Route 26 Corridor Study
Final Report

prepared for:

Maine Department of Transportation

Town of Gray

T.Y.LIN INTERNATIONAL

Route 26 Corridor Study
Gray, Maine

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Prepared for:
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Bureau of Planning

Prepared by:
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Executive Summary

To facilitate future development opportunities, the Town of Gray has embarked on a planning and policy process that considers increased commercial and residential development on land east and west of State Route 26. To ensure that future land development in Gray and the regional highway functionality of Route 26 are compatible, MaineDOT and the Town of Gray have joined forces in a collaborative planning effort. To assist with this, the Maine Department of Transportation (MaineDOT) has contracted T.Y. Lin International (TYLI) to perform a corridor study of Route 26 in Gray from the southerly intersection of State Route 26/26A approximately 1.3 miles north to the intersection of State Route 26 and Weymouth Road. This Gray Route 26 Corridor Study (Study) developed recommendations that consider a balance of future development needs of the Town of Gray with the future transportation corridor needs of MaineDOT in the study area. The two primary study goals were the following:

- Develop a highway improvement plan that maintains or improves the safety and mobility function of the intersections to road segments on State Route 26 in the Study Area as a Priority 1 Principal Arterial Highway for vehicles, pedestrians and bicyclists.

- Coordinate the Town of Gray's land development planning for the study area with the functional needs of State Route 26 to allow for appropriate rezoning.

ES-1 Existing Transportation Data

A significant amount of existing transportation data was compiled for this study from previously gathered MaineDOT data and data collected by TYLI:

- **Average Annual Daily Traffic Volumes (AADT)** – According to tube counts performed in 2013 by MaineDOT, Route 26 had an AADT of 14,730 vehicles north of Route 26A, 14,440 vehicles south of North Raymond Road and 11,680 vehicles north of North Raymond Road.

- **Intersection Turning Movement Volumes** – From 2011 to 2013, MaineDOT conducted 12 hour intersection turning movement counts at the following locations:

    - Route 26/North Raymond Road - July 14, 2011 (Thursday)
    - Route 26/North Raymond Road – September 25, 2012 (Tuesday)
    - Route 26/Weymouth Road – September 9, 2013 (Thursday)
    - Route 26/Libby Hill Road – September 19, 2013 (Thursday)
    - Route 26/Route 26A – September 25, 2012 (Tuesday)

- **Vehicle Classification** - Heavy vehicle percentages were recorded as part of turning movement counts in the corridor. Between the 6:00am to 6:00pm count periods, the major intersections on the corridor experienced an average of 7.7% heavy vehicles; 4.3% being single unit trucks and 3.4% being tractor trailers. Minor streets carry similar heavy vehicle percentages as the mainline.

- **Pedestrian Volumes** – Pedestrian counts were collected as part of the intersection turning movement counts. As a whole, very few pedestrians were observed in the corridor during peak hours. The majority of pedestrians were seen in the PM Peak hour walking south on Route 26.

- **Speed Study** - Travel speeds, recorded by TYLI, were observed to be relatively slow between Route 26A and Fairview Road. North of Fairview Road travel speeds increase and tend to be slightly higher than the posted speed limit.

- **Signal Warrant Analysis** - Signal warrant evaluations were conducted by MaineDOT at the Route 26 intersections with North Raymond Road and Weymouth Road. It should be noted that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal, satisfaction of a signal warrant does indicate that installation of a signal should be evaluated as an improvement alternative. Warrant 3B – Peak Hour Volume is met for both locations.

- **Crash History** - Crash reports for the years of 2010 – 2012 were used for this Study. From this data, one High Crash Location was identified in the corridor study area – at the North Raymond Road intersection.

- **Existing Intersection Level of Service:**

  - The unsignalized intersection of Route 26 and Route 26A operates with little delay and meets level of service standards for all movements.

  - The signalized intersection of Route 26/Libby Hill Road/Hannaford experiences poor levels of service during the AM and PM peak hours for several movements including left/through movements from the minor approaches and some significant through and turning delays from the major approaches. There are some significant queues in the northbound and southbound directions, however the intersection operates at an acceptable level of service overall.

  - The unsignalized North Raymond Road intersection has a failing level of service for the North Raymond Road approach. Left turns from this approach are extremely difficult during peak hours and affect the overall intersection level of service.

  - The unsignalized Weymouth Road intersection currently operates well with some vehicular delay on the Weymouth Road approach during peak hours. Despite this delay, overall the intersection operates at an acceptable level of service.

- **Existing Two-Lane Capacity Analysis** -A two-lane capacity analysis of the corridor from Libby Hill Road to North Raymond Road was conducted using methods contained in the 2010 Highway Capacity Manual. Results indicate that the two lanes of Route 26 provide adequate capacity but are a level of service E during both AM and PM conditions. This level of service is a function of the ability for vehicles to pass when provided the opportunity; study corridor conditions limit vehicle passing during the peak hour volume conditions.

- **MaineDOT Customer Service Levels** - MaineDOT has a process for prioritizing highway and bridge candidate projects for the biennial work plan according to Customer Service Levels (CSL). Route 26 is considered to be a Priority 1 Highway (the highest priority) and MaineDOT has provided CSL ratings regarding Safety, Condition, and Service. Facilities are rated on an A-B-C-D-F scale.

  - CSL/Safety - The Safety CSL includes consideration of Crash History, Paved Roadway Width, Pavement Rutting, and Bridge Reliability. The corridor ranges from A-C for this category. Route 26A approaching Route 26 has a safety rating of A. North Raymond Road

approaching Route 26 has a safety rating of C due to pavement rutting and pavement width. The study area along Route 26 is given a safety rating of C due to crash history.

- CSL/Condition - The Condition CSL includes consideration of Pavement Condition, Roadway Strength, Bridge Condition, and Ride Quality. The corridor ranges from A to D for this category. Route 26A approaching Route 26 has a condition rating of A. The condition deteriorates as North Raymond Road approaches Route 26 to a rating of B due to ride quality. The Route 26 corridor varies from B to D. Ride quality and pavement condition are constantly providing a level of service B but poor pavement strength in some areas deteriorates the CSLs to C and D.

- CSL/Service - The Service CSL includes consideration of posted roads and congestion. The corridor ranges from B to C for this category. Route 26A approaching Route 26 is given a service rating of B due to congestion. The service level deteriorates as North Raymond Road approaches Route 26 to a rating of C due to road posting. The Route 26 corridor varies between B and C due to fluctuating areas of congestion.

