazard due to the significant vertical differences between surfaces that can affect vehicle stability and reduce a driver's ability to handle the vehicle.	Medium-High

RSA Team's Recommendation	Cost	Potential Safety Benefit
16 Consider backfilling soil to grade and investigate underlying erosion control.	Medium-Low	Medium-High
17 During next resurfacing, consider installing the safety edge treatment	Low (if completed during pavement resurfacing)	Medium-High

Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639)

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: General Signage	Safety Risk	
Description: Signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
18 An engineer should conduct a full sign study to update existing signs and replace missing signs to meet current standards.	Medium-Low	Medium-Low

Issue: Yield Sign	Safety Risk	
Description: There is no traffic control for right-turning traffic along southbound Willow Grove Road on to Lawrence Corner Road.	Low	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
19 Install yield sign.	Low	Medium-Low

Issue: Stop Bar and Sign Location	Safety Risk	
Description: The stop bar and "Stop" sign on Lawrence Corner Road are located too far back from the intersection *(Note: MUTCD guidance is "Stop" signs should not be placed greater than 50 feet from the edge of the pavement of the intersecting roadway).*	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
20 Conduct an engineering study to locate the stop bar and "Stop" sign close to the intersection, with clear advanced visibility. Supplemental "Stop" signs or "Stop Ahead" signage may be necessary to achieve both objectives.	Low	Medium-Low

Issue: Pavement Markings	Safety Risk	
Description: Pavement markings are old, worn, and of substandard design resulting in limited visibility.	Medium-High	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
21 Replace worn pavement markings with new reflective markings to current standards, including upgrading of the hatched neutral areas.	Low	Medium-High

Dutch Row Road (CR 611) & Three Bridge Road

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: General Signage	Safety Risk	
Description: Signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
22 An engineer should conduct a full sign study to update existing signs and replace missing signs to meet current standards.	Medium-Low	Medium-Low

Issue: Lighting	Safety Risk	
Description: There is no street lighting at this intersection.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
23 An engineer should be consulted to review and perform a lighting study for this intersection. The lighting study should consider the needs of all the roadway users.	Medium-High	Medium

Issue: Worn Pavement Markings	Safety Risk
Description: Pavement markings are old and worn resulting in limited visibility.	Medium-High

RSA Team's Recommendation	Cost	Potential Safety Benefit
24 Replace worn pavement markings with new reflective markings.	Low	Medium-High

Issue: Missing Stop Bars	Safety Risk
Description: Stop bars are faded or missing on Three Bridge Road.	Medium

RSA Team's Recommendation	Cost	Potential Safety Benefit
25 Replace worn or missing pavement marking with new reflective stop bar.	Low	Medium-Low

Issue: Pavement	Safety Risk	
Description: Evidence of "peeled wheels" along northbound Three Bridge Road, pavement is worn.	Medium-High	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
26 Replace worn pavement with new.	High	Medium-High

Issue: Geometry and Stop Control	Safety Risk	
Description: There is limited sight distance from the stop controlled Three Bridges Road, potentially when crops are growing on the northwest corner.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
27 Investigate sight distance and ensure any vegetation and crop growth within the sign triangle does not pose a safety hazard. Remove or trim back crop area as necessary.	Medium-Low	Medium-High

Issue: Intersection Warning Signage	Safety Risk	
Description: There may be a missing intersection warning sign on the southbound direction of Dutch Row Road approaching the intersection.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
28 Install advanced intersection warning signage on both non-stop controlled approaches of the intersection. Consider oversizing the signs.	Low	Medium

Glassboro Road (CR 619) & Swedesboro Road (CR 666)

RSA Team Findings

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: General Signage	Safety Risk
Description: Signs throughout the intersection are old, faded, non-retro reflective, and non-breakaway.	Medium
Signs are mounted at different heights.	Medium-Low

RSA Team's Recommendation	Cost	Potential Safety Benefit
29 An engineer should conduct a full sign study to update existing signs to the proper height as outlined in the MUTCD and to meet current standards.	Medium-Low	Medium-High

Issue: Lighting	Safety Risk	
Description: There is no street lighting at this intersection.	Medium	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
30 An engineer should be consulted to review and perform a lighting study for this intersection. The lighting study should consider the needs of all the roadway users.	Medium-High	Medium

Issue: Geometry and Stop Control	Safety Risk	
Description: Based upon limited field observations, the volume on both approaches seems to be comparable.	Low	
There is limited sight distance from the stop controlled Swedesboro Road.		
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
31 Conduct a traffic count to determine the traffic volumes at the intersection on all approaches as a basis for an engineering study to potentially modify the traffic control at this intersection. Alternatives to consider should include reversal of the stop-controlled approach, an all-way stop, and a roundabout.	Medium-Low	Medium-High
32 Engage a professional engineer to investigate the benefits of a new stop-go traffic signal, and see if it is warranted.	High	High

Issue: Worn Pavement Markings	Safety Risk	
Description: Pavement markings are old and worn resulting in limited visibility.	Medium-High	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
33 Replace worn pavement markings with new reflective markings.	Low	Medium-High

Issue: Stop Bar	Safety Risk	
Description: The stop bar on westbound Swedesboro Road appears to be located too far back from the intersection.	Low	
RSA Team's Recommendation	**Cost**	**Potential Safety Benefit**
34 An engineer should be consulted to review specifications for possible stop bar locations closer to the intersection, as well as consider truck turning radius.	Low	Medium-Low

Implementing Recommendations

All of the recommendations fall under the County of Salem's roadway jurisdictions, and any potential projects generated from this report would be led by the County of Salem, with the following exceptions:

- The intersection of Dutch Row Road (CR 611) & Three Bridge Road is under the joint jurisdiction of Upper Pittsgrove Township and Salem County. Any of the team's recommendations would be the joint responsibility of the county working with the township.
- The recommended removal of the large tree on the southbound side of Centerton Road (CR 610) at its intersection with Dutch Row Road (CR 611) may be the responsibility of the county or the private home owner depending on right-of-way easements and property maintenance ordnances. The county should be the lead in investigating the proper course of action for removing the tree; however, coordination and written consent from the property owner should be obtained.

Many of the recommendations contained within this report can be implemented through routine maintenance (trimming vegetation, maintaining sign/pavement conditions, etc.), while others will take more time and investment. Recognizing limited resources, developing partnerships can help to extend the impact of safety efforts. Rutgers TSRC can provide support to counties in identifying partnership opportunities. SJTPO staff also provides a great partnership to assist with analysis with respect to crash data, capacity analysis, or any other related assistance.

Some of the recommendations may require sizable capital investment to obtain a long-term safety benefit. It is understood that larger projects may require funding assistance from non-county funds. In the following section, various potential funding sources are listed.

In addition to physical improvements, a combined effort of public education and police enforcement will help in reducing the safety issues identified. NJSP Troop A was involved in the RSA audit process, and if targeted enforcement is deemed necessary, NJSP Troop A traffic should be consulted, understanding their resource limitations. In terms of public education, the South Jersey Traffic Safety Alliance (SJTSA) provides support through various programs focused on seat belt usage, child seats, and additional driver behavior educational and outreach programs.

Potential Funding Sources

In this economy, budget constraints may hamper the implementation of some of these recommendations. Finding alternative funding sources is critical to ensuring the investment in the safety of the intersections' users.

Local Funding Sources:

Roadway Owner's Maintenance and Operation Budget:

Existing funds from local and county sources, as appropriate, which are allocated for investment in maintenance and operational activity, can be used to implement the above suggestions. Many of the above countermeasures may be eligible for the appropriate use of these existing funds. The manager of these funds who understands the full budget picture should be consulted.

State Funding Sources:

Contact:

NJDOT Local Aid District 4 Office
One Executive Campus
Route 70 West- 3rd floor
Cherry Hill, NJ 08002
Phone: 856-486-6711
Fax: 856-486-6771

Municipal Aid, County Aid, Urban Aid Program (NJDOT Local Aid):

http://www.state.nj.us/transportation/business/localaid/municaid.shtm

This program has been a significant resource for municipalities and counties in funding local transportation projects. All municipalities are eligible. The department continues to encourage municipalities to consider using the Municipal Aid Program to fund projects that support walking and biking in their communities. NJDOT has set a goal to award up to 10 percent of the Municipal Aid Program funds to projects such as pedestrian safety improvements, bikeways, and streetscapes.[2].

Safe Streets to Transit:

http://www.state.nj.us/transportation/business/localaid/safe.shtm

The intent of this program is to encourage counties and municipalities to construct safe and accessible pedestrian linkages to transit facilities in order to promote increased usage of transit by all segments of the population. *Note: This source of funding is not applicable for any recommendations made as part of this report as none involve transit.*

[2] Local Aid Letter Dated June 18, 2010, available publicly:
http://www.state.nj.us/transportation/business/localaid/documents/2011Letter.pdf

Local Aid Infrastructure Fund (Discretionary Aid):
http://www.state.nj.us/transportation/business/localaid/descrfunding.shtm

Subject to funding appropriation, a discretionary fund is established to address emergencies and regional needs throughout the state. Any county or municipality may apply at any time. These projects are approved at the discretion of the commissioner. Payment of project costs is the same as the Municipal Aid Program. Under this program a county or municipality may also apply for funding for local pedestrian safety and bikeway projects. *Note: Although it is not applicable for any recommendations made as part of this report*[3].

NJDOT Centers of Place Program:
http://www.state.nj.us/transportation/business/localaid/centerplace.shtm

The program provides a funding opportunity to municipalities that have been designated as a Center of Place by the New Jersey Department of Community Affairs to obtain funding for nontraditional transportation improvements that advance municipal smart growth management objectives. Eligible program projects include pedestrian and bicycle facilities, scenic or historic transportation programs, parking and circulation management, landscaping/beautification of transportation-related facilities, and rehabilitation of publicly owned transportation structures. *Note: Salem County does not have any municipalities that are eligible for this type of funding source. A listing of eligible municipalities within the state for the current fiscal year can be found on the link above.*

Contact:
New Jersey Business Action Center
Office for Planning Advocacy
Department of State
P.O. Box 204
Trenton, NJ 08625-0204
Barry Ableman
Phone: 609-292-3228
Email: bableman@dca.state.nj.us

Office of Smart Growth Downtown Business Improvement Zone Loan Fund
http://www.nj.gov/state/planning/docs/techassist071506.pdf

This program provides loans up to $500,000 to make capital improvements within designated downtown business improvement zones. *Note: This type of funding source is not applicable for any recommendations made as part of this report, as the studied intersections are outside of the downtown business area.*

[3] NJDOT TTF State Aid Handbook available publicly:
http://www.state.nj.us/transportation/business/localaid/documents/StateAidHandbook-May272010.pdf

Contact:
New Jersey Department of Community Affairs
101 South Broad Street
PO Box 800
Trenton, NJ 08625-0800
Laura Julian
Phone: 609-633-6265
Email: ljulian@dca.state.nj.us

Community Services Block Grant (CSBG)
http://www.state.nj.us/dca/divisions/dhcr/offices/comact.html

Awards funds to agencies for provision of health, education, employment housing, and other services to the low-income population of New Jersey. Ninety percent of the annual allocation must go to designated community action agencies (CAAs).

Federal Funding Sources via NJDOT Office of Local Aid:

Contact:
NJDOT Local Aid District 4 Office
One Executive Campus
Route 70 West - 3rd floor
Cherry Hill, NJ 08002
Phone: 856-486-6711
Fax: 973-856-486-6771

Safe Routes to Schools (SRTS):
http://www.state.nj.us/transportation/business/localaid/srts.shtm

The federal-aid SRTS program provides federal-aid highway funds to State Departments of Transportation over five fiscal years (FY2005–FY2009). The program targets schools for grades K–8 only. The main objectives of the program are:

- to enable and encourage children, including those with disabilities, to walk and bicycle to school;
- to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
- to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

Funds are available for infrastructure projects that benefit elementary and middle school children in grades K–8 in both public and private schools. The infrastructure portion can fund

design, construction, and planning of the proposed improvements, while the non-infrastructure portion would fund activities that encourage walking and bicycling to school.

Selection of SRTS projects involves the participation of civic, education, and environmental groups, the transportation community, and other government organizations such as the state's metropolitan planning organizations.

Note: This type of funding source is not applicable for any recommendations made as part of this report as there are no schools in the area of the studied intersections.

Federal Funding Sources via South Jersey Transportation Planning Organization (SJTPO):

Contact:
South Jersey Transportation Planning Organization
782 South Brewster Road, Unit B6
Vineland, NJ 08361
Jennifer Marandino, P.E.
Email: jmarandino@sjtpo.org
Phone: 856-794-1941
Fax: 856-794-2549

Surface Transportation Program (STP-SJ):

The federal-aid highway funding program supports a broad range of surface transportation capital needs, including many roads, transit, sea and airport access, vanpool, bike, and pedestrian facilities.

Local Safety Program:

The federally funded Local Safety Program uses Highway Safety Improvement Program (HSIP) funding at SJTPO, supporting construction of quick-fix, high-impact safety improvements on county and local roadway facilities in the SJTPO region. Projects supported by this program include new and upgraded traffic signals, signage, pedestrian indications, crosswalks, curb ramps, pavement markings, and other improvements to increase the safety of drivers, bicyclists, and pedestrians.

The Local Safety Program:

- typically addresses SJTPO and/or NJDOT derived high priority crash locations on county or local roadways;
- supports quick-fix projects, backed with detailed crash data, with minimal or no environmental or cultural resource impacts (eligible for programmatic categorical exclusion from FHWA); and
- funds the construction phase of work only— planning, design, and right-of-way acquisition are the responsibility of the sponsor.

Local CMAQ Mobility Initiatives:

The federal Congestion Mitigation and Air Quality (CMAQ) program provides funds to reduce roadway congestion and reduce single occupancy auto usage in order to lessen the level of pollutants and greenhouse gases generated through the use of fossil fuels. The SJTPO has established the Local CMAQ Program to help meet these goals, with an emphasis on signal synchronization although other improvements may also qualify for this funding.

RSA Team's Site Conclusion

The RSA team's recommendations suggested in this report should improve the safety of the six intersections selected for investigation in Pittsgrove and Upper Pittsgrove Townships. Many of the recommendations can be implemented through routine maintenance, while others will take more time and investment. However, physical improvements alone will not eliminate the safety issues identified.

A combined effort of public education and police enforcement is necessary to make these intersections safer for all users. Education about traffic safety in public schools—such as drivers' education courses in high school and distribution of informational pamphlets to pedestrians—can benefit road users. Enforcement can go a long way in reducing crashes and alerting drivers of the seriousness of being safety conscious. Officers may also hand out pamphlets during routine traffic stops to educate motorists of changes in traffic laws.

Intersection Ranking Conclusion

Based on the RSA team's ability to identify safety improvements of a low-cost nature, it is felt that intersection improvements made through the high risk rural road program are a viable and productive use of otherwise underutilized funds. It is further felt the high risk rural road (HRRR) intersection model used successfully directed the RSA team to intersections where improvements are warranted.