ES-2 No-Build Future Background Growth Projections

Analysis was conducted for a 22 year growth of the study area traffic volumes thus representing the year 2035. Per direction from MaineDOT, a non-compounding 1% annual growth factor was applied to volumes along the mainline and force balanced through the corridor. The following shows the peak hour volume increases at selected locations along the corridor.

Future Background Traffic Growth between 2012 and 2035				
Location	AM Peak Hour		PM Peak Hour	
	%	Vehicles	%	Vehicles
Route 26 n/o Weymouth	+22%	+182	+20%	+201
Weymouth e/o Route 26	+22%	+53	+34%	+79
North Raymond w/o Route 26	+22%	+157	+22%	+181
Route 26 s/o N. Raymond	+22%	+306	+22%	+379
Hannaford e/o Route 26	0%	0	0%	0
Libby Hill Road w/o Route 26	0%	0	0%	0
Route 26 s/o Libby Hill	+18%	+303	+18%	+339
Route 26 e/o Route 26A	+17%	+129	+18%	+141
Route 26A s/o Route 26	+15%	+179	+18%	+210

ES-3 Development of Trip Generation Data for Scenarios Three, Four and Five

Three developments scenarios were fully evaluated in conjunction with the study. The following tables present the land-use type and scale of development. Trip generation volumes for land use type and size were estimated from data contained in the Trip Generation Manual, Institute of Transportation Engineers, 9th Edition and is summarized in the following tables.

Scenario Three Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
831,680 SF of Retail	948	2,820
514,400 SF of Light Commercial	685	590
99,900 SF of Manufacturing	34	27
654 Units of High Density Residential	191	64
216 Units of Residential Single-Family	108	136
Total	**1,966**	**3,637**

Scenario Four Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
371,840 SF of Retail	260	1,109
178,640 SF of Light Commercial	242	209
589 Units of High Density Residential	168	195
320 Units of Residential Single-Family	170	217
Total	**840**	**1,730**

Scenario Five Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
227,840 SF of Retail	160	411
666 Units of Residential Single-Family	318	407
Total	**478**	**818**

ES-4 Short-Term Improvements

Because of the existing failing levels of service and safety concerns, several short term improvements were evaluated in order to correct existing corridor deficiencies. These short-term improvements focus on improving traffic operations at the Route 26/Libby Hill Road/Hannaford Drive intersection and addressing safety and traffic congestion at the Route 26/North Raymond Road intersection.

Proposed Route 26/Libby Hill Road/Hannaford Drive Improvements

- Change the lane assignment on the Hannaford Drive and Libby Hill Road approaches to a dedicated left lane and shared through-right lane (from a shared left-through lane and a right lane)
- Upgrade the traffic signal system for improved detection and re-evaluate phasing, and signal timing

The following table compares the results of the improvements for the existing and future volumes without any development traffic. While the improvements are significant and improve the existing flow of the intersection, as shown, conditions with 2035 volumes and the short term improvement degrade to an overall level of service E in the AM peak hour. Approach abbreviations are as follows with the direction of travel listed first and movements allowed listed second:

Direction of travel:

- EB – eastbound
- WB – westbound
- NB – northbound
- SB – southbound

Movements:

- L – left turn only lane
- T – through only lane
- R – right turn only lane
- LT – left/through combined lane
- TR – through/right combined lane
- LTR – left/through/right combined lane

Level of Service Comparison at Route 26/Libby Hill Road/Hannaford

		Libby Hill		Hannaford		Route 26			Route 26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	2013 Existing	D	C	E	A	D	A	A	B	F	A	D
	2013 Sh. Term	D	C	E	D	D	A	A	A	D	A	C
	2035 Sh. Term	D	D	D	D	E	A	A	A	F	A	E
PM Peak	2013 Existing	E	A	E	C	E	A	A	D	A	A	B
	2013 Sh. Term	D	C	D	C	A	A	A	C	A	A	B
	2035 Sh. Term	D	D	D	E	B	C	A	E	B	A	C

Proposed Route 26/North Raymond Road Improvements

- Install traffic signal at North Raymond Road to facilitate the movement of vehicles to and from North Raymond Road;
- Construct formal dedicated left and right turn lanes on the North Raymond Road approach to Route 26;
- Construct a formal dedicated left-turn lane on northbound Route 26;
- Implement access management improvements;
- Improve sight distance, where possible

The following table compares the results of the improvements for the existing and proposed traffic volumes. While the improvements are significant and improve the existing flow of the intersection, conditions for the 2035 condition with the proposed short term improvements degrades to a failing level of service.

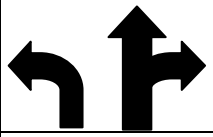
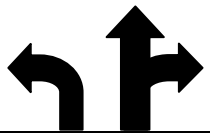
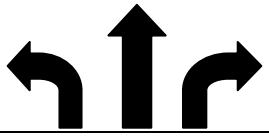
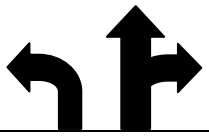
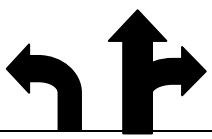
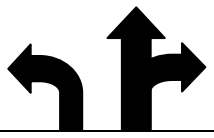
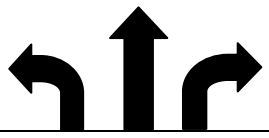
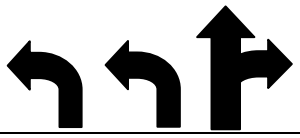
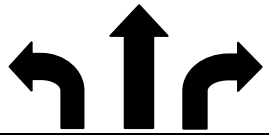
Level of Service Comparison Route 26/North Raymond Road							
		N Raymond		SR26		SR26	
		EBL	EBR	NBL	NBT	SBTR	Overall
AM Peak	2013 Existing	F	D	A	A	A	E
	2013 Sh. Term	B	B	C	A	B	B
	2035 Sh. Term	F	C	E	B	A	F
PM Peak	2013 Existing	F	B	A	C	A	F
	2013 Sh. Term	C	A	B	A	B	B
	2035 Sh. Term	C	B	C	A	B	B

ES-5 Long-Term Improvements

Route 26/North Raymond Road and Route 26/Weymouth Road

Realigned/Signalized Four-Way Intersection

One of the options discussed for the corridor is to align the intersections of North Raymond Road and Weymouth Road to create a four-leg signalized intersection. The exact location of the intersection and alignment of the side roads requires further evaluation. Following the realignment of the North Raymond Road and Weymouth Road intersection under the 2035 No-Build traffic volume forecast, the intersection is projected to operate at acceptable levels of service during both peak hours. A summary of the required intersection configurations for each proposed scenario is found below. It should be noted that once the volumes approach Scenario 3, a five lane section is likely required.

Combined North Raymond and Weymouth Road Intersection Configuration				
	Southbound	Northbound	Westbound	Eastbound
2035 No-Build				
2035 Scenario 5				
2035 Scenario 3 - 4				

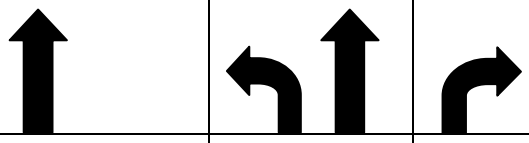
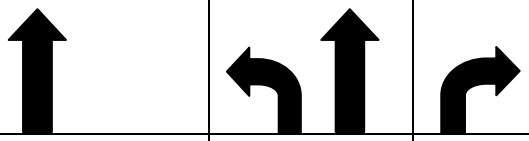
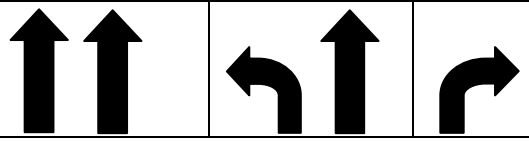
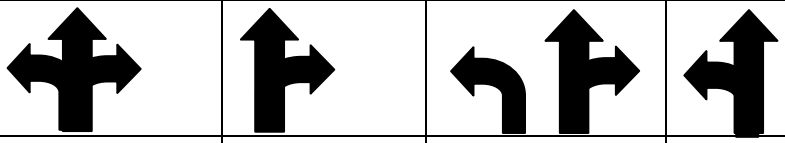
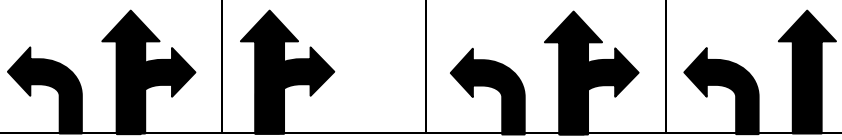
Single Lane Roundabout

As part of the long term alternatives, a roundabout was considered at the Route 26/North Raymond Road/Weymouth Road intersection. An analysis was performed for the 2035 No-Build traffic volume condition assuming a one lane roundabout, and using methods contained in the 2010 Highway Capacity Manual. While the one lane roundabout would operate acceptably in the AM Peak hour, the volumes in the PM Peak hour would cause the roundabout to fail for the northbound Route 26 approach. The

roundabout would therefore be required to be two lanes or a hybrid or both, and, due to the limited space, this alternative was not evaluated further for additional scenarios.

Triangle Alternative

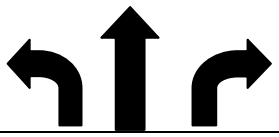
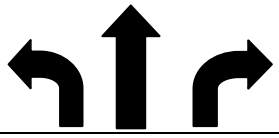
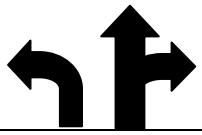
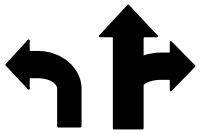
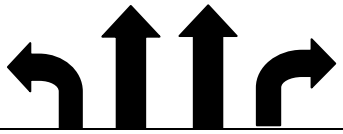
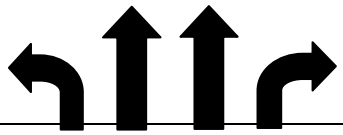
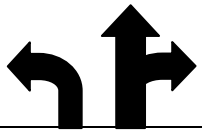
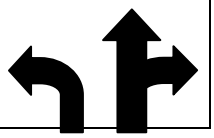
Another option evaluated is to create a new four-way signalized intersection with North Raymond Road and Weymouth Road (with North Raymond Road under a new northerly alignment – opposite the existing Weymouth Road location) and maintain the existing North Raymond approach to Route 26, but prohibit left-turn movements. The exact location of the intersection and alignment of the side roads requires further evaluation. All intersections will operate at acceptable levels of service using the configurations noted in the following table.

Triangle Alternative Intersection Configuration				
	Intersection of North Raymond Road and Route 26			
	Southbound	Northbound	Eastbound	
2035 No-Build				
2035 Scenarios 4 and 5				
2035 Scenario 3				
	Intersection of Weymouth Road and Route 26			
	Southbound	Northbound	Westbound	Eastbound
2035 No-Build				
2035 Scenarios 3 - 5				

Based upon the evaluation of the alternatives previously summarized for this area, the Triangle Alternative provides the best traffic operational benefit and is more easily implemented as a second phase to the Short-term improvements identified.

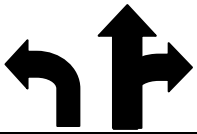
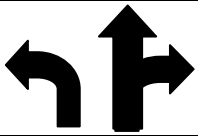
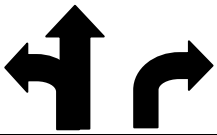
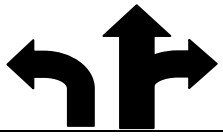
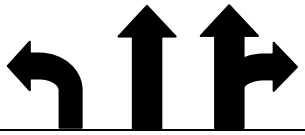
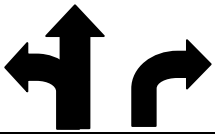
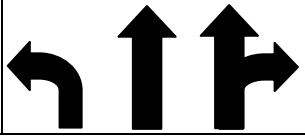
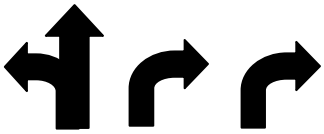
Route 26/Libby Hill Road/Hannaford Drive

During the 2035 No-Build condition, the level of service at the Route 26/Libby Hill Road/Hannaford Drive intersection will fail without further improvements, even when the short term improvements are implemented. Identified long-term future improvements are shown as intersection configurations in the following table Scenarios 4 and 5 require four lanes and Scenario 3 requires a five lane section.

Route 26 and Libby Hill Road/Hannaford Intersection Configuration Improvements				
	Southbound	Northbound	Westbound	Eastbound
2035 No-Build				
2035 Scenarios 3 - 5				

Route 26/Route 26A

An increased volume of traffic will cause congestion at the intersection of State Route 26 and State Route 26A. Remediation options in the table below will provide insight into configurations required to make the intersection operate acceptably under the proposed scenarios. It should be noted that the addition of traffic from the development scenarios triggers the need for a signal at this intersection.