The single identified limitation of the implemented methodology was the overall low number of crashes at many of the ranked sites. This allows for non-reoccurring crashes, including one at a study intersection where it is believed the driver suffered an acute medical event prior to the lane departure of his vehicle, to heavily influence the rankings. This suggests the mere ranking of a site in and of itself may not warrant investment, but if the HRRR intersection ranking is used as a guide for further study, such as through an RSA process, it is felt the HRRR intersection model can provide guidance and direction for the investment of HRRR funds.

Appendix A

Raw Crash Data

	Parvin Mill Road (CR 645) & Alvine Road (CR 655)& Garden Road (CR 674)					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
No	12/6/2008	12:58 PM	Right Angle	Daylight	Property Damage	Dry
No	3/5/2008	1:35 PM	Right Angle	Daylight	Property Damage	Dry
No	7/15/2008	12:32 PM	Right Angle	Daylight	Property Damage	Dry
No	7/23/2008	3:25 PM	Right Angle	Daylight	Property Damage	Dry
No	4/12/2009	5:46 PM	Same Direction - Side Swipe	Daylight	Property Damage	Dry
No	6/22/2009	12:15 PM	Right Angle	Daylight	Injury	Dry
No	3/20/2009	7:52 PM	Right Angle	Dark (Street Lights On/ continuous)	Injury	Dry
No	12/29/2009	6:30 PM	Right Angle	Dark (Street Lights Off)	Property Damage	Dry
No	9/19/2009	8:38 PM	Right Angle	Dark (No Street Lights)	Property Damage	Dry
No	7/23/2010	5:09 PM	Same Direction - Rear End	Daylight	Property Damage	Dry
No	9/21/2010	5:16 PM	Fixed Object	Daylight	Injury	Dry

	Centerton Road (CR 610) & Willow Grove Road (CR 639)					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
Yes	1/19/2008	11:46 PM	Fixed Object	Dark (Street Lights On/ continuous)	Property Damage	Dry

	Lawrence Corner Road (CR 621) & Willow Grove Road (CR 639)					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
No	12/27/2009	11:12 PM	Fixed Object	Dark (No Street Lights)	Injury	Dry

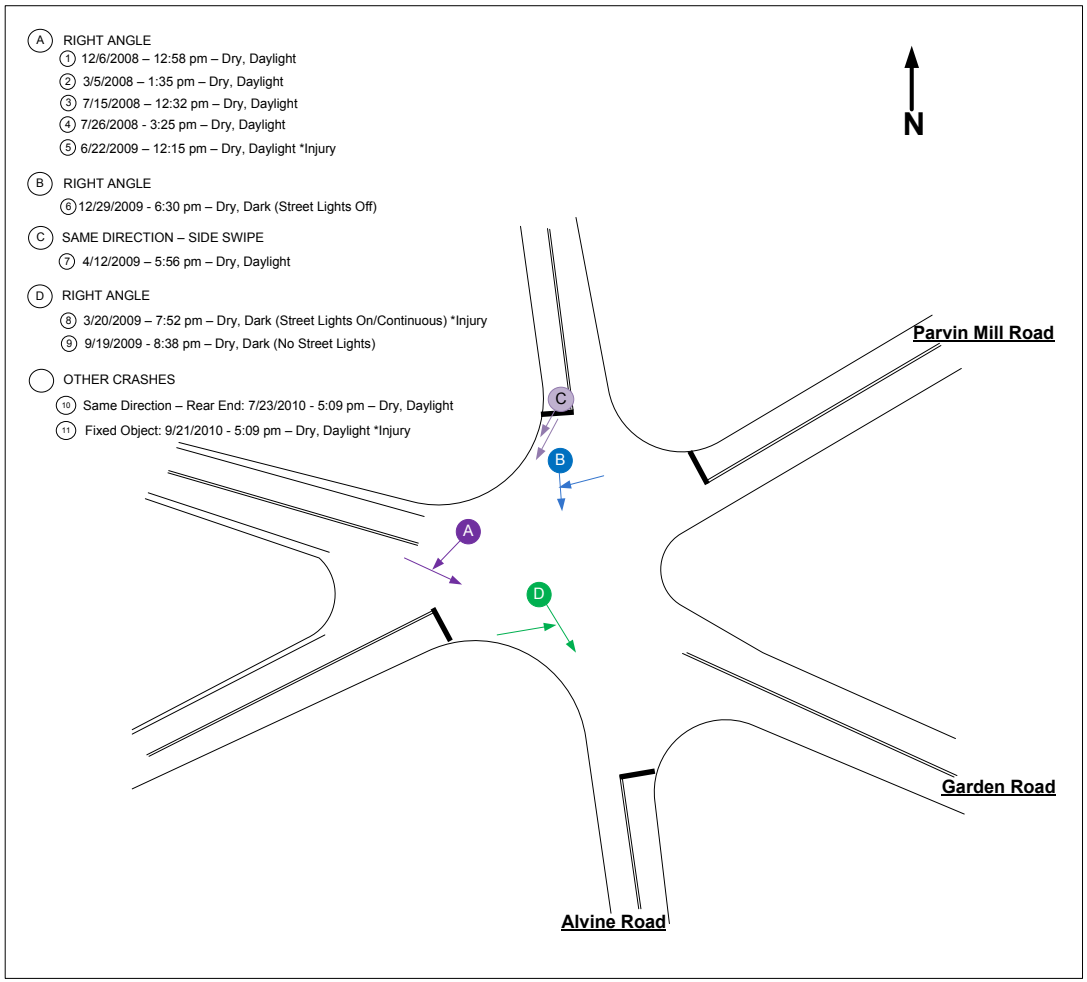
	Ceterton Road (CR 610) & Dutch Row Road (CR 611)					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
No	10/25/2008	5:13 PM	Fixed Object	Daylight	Property Damage	Wet
No	2/5/2008	9:51 PM	Opposite Direction - Head On/Angular	Dark (No Street Lights)	Property Damage	Dry
No	2/4/2009	3:51 PM	Fixed Object	Daylight	Property Damage	Icy
No	6/5/2009	2:45 PM	Same Direction - Rear End	Daylight	Injury	Wet
No	9/17/2009	7:57 AM	Fixed Object	Dark (No Street Lights)	Fatal	Dry
No	4/2/2010	8:53 AM	Opposite Direction - Head On/Angular	Daylight	Injury	Dry

	Dutch Row Road (CR 611) & Three Bridge Road					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
No	6/16/2008	1:39 PM	Right Angle	Daylight	Injury	Dry
No	6/20/2009	6:49 PM	Right Angle	Daylight	Injury	Wet
No	7/3/2009	4:09 PM	Right Angle	Daylight	Injury	Dry
No	8/24/2009	2:23 PM	Right Angle	Daylight	Injury	Dry
No	8/24/2009	2:23 PM	Right Angle	Daylight	Injury	Dry
No	6/10/2010	10:42 AM	Right Angle	Daylight	Injury	Dry