Route 26 and 26A Intersection Configuration			
	Southbound	Northbound	Eastbound
2035 No-Build			
2035 Scenarios 4 and 5			
2035 Scenario 3			

A roundabout was examined conceptually at this location. Based upon use of the Highway Capacity Manual methods, a two-lane roundabout would operate at failing conditions in 2035. The key capacity constraint is the conflict between heavy southbound left turning vehicles and northbound Route 26 through vehicles.

ES-6 Long Term General Route 26 Corridor Improvements

- **Roadway Cross-Section** – As previously discussed, between Libby Hill Road and North Raymond Road the long-term improvement plan would be to provide a three-lane section, where one travel lane would be provided in each direction and a center lane would be available for left-turn movements with the exception of Scenario 3, which requires a five lane section. The key trigger for when this change is required would be a function of development activity within the corridor and increase in turning traffic onto and off of Route 26.

- **Bicycle Facility Provisions** - Route 26 serves local and regional bicycle travel needs and as such adequate facilities are suggested. It is suggested that for the corridor a minimum of 5-foot paved shoulders be provided. Although these may not be necessarily signed and marked as a formal bicycle lane, the shoulder width is considered to be a safe facility. In addition to the general needs for shoulder space, intersections that are being improved should be cognizant of bicycle mode needs and therefore may include special facility design. For example, to avoid right-turning vehicle conflicts, it may beneficial to mark a bicycle lane between a through lane and a dedicated right-turn lane. Additionally, recommendations identified in the 2013 Gray Maine Bicycle-Pedestrian Plan should be considered as part of future improvement projects.

- **Pedestrian Facilities** - Given the mixed land-use nature of the area and particularly the proximity of schools within the study area, sidewalks should be provided. In the short-term, a sidewalk should be considered along the east side of Route 26 linking the Fairview Drive neighborhood with the Hannaford Supermarket/traffic signal, so that a safe crossing to the school can be accomplished. As future development occurs, the provision of sidewalks and how they would integrate into the existing sidewalk system should be considered. Additionally, all intersection improvements should consider crosswalks and pedestrian signal control.

ES-7 Connector Roads and Access Management

The Scenario Land Use plans include the provision of connector roads. These connector roads provide several benefits including:

- Allowing for inter-parcel connectivity, thus reducing unnecessary use of Route 26.
- Allowing traffic direct access to a development destination for motorist originating from outside the area again minimizing impacts to Route 26. An example of this would be provision of a roadway connecting North Raymond Road to development towards the south. This provision will reduce the traffic loading on the Route 26/North Raymond Road intersection.
- Spreads traffic so volumes are not concentrated at a single location.

To develop these recommendations, MaineDOT conducted a traffic evaluation of corridor conditions as it relates to determining the number of major new intersections that would be allowed between Libby Hill Road and North Raymond Road. Assuming two major intersections between Libby Hill Road and North Raymond Road, 40 mph progression speed (at the posted speed) would be attainable with traffic signals. This assumed 80-second cycle lengths and intersection spacing of approximately 0.44 mile (2300 feet). Accordingly, two major intersections would be permitted between Libby Hill Road and North Raymond Road.

ES-8 Public Outreach Meetings

During the initial evaluation and development of the land use alternatives and corridor improvements, two public meetings were held. The first meeting, an informational workshop, was held on February 25, 2014 at the Gray Town Hall. The second meeting, a public meeting, was held on May 14, 2014 also at the Gray Town Hall. Located on the Town of Gray Website (http://www.graymaine.org/projects-planning/pages/route-26-corridor), a video from each meeting can be viewed (A CD is provided with this report). In addition, the presentation slides from the May 24 public meeting are available in PDF format.

ES-9 Next Steps

Next steps as set forth by the Town of Gray:

- The Town of Gray and MaineDOT should collaboratively prioritize the short-term improvements detailed in the Study and determine the timing of those improvements they intend to implement.
- MaineDOT and the Town should discuss the merits of the long-term intersection improvements, particularly the Dry Mills area, and ideally agree upon the 'build-out' scenario so that informed policy decisions can be made.
- The town should examine the short and longer-term implications of possible new commercial development, from both a land use and transportation perspective, and make the policy call of if it is to be permitted.
- In the event the town considers allowing more commercial development within the study area, the location(s) and extent needs to be defined.
- MaineDOT should have an opportunity to review and comment any Town-proposed land use changes at a formative stage to maintain maximum corridor capacity and explore the necessary funding/timing for any future improvements.

1.0 Introduction

State Route 26 north of State Route 26A (the Gray Bypass) is a Priority 1 Principal Arterial Highway that serves as a main link between Interstate 95 and western Maine including Oxford County, western Androscoggin County and northern Cumberland County. In the Town of Gray, Route 26 is also an important internal link between major commercial, residential, educational, and recreational land uses within the community while serving as an access link to future development opportunities in the northern part of Gray. T.Y. Lin International (TYLI), under contract by the Maine Department of Transportation (MaineDOT), performed a study of Route 26 in Gray, Maine, as shown in **Figure 1** (all figures are located in **Appendix A** at the conclusion of this report**),** from the northerly intersection of State Route 26/26A approximately 1.3 miles north to the intersection of State Route 26 and Weymouth Road to the north.

To facilitate these future development opportunities, the Town of Gray has embarked on a planning and policy process that is considering zoning changes on land east and west of State Route 26. To ensure that future land development in Gray and the regional highway functionality of Route 26 are compatible, MaineDOT and the Town of Gray joined forces in a collaborative planning effort, the Gray Route 26 Corridor Study. The Gray Route 26 Corridor Study developed recommendations that consider the future development and needs of the Town of Gray and the future transportation corridor needs of MaineDOT in the study area. The two primary study goals were the following:

- Develop a highway improvement plan that maintains or improves the safety and mobility function of the intersections and road segments on State Route 26 in the Study Area as a Priority 1 Principal Arterial Highway for vehicles, pedestrians and bicyclists.

- Coordinate the Town of Gray's land development planning for the study area with the functional needs of State Route 26 to allow for appropriate rezoning.

This document describes the existing transportation conditions in the corridor and the implications resulting from future background traffic growth and study area development growth and how they impact transportation through the corridor.

2.0 Existing Transportation Data

2.1 Existing Average Annual Daily Traffic Volumes

Existing average annual daily traffic volumes (AADT) were obtained from the 2009, 2010 and 2012 MaineDOT Count Books as well as recent 2013 counts provided by MaineDOT. **Table 1** presents a summary of this historical AADT information. **Figure 2** provides a graphical summary of the most current AADT volumes within the study area.

Table 1: Historical Average Annual Daily Traffic

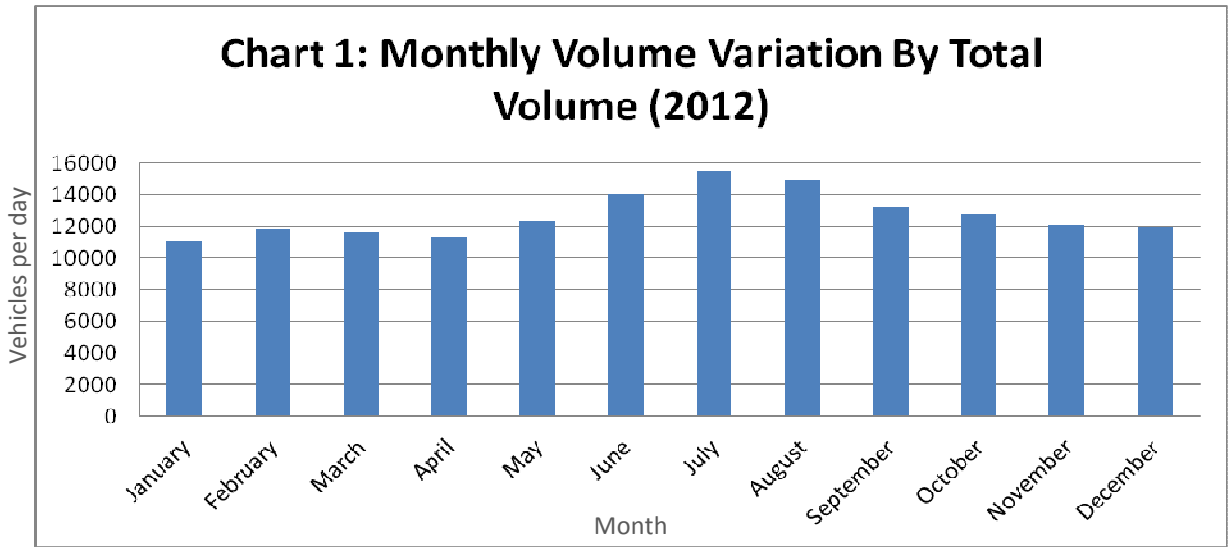
Location	AADT								
	05	06	07	08	09	10	11	12	13
SR26A (ME Wildlife Rd) SW/O SR26	--	--	8870	--	--	8690	--	9760	9440
SR26 SE/O SR26A (ME Wildlife)	--	--	7620	--	--	6370	--	6890	6780
SR26 NW/O SR26A (ME Wildlife)	--	--	15960	--	--	14910	--	16160	14730
SR26 N/O N Raymond Rd	12060	--	12680	--	--	9970	11770	11360	11680
SR26 S/O N Raymond Rd	--	--	--	--	--	--	15670	14640	14400
SR26 N/O Weymouth Rd	10040	--	10920	--	--	8280	--	--	--
SR26 NW/O Libby Hill Rd	15850	--	16040	--	--	13950	--	--	--
SR26 N/O Game Farm Rd (PW)	--	--	10100	--	--	7850	--	--	--
SR26 S/O Game Farm Rd (PW)	9780	--	10230	--	--	8010	--	--	--
N Raymond Rd NW/O SR26	6450	--	6560	--	--	6160	6930	5900	5690
Weymouth Rd NE/O SR26	1920	--	2060	--	--	1540	--	--	--

2.2 Existing Monthly Traffic Volume Variation

Average monthly traffic variation was derived from data collected throughout 2012 at the permanent count station in the Town of Oxford on Route 26/121 (Main Street) southeast of State Route 121 (north junction). Reports from the count station are contained within **Appendix B**.

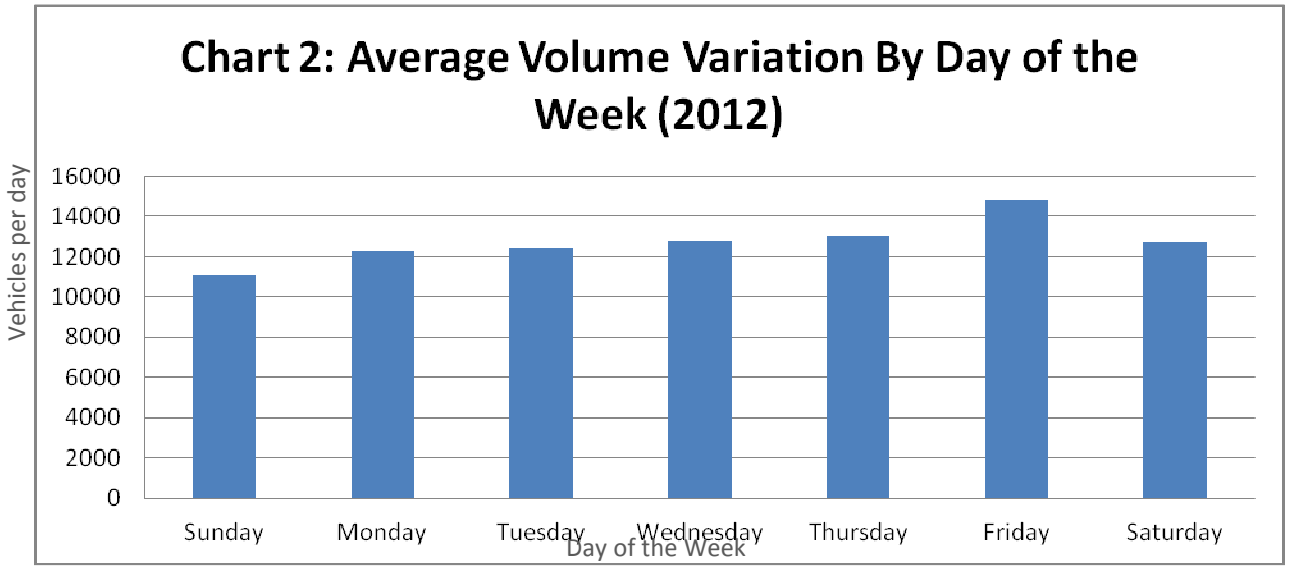
While this permanent count station is not within the study corridor, it does provide some insight into travel patterns on Route 26. It should be cautioned that Route 26 in Gray, while its proximity to Portland, likely has a higher commuter population than Oxford and may see a greater commuter pattern southbound weekday mornings and northbound weekday afternoons. Additionally, the corridor includes a high volume of vehicular traffic from North Raymond Road not seen at the Oxford permanent count station.

The average total volume at the Oxford Route 26 permanent count station for each month was calculated and is illustrated in **Chart 1**. July shows the greatest volume of vehicles followed by August, June and September.