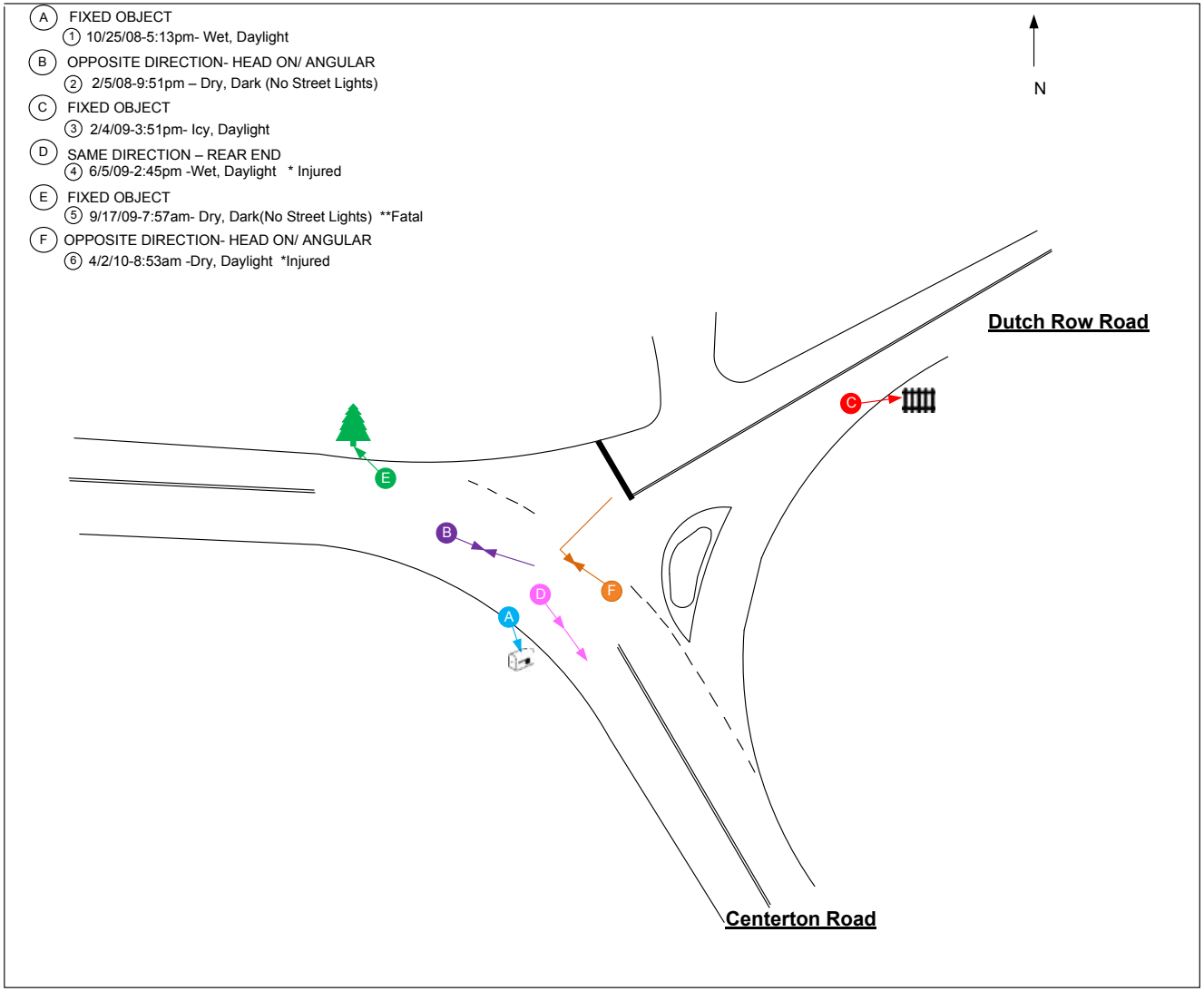
	Glassboro Road (CR 619) & Swedesboro Road (CR 666)					
ALCOHOL INVOLVED	CRASH DATE	CRASH TIME	CRASH TYPE	LIGHT CONDITION	SEVERITY	SURFACE CONDITION
No	7/10/2008	8:29 AM	Same Direction - Rear End	Daylight	Property Damage	Dry
No	2/3/2009	6:59 PM	Encroachment	Dark (Street Lights On/ continuous)	Property Damage	Snowy
Yes	7/11/2009	7:19 PM	Fixed Object	Daylight	Property Damage	Dry

Crash Diagrams

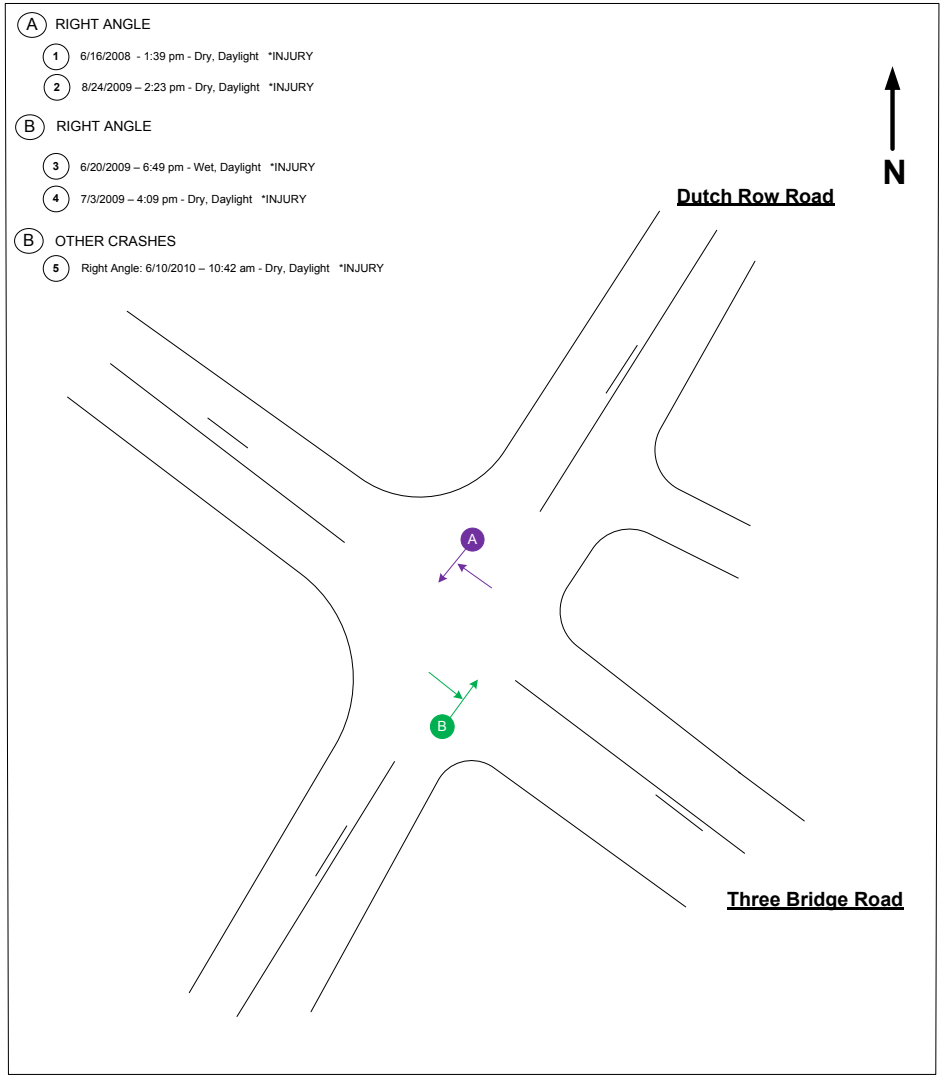
Parvin Mill Road (CR 645) & Alvine Road (CR 655) & Garden Road (CR 674)



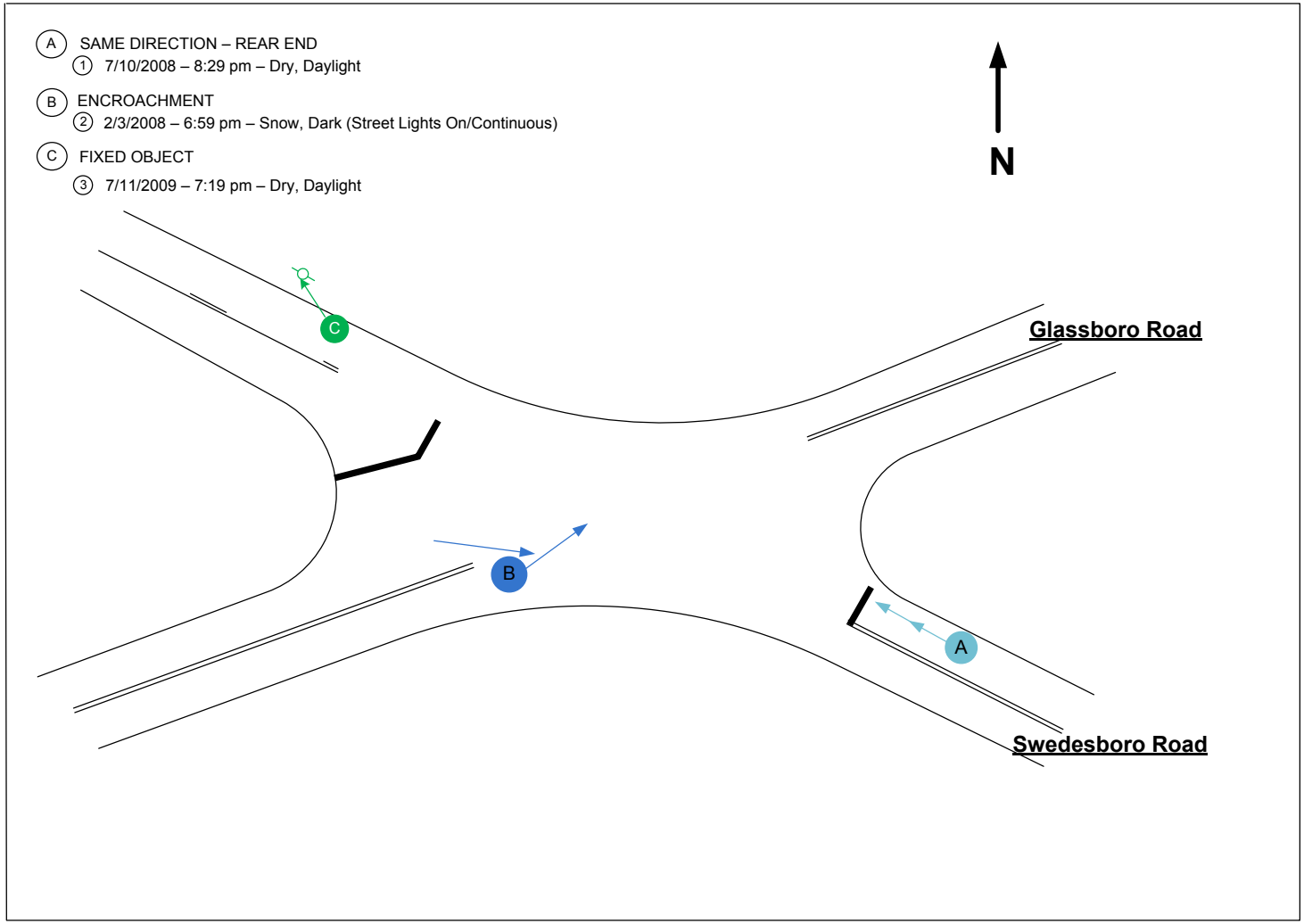
Centerton Road (CR 610) & Dutch Row Road (CR 611)



Dutch Row Road (CR 611) & Three Bridge Road



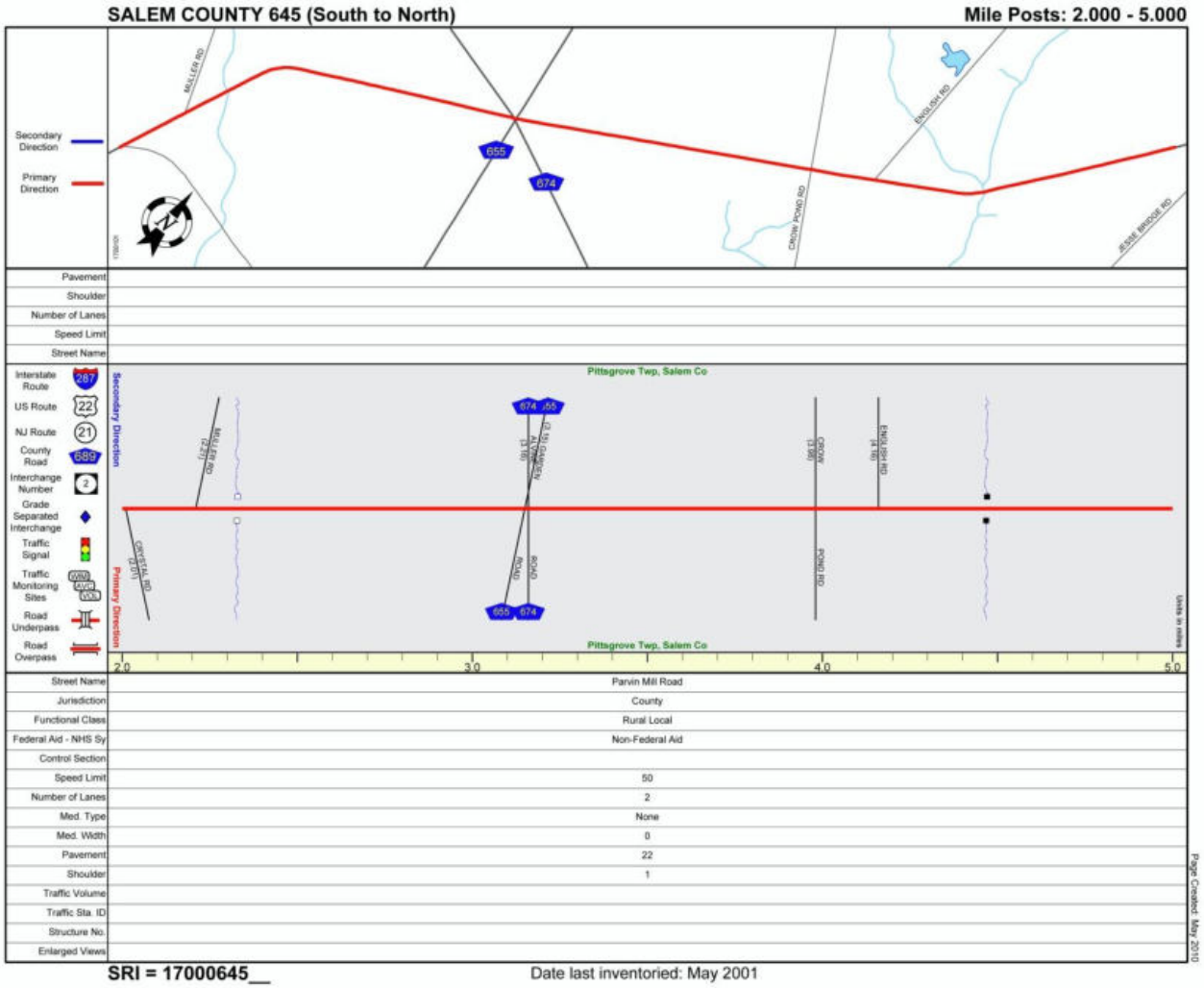
Glassboro Road (CR 619) & Swedesboro Road (CR 666)