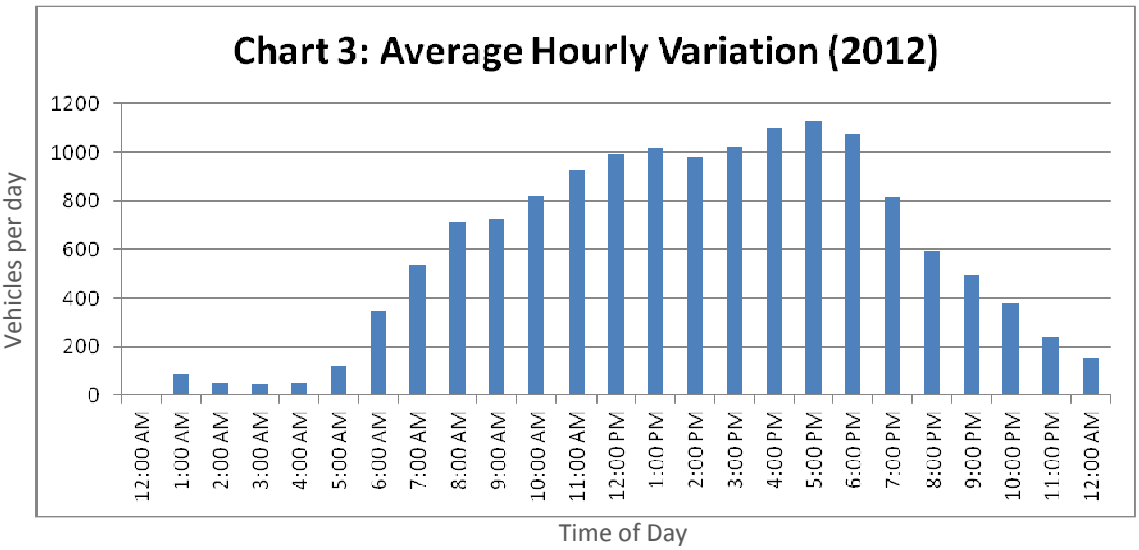
2.3 *Existing Daily Traffic Volume Variation*

Volume variation by day of the week was also derived from the Oxford permanent count station. The average total volume for each day of the week is shown on **Chart 2**. Friday holds the most volume through the corridor and Sunday the least.



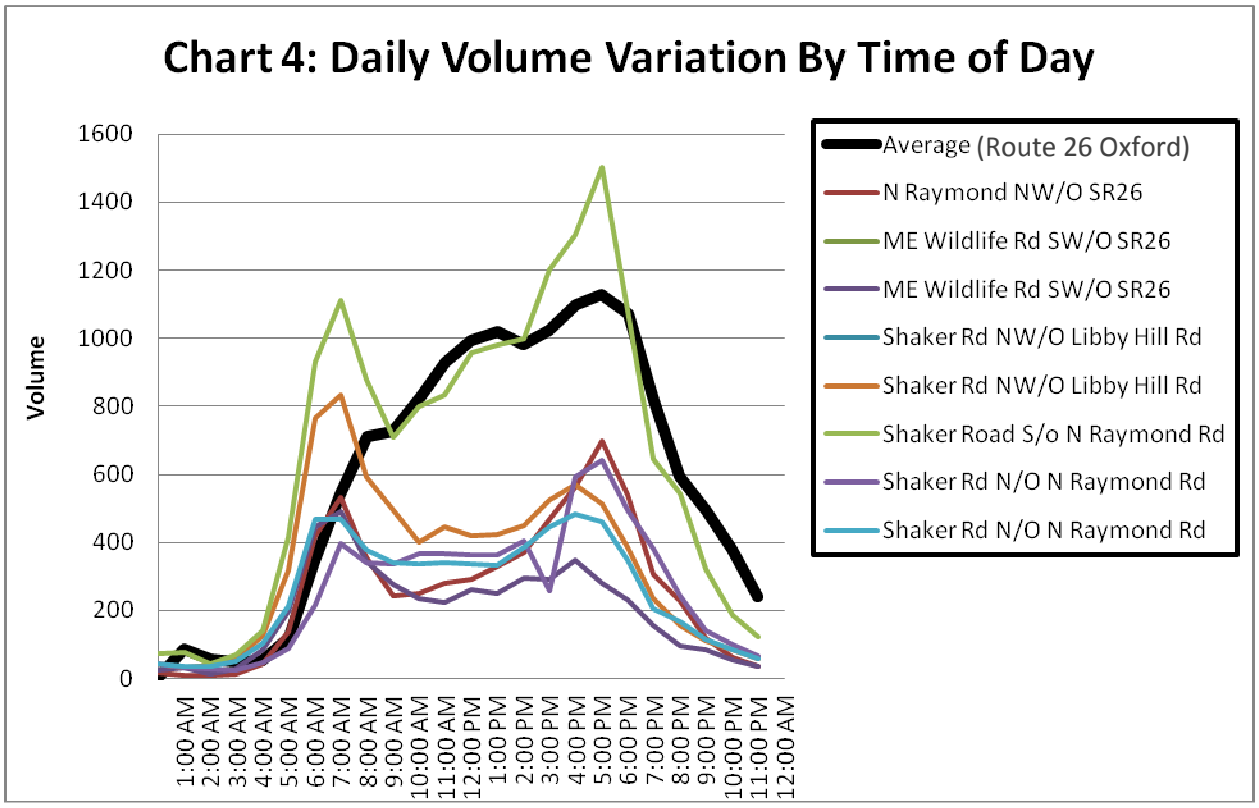
2.4 *Existing Hourly Traffic Volume Variation*

Hourly volume variation is presented in a similar manner to the monthly volume variation from the Oxford Permanent Count Station. Using this data, **Chart 3** was developed using the average total volume for each hour of the day throughout the year assuming that hourly peaks are not seasonally significant.



The Oxford data was also examined in order to determine the highest hours of travel throughout the year. Of the 30 highest hours, the most common time periods were found on Fridays between 4:00 and 5:00pm and on Saturdays between 11:00am and 12 noon. The Friday time period extends throughout the year in the top 100 hours. The 30th highest hourly volume is approximately 10% higher than the 100th highest hourly volume.

Short-term automatic traffic counts in the study area were used to compare local hourly variation with those of the Oxford Permanent Count Station as it is outside of the corridor. A summary of the volumes are provided in **Appendix C**. As seen in **Chart 4**, the mainline and side roads in the corridor do not follow the general peak pattern of the permanent count station, but rather have commuter peaks in the AM and PM periods and lulls midday and overnight. Values taken from the permanent count station shown in the heavy black line, are the average for the months of June through September as that is the time period in which the automatic traffic recorders were set up. Exact dates for the automatic traffic records can be found in **Appendix C**.