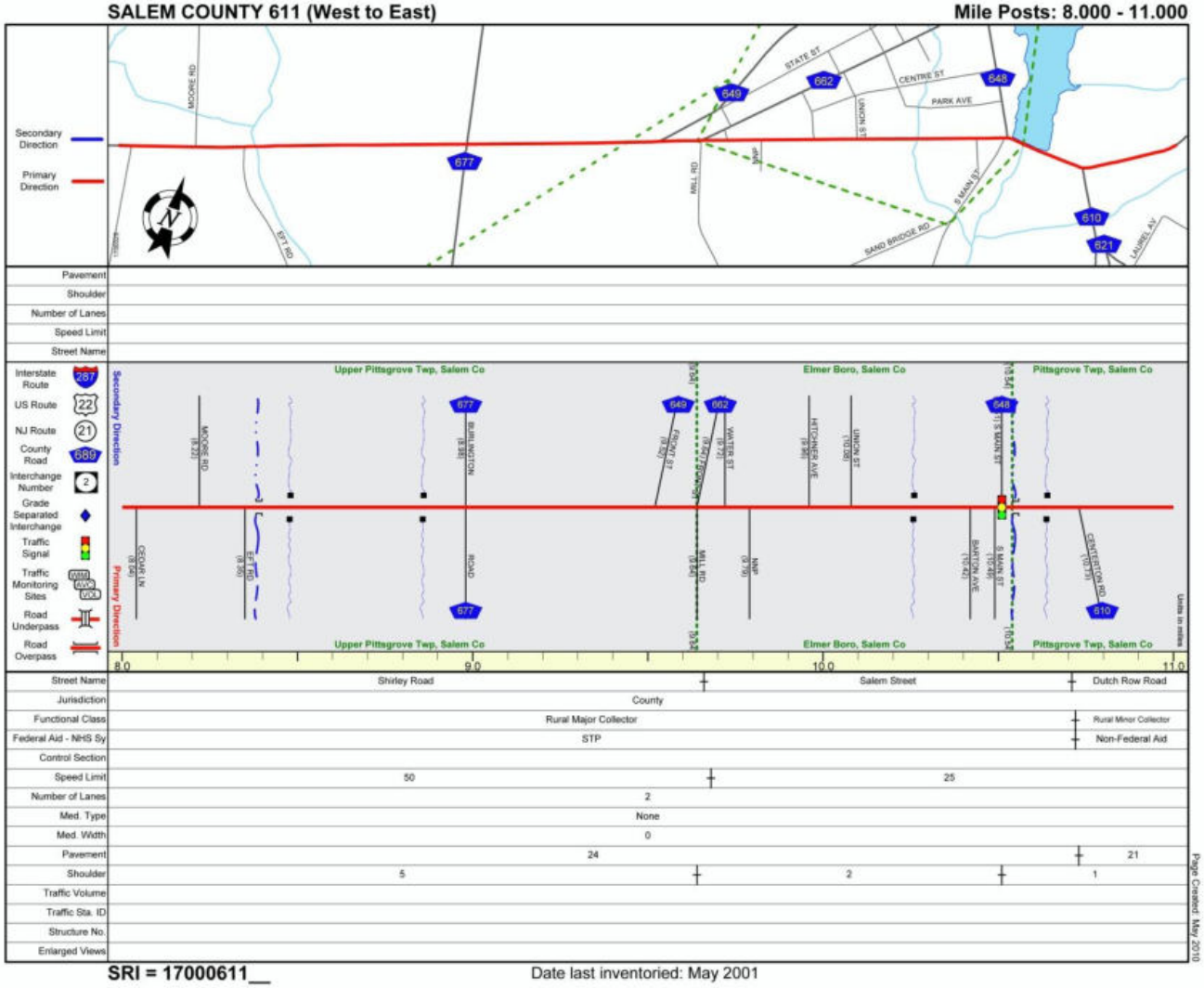
Appendix B

Straight Line Diagram

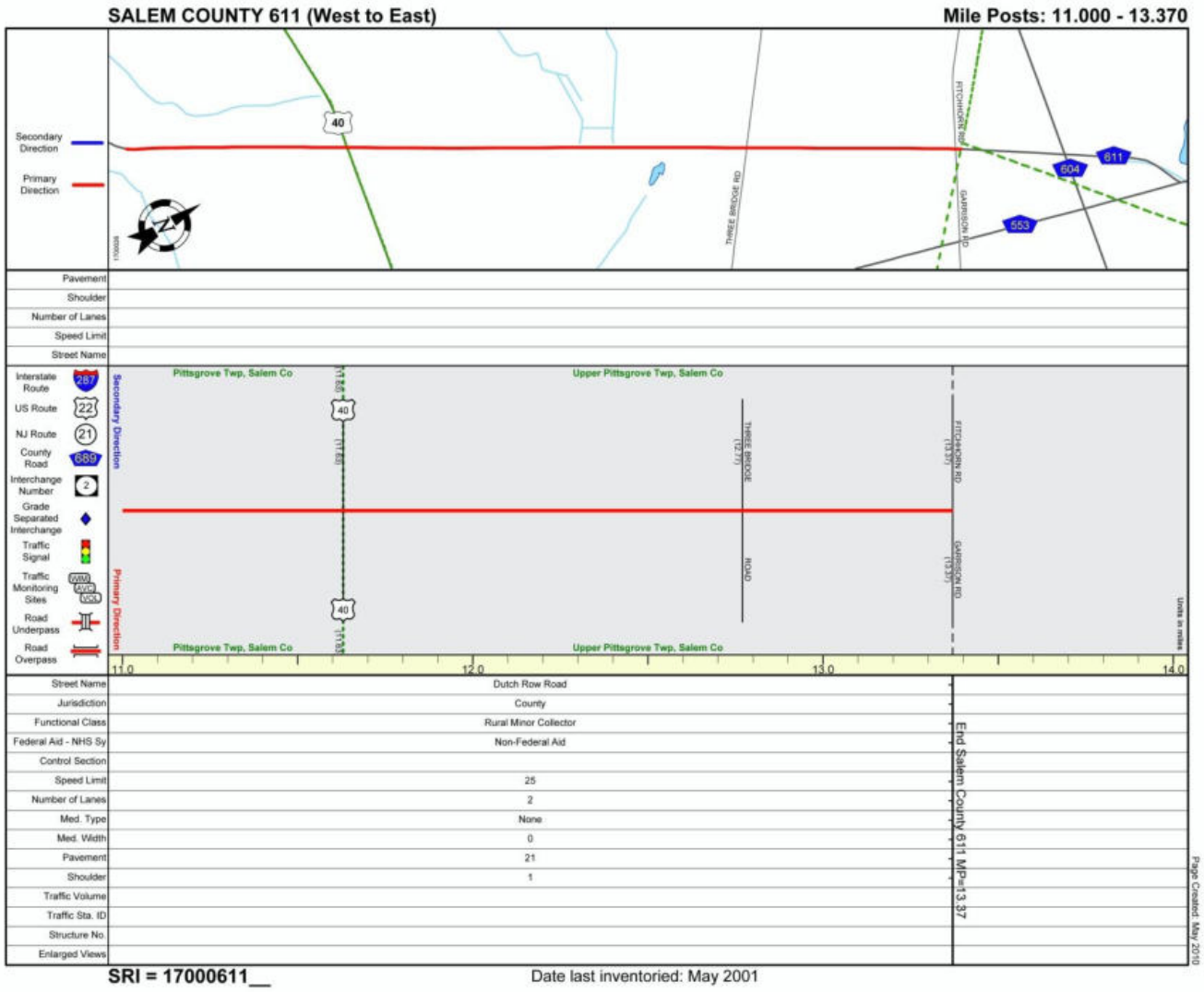
Parvin Mill Road (CR 645) &Alvine Road (CR 655) & Garden Road (CR 674)