2.5 Existing Intersection Turning Movement Volumes

Twelve hour intersection turning movement counts were conducted as noted in **Table 2**, following, as provided by MaineDOT. Printouts of these turning movement counts are provided in **Appendix D**.

Table 2: Turning Movement Count Dates and Locations

Mainline	Minor Street	Start	End	Date	Start	End	Date
SR26	North Raymond Road	12:00 PM	6:00 PM	7/15/2011	6:00 AM	12:00 PM	7/14/2011
SR26	North Raymond Road	12:00 PM	6:00 PM	9/26/2012	6:00 AM	12:00 PM	9/25/2012
SR26	Weymouth Road	12:00 PM	6:00 PM	9/20/2013	6:00 AM	12:00 PM	9/19/2013
SR26	Libby Hill Road	12:00 PM	6:00 PM	9/20/2013	6:00 AM	12:00 PM	9/19/2013
SR26	SR 26A	12:00 PM	6:00 PM	9/26/2012	6:00 AM	12:00 PM	9/25/2012

Peak hours for each location were determined to help balance volumes throughout the corridor. These results are noted in **Table 3**. The day of the week is included in this data. It should be noted that count dates reflect the date the PM portion of the 12 hour counts was started. Counts were performed for 6 hours from 12-6pm and the following morning from 6am – 12pm.

Table 3: Peak Hours from Turning Movement Counts					
Mainline	Minor Street	AM Peak	PM Peak	Date	Day
SR26	North Raymond Road	6:45 - 7:45	5 :00 - 6:00	7/14/2011	Thursday
SR26	North Raymond Road	6:30 - 7:30	4:45 - 5:45	9/25/2012	Tuesday
SR26	Weymouth Road	6:45 - 7:45	4:30 - 5:30	9/19/2013	Thursday
SR26	Libby Hill Road	6:45 - 7:45	4:30 - 5:30	9/19/2013	Thursday
SR26	SR 26A	6:45 - 7:45	5 :00 - 6:00	9/25/2012	Tuesday
Overall Corridor Peak		6:45 - 7:45	4:45 - 5:45	9/25/2012	Tuesday

For the purpose of capacity analysis, seasonal variation adjustments of the counts were made using the 6th highest weekly group mean factor as found in the 2012 MaineDOT Count Book. All roads approaching the intersections are Group II with the exception of Weymouth and North Raymond Roads, which are Group I. Factors applied are shown in **Table 4**. Group II factors were applied for all counts in order to be more conservative.

Table 4: Seasonal Adjustment Factors						
Mainline	Minor Street	Week	Group	Factor	6th Highest	Factor
SR26	North Raymond Road	July Wk 3	II	0.82	0.81	1.00 *
SR26	North Raymond Road	Sept Wk 4	II	0.91	0.81	1.12
SR26	Weymouth Road	Sept Wk 3	II	0.91	0.81	1.12
SR26	Libby Hill Road	Sept Wk 3	II	0.91	0.81	1.12
SR26	SR 26A	Sept Wk 4	II	0.91	0.81	1.12

* Do not decrease count, leave as 1.0 to remain conservative.

Figure 3 illustrates the 2013 Existing Design Hour Volumes during the AM and PM peak hours at the study locations.

2.6 Existing Vehicle Classification

Heavy truck percentages were recorded as part of turning movement counts in the corridor. **Table 5** summarizes each approach at the major intersections. For the 6:00am to 6:00pm count periods, the major intersections on the corridor experience an average of 7.7% heavy vehicles with 4.3% being single unit trucks and 3.4% being tractor trailers. Minor streets carry heavy vehicle percentages similar to those of the mainline. In **Table 5**, the 12 hour count volume totals are provided in parenthesis after the percentage to provide perspective on the percentages.

Table 5: Heavy Vehicle Percentage by Approach					
Route 26 (Shaker Rd)/Weymouth Road					
	SR26 (Shaker Rd)	Weymouth Road	SR26 (Shaker Rd)		
	From North (SB)	From East (WB)	From South (NB)		Overall
Single Unit	5.7% (201)	4.7% (30)	4.8% (199)		5.0% (430)
Tractor Trailer	4.6% (162)	0.5% (3)	5.1% (212)		5.0% (377)
Route 26 (Shaker Rd)/North Raymond Road					
	SR26 (Shaker Rd)		SR26 (Shaker Rd)	N Raymond Rd	
	From North (SB)		From South (NB)	From West (EB)	Overall
Single Unit	5.1% (221)		5.0% (270)	3.4% (86)	4.7% (577)
Tractor Trailer	4.8% (209)		4.0% (215)	0.3% (8)	3.5% (432)
SR26 (Shaker Rd)/Libby Hill Road/Hannaford Entrance					
	SR26 (Shaker Rd)	Hannaford Entrance	SR26 (Shaker Rd)	Libby Hill Rd	
	From North (SB)	From East (WB)	From South (NB)	From West (EB)	Overall
Single Unit	3.6% (219)	1.5% (18)	4.0% (276)	6.0% (64)	3.8% (577)
Tractor Trailer	2.6% (159)	0.3% (4)	3.0% (203)	0.0% (0)	2.4% (366)
Route 26/Route26A					
	SR26	SR26	SR26A	(PW) Grover's Pit Entrance	
	From North (SB)	From East (WB)	From South (NB)	From West (EB)	Overall
Single Unit	3.4% (175)	4.3% (131)	4.4% (158)	88.9% (16)	4.0% (480)
Tractor Trailer	2.1% (109)	1.2% (38)	5.1% (185)	0.0% (0)	2.8% (332)

2.7 Existing Pedestrian Volumes

Table 6 notes that very few pedestrians were observed in the corridor during peak hours. Most pedestrians were seen walking south on Route 26 in the PM Peak hour. While there are residential streets in the vicinity, there are no corridor sidewalks to accommodate pedestrians.