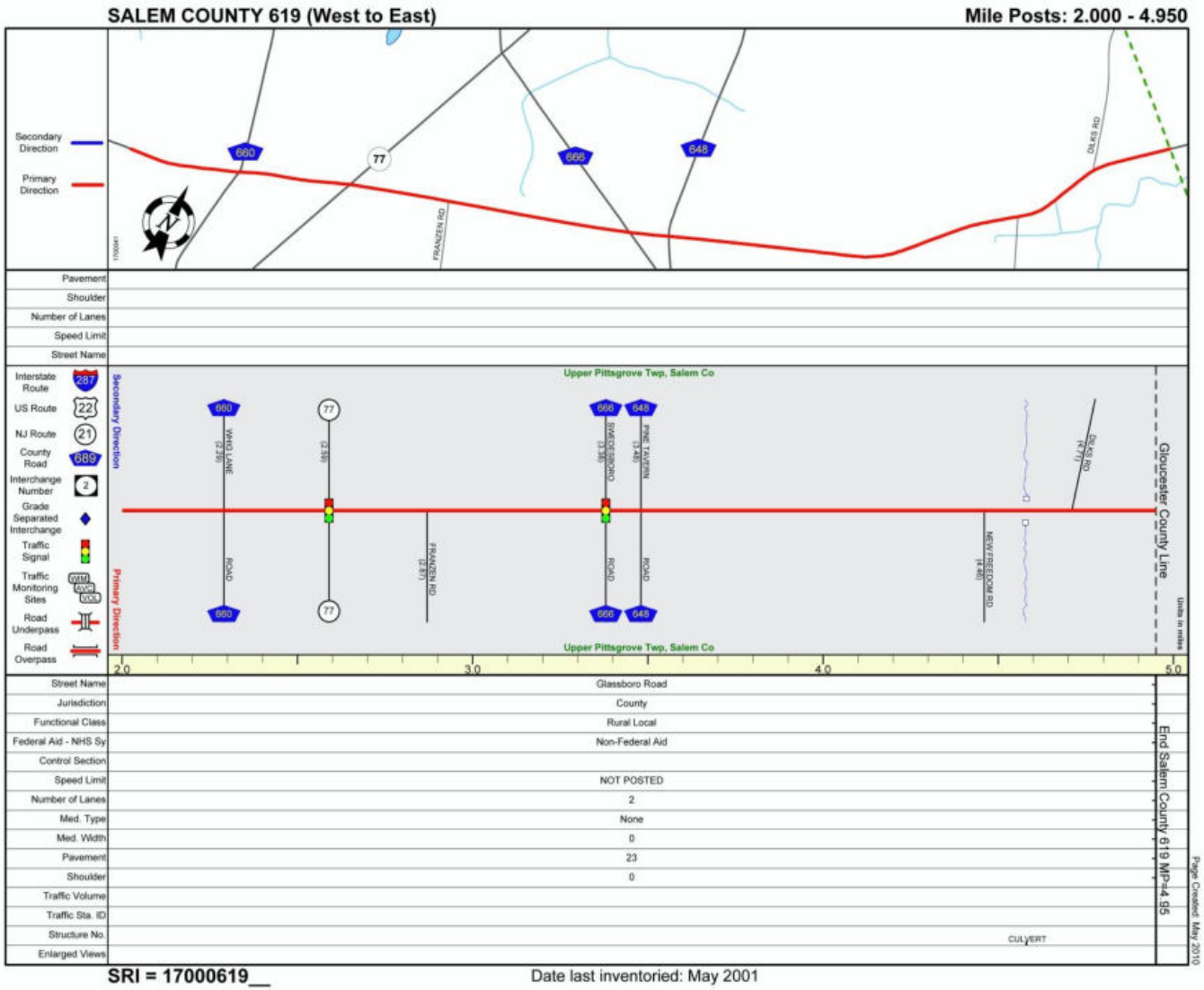
Centerton Road (CR 610) & Dutch Row Road (CR 611)



Dutch Row Road (CR 611) & Three Bridge Road



Glassboro Road (CR 619) & Swedesboro Road (CR 666)



Appendix C

High Risk Rural Road Intersection Ranking Methodology

Assumptions:

- *Intersections* are defined using the P4S devolved intersection model (explained in full below)
- *Rural intersection* are defined as any intersection in which ***one of the two main*** approaches has a rural functional classification (NJDOT SRI Database's Functional Classification field)
- Query is limited to Salem County.
- Query is limited to the years to 2008, 2009 & 2010.

Ranking:

- Rankings were based on EPDOs
- EPDOs weighting were defined using NJDOT accepted practice (5 EPDO for fatal crashes, 4 EPDO for incapacitating injury, 3 EPDO for moderate injury, 2 EPDO for complaint of pain and 1 EPDO for property damage only)

Selecting RSA Sites:

- A floor was set at 10 EPDO over a three-year period, which identified 23 locations (show on the following page).

- Ranked locations were attributed to a roadway owner, NJDOT, Salem County, or municipal.

- NJDOT locations were excluded from consideration for an RSA—leaving 10 Salem County and municipal ranked locations.

- A pre-screening took place with TSRC, SJTPO, and Salem County to observe conditions at all county and municipal owned intersections. Locations in which significant safety improvements in the last three years had been made (such as the conversion to an all-way stop) were excluded from the list to audit.

- Due to the limitation of a single-day RSA, two municipalities were identified in which to contain the audit. Of the top Salem County local system ranked locations, a significant percentage were found to be located within the Townships of Pittsgrove and Upper Pittsgrove—including four of the top five locations.

- All of the locally owned intersections that did not have recent operational and safety improvements within the townships of Pittsgrove and Upper Pittsgrove were included in the RSA.

- Additionally, the intersections of Centerton & Willow Grove and Lawrence Corner & Willow Grove were included as, together with Centerton & Dutch Row Road, the three intersections and roadway segment in between comprise a previously identified regional high risk rural road segment.

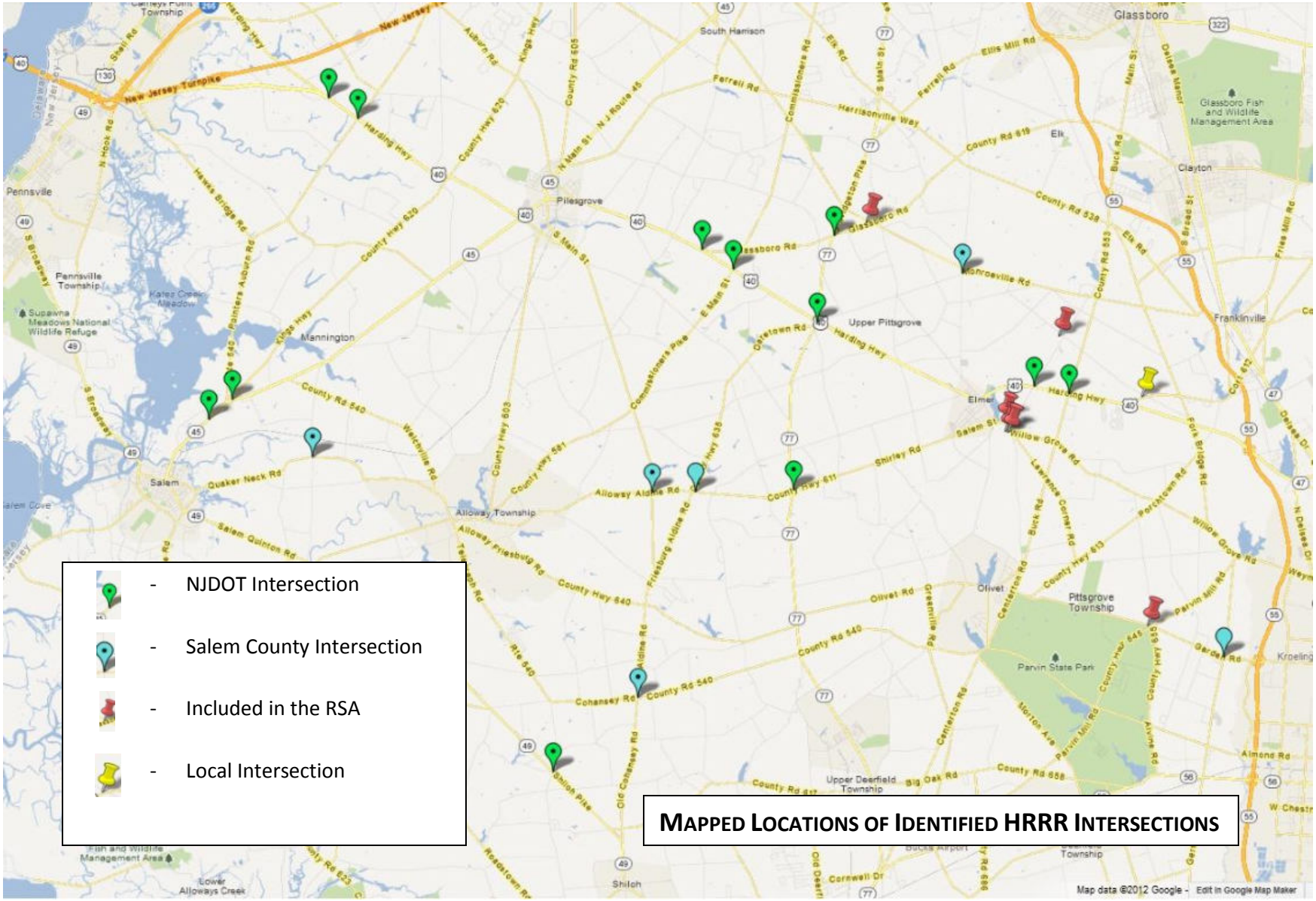
3.1.3 Intersection Model Approach

The State of New Jersey maintains an intersection database as part of the SLD. However, this data was not specifically designed to meet the needs of the traffic safety professional. As just one example, a single physical intersection would be represented by multiple entities in the database representation. Therefore, the Plan4Safety team developed a custom procedure to create an intersection model that would represent each physical intersection uniquely, and identify what routes converged there. This was done in the following manner:

1. Find all intersecting roadway segments in NJ_ROADWAY_NETWORK (essentially all roads in New Jersey)
2. Determine SRI and milepost of each road meeting at intersection
3. Remove unrelated data (overpasses, ramps, etc.)
3. Determine number of legs
4. Determine if intersection is skewed or right angle
5. Assign all roadway characteristics associated with roadway at that point by link to SLD
6. Determine intersection type by link to SLD
7. Determine primary and secondary roads based upon functional class and number of lanes

Each intersection, once identified, is assigned an area of influence defined by extending a given buffer length down each approach. This buffer length is defined by functional classification and is outlined below. Crashes geocoded within the area of influence of the intersections are associated with the intersection for the purpose of network screening.

Code	Functional Class	BUFFER (ft.)
1	Rural Interstate	250
2	Rural Principal Arterial	250
6	Rural Minor Arterial	200
7	Rural Major Collector	150
8	Rural Minor Collector	150
9	Rural Local	100



MAPPED LOCATIONS OF IDENTIFIED HRRR INTERSECTIONS

County LRS	County Tot	SJTPO LRS	SJTPO Tot	Roadway Owner	Township	Major	Minor	Num Crash	EPDO	Fatal	Incap Inj	Mod Inj	Pain	PDO
	1		6	NJDOT	Upper Pittsgrove	Pole Tavern-Bridgeton Road	Shirley Road	18	28	0	1	1	5	11
	2		11	NJDOT	Upper Pittsgrove	Bridgeton Pike	Glassboro Road	13	22	0	0	1	7	5
	3		12	NJDOT	Upper Pittsgrove	Harding Highway	Daretown Road	17	21	0	0	1	2	14
	4		13	NJDOT	Carneys Point	Harding Highway	Pointers Auburn Road	13	21	0	0	2	4	7
1	5	4	14	County	Upper Pittsgrove	Monroeville Road	Richwood Road	12	21	0	0	1	7	4
	6		18	NJDOT	Upper Pittsgrove	Harding Highway	Buck Road	13	20	0	0	1	5	7
	7		19	NJDOT	Upper Pittsgrove	Harding Highway	Dutch Row Road	12	20	1	0	1	2	8
2	8	8	21	County	Pittsgrove	Jesse Bridge Road	Gershel Avenue	9	19	1	0	1	4	3
3	9	11	26	County	Mannington	Quaker Neck Road	Action Station Road	10	17	0	0	3	1	6
4	10	16	33	County	Pittsgrove	Parvin Mill Road	Alvine Road	11	15	0	1	0	1	9
5	11	17	34	County	Upper Pittsgrove	Glassboro Road	Swedesboro Road	11	15	0	0	1	2	8
6	12	20	37	County	Alloway	Harmors Mill-Cohansey Road	Cohansey Friesburg Road	9	15	0	0	0	6	3
	13		38	NJDOT	Carneys Point	Harding Highway	Forest Ln	7	15	0	1	2	1	3
	14		41	NJDOT	Quinton	Main Street	Telegraph Road	8	14	0	0	2	2	4
7	15	21	42	County	Upper Pittsgrove	Dutch Row Road	Three Bridge Road	7	14	0	0	2	3	2
8	16	25	47	County	Alloway	Aldine Shirley Road	Friesburg Aldaine Road	7	13	0	0	3	0	4
9	17	27	49	Local	Upper Pittsgrove	Three Bridge Road	Taylor Road	5	13	1	0	0	4	0
	18		54	NJDOT	Upper Pittsgrove	Harding Highway	Commissioners Pike	6	12	1	0	0	2	3
10	19	34	61	County	Alloway	Alloway Aldine Road	Watson Mill Road	7	11	0	0	2	0	5
	20		64	NJDOT	Pilesgrove	Harding Highway	Glassboro Road	6	11	1	0	0	1	4
11	21	36	65	County	Pittsgrove	Centerton Road	Dutch Row Road	5	11	1	0	1	0	3
	22		70	NJDOT	Mannington	NJ 45	Bypass Road	8	10	0	0	0	2	6
	23		73	NJDOT	Mannington	NJ 45	Newell Road	7	10	0	0	1	1	5

Appendix D

Salem County Skid Special

TEST SITES	Skid Number	Speed Limit
Dutch Row Rd. South	48	Unk.
Dutch Row Rd. North	27	Unk.
Three Bridge Rd. West	36	25
Three Bridge Rd. East	30	25
Dutch Row at Centerton South	37	25
Centerton at Dutch Row North	27	45
Centerton at Dutch Row South	24	25
Centerton at Willow South	48	45
Centerton at Willow North	38	45
Willow at Centerton East	33	50 (Stat)
Willow at Centerton West	26	50 (Stat)
Lawrence Corner at Willow South	42	25
Lawrence Corner at Willow North	38	25
Alvine Rd. South	41	50 (Stat)
Alvine Rd. North	38	50 (Stat)
Parvins Mill Rd. North	40	50 (Post)
Parvins Mill Rd. South	45	50 (Post)
Garden Rd. West	35	25
Garden Rd. East	29	25
Swedesboro Rd. North	32	50 (Stat)
Swedesboro Rd. South	32	50 (Stat)
Glassboro Rd. West	44	50 (Stat)
Glassboro Rd. East	45	50 (Stat)