Table 6: Total Pedestrian Volume During Peak Hours from Turning Movement Counts										
	Route 26/North Raymond Road					Route 26/Weymouth Road				
	SR26 SB	SR26 NB	N Raymond EB	Total		SR26 SB	Weymouth WB	SR26 NB	Total	
AM Peak	0	0	5	5		0	0	0	0	
PM Peak	0	0	3	3		0	0	0	0	
12 Hr Total	0	0	45	45		0	0	6	6	
	Route 26/Route 26A					Route 26/Hannaford/Libby Hill Road				
	SR26 SB	SR26 WB	SR26A NB	Grover's Pit EB	Total	SR26 SB	Hannaford WB	SR26 NB	Libby Hill EB	Total
AM Peak	0	0	0	0	0	0	0	0	0	0
PM Peak	3	0	0	0	3	2	0	0	0	2
12 Hr Total	3	0	0	0	3	28	0	1	1	30

2.8 Speed Study

A speed study was conducted on December 18, 2013 during the AM, PM and midday travel time periods. Average speeds were calculated in the northbound and southbound travel directions between Weymouth Road, Fairview Road, Libby Hill Road, and 26A. The results of the survey are noted in **Figure 5**. As noted travel speeds are relatively slow between Route 26A and Fairview Road. North of Fairview Road travel speeds increase and tend to be slightly higher than the posted speed limits. The runs were calculated as the average of six AM runs, ten midday runs, and five PM runs. Anecdotal evidence supports a slightly lower speed as calculated in the HCM Two Way Analysis in **Section 2.12**.

2.9 Signal Warrants

Signal warrant evaluations were conducted by MaineDOT according to methods contained in the Manual on Uniform Traffic Control Devices, Federal Highway Administration (MUTCD) at the Route 26 intersections with North Raymond Road and Weymouth Road. **Table 7** presents a summary of conclusions for each of the signal warrants evaluated. For the North Raymond Road intersection, signal warrant evaluations were conducted in 2011 (using July traffic volumes) and in 2012 (using September traffic volumes). It should be noted that warrants for traffic signals are based upon average traffic volume conditions and therefore the evaluation incorporated volume adjustments such that average volume conditions were assessed.

The investigation of warrants for a traffic control signal includes an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions. The applicable factors contained in the following traffic signal warrants were reviewed, where applicable:

- Warrant 1A: Minimum Vehicular Volume
- Warrant 1B: Interruption of Continuous Traffic
- Warrant 1C: Combination of Warrants 1A and 1B
- Warrant 2: Four-Hour Vehicular Volume
- Warrant 3A: Peak Hour Delay
- Warrant 3B: Peak Hour Volume

- Warrant 4A: Four-Hour Pedestrian Volume
- Warrant 4B: Peak-Hour Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience - Correctable by Signalization
- Warrant 8: Roadway Network
- Warrant 9: Railroad Crossing

It should be noted, per the MUTCD, the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Satisfaction of a signal warrant does indicate that installation of signal should be evaluated as an improvement alternative. Detailed warrant analysis worksheets are provided in **Appendix H**.

Table 8: Signal Warrant Analysis Results Summary

Signal Warrant	@ N Raymond Rd 7/15/2011	@ N Raymond Rd 9/26/2012	@ Weymouth Rd 9/20/2013
1A (minimum vehicle volume)	Not Met	Not Met	Not Met
1B (interruption of continuous traffic)	Not Met	Not Met	Not Met
1C (combination of 1A & 1B)	Not Met	Not Met	Not Met
2 (4-hour vehicle volume)	Not Met	Not Met	Not Met
3A (peak hour delay)	Not Met	Not Met	Not Met
3B (peak hour volume)	Not Met	**Met**	**Met**
4 (pedestrian volume)	Not Met	Not Met	Not Met
5 (school crossing)	*N/A*	*N/A*	*N/A*
6 (coordinated signal system)	*N/A*	*N/A*	*N/A*
7 (crash Experience)	Not Met	Not Met	Not Met
8 (roadway network)	*N/A*	*N/A*	*N/A*
9 (rail crossing)	*N/A*	*N/A*	*N/A*

As noted in **Table 8**, Warrant 3B – Peak Hour Volume, is met for both locations. Further analysis review for potential traffic signalization will be undertaken during the development of recommendations for the project.

2.10 Crash History

To be classified as a high crash location (HCL), MaineDOT has established criteria where an intersection or road segment must meet two requirements: there must be 8 or more crashes during a three year study period and the intersection must have a critical rate factor (CRF) greater than or equal to 1.0. The critical rate factor is a statistical comparison of the study locations with other comparable locations in the state. It should be noted that meeting the crash warrant as determined by MUTCD and determining that a location is a High Crash Location are not synonymous – meeting a crash warrant requires five or more crashes in a one year period where the pattern is correctable by a signal.

Crash reports were obtained from MaineDOT for the years of 2010 – 2012. From this data, one HCL was identified in the corridor study area – at the North Raymond Road intersection. A crash diagram depicting this intersection is provided in **Appendix E**. The majority of crashes at this intersection are

rear-end collisions – 2 northbound, 2 southbound on Route 26, and 4 crashes on the North Raymond Road approach. There were also two angle crashes – one where the driver at-fault lost control and the other when the driver at-fault failed to yield. Of the crashes, 5 occurred in 2010, 1 occurred in 2011 and 3 occurred in 2012. All of the crashes occurred on dry and clear days. Two of the crashes occurred during the AM peak hour and two during the PM peak hour.

There are three other locations of note in the study corridor, the first being the intersection of Libby Hill Road, Hannaford and Route 26. While the CRF is less than 1.0 at this location, there were 11 crashes during the three year study period. All crashes were rear-end collisions consisting of only property damage and/or possible minor injuries. No correctable pattern was identified. The intersection of 26A and Route 26 intersection was 1 shy of the 8 crashes required to be an HCL and the CRF is 1.44 for the intersection. Of the 7 crashes during the study period, 3 were rear-end collisions, one hit an object, 2 were sideswipes and 1 involved an object that traveled down the pavement. One serious injury was reported. No correctable pattern was identified.

Table 9 summarizes the 2010-2012 crash data for the study intersections.

Table 9: Summary of Intersection Crashes		
Intersection with Route 26	Number Crashes	Critical Rate Factor
Route 26A	7	1.44
Libby Hill Road/Hannaford	11	0.62
North Raymond Road	9	1.80
Weymouth Road	3	0.81

Lastly, there are 20 crashes reported on Route 26 between the intersection of North Raymond Road and about half a mile south. No specific correctible pattern was identified. **Figure 6** graphically summarizes this information.

2.11 Existing Intersection Level of Service

The standard used to evaluate traffic operating conditions of the transportation system is referred to as the Level of Service (LOS). This is a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays, and freedom to maneuver. LOS analysis was based upon procedures detailed in the 2010 Highway Capacity Manual, Transportation Research Board.

Level of Service provides a measurement of the delay experienced at an intersection as a result of traffic operations at that intersection. In general, there are six levels of service: Level of Service A to Level of Service F. The highest, Level of Service A, describes a condition of free-flow operations, Level of Service F, is the result of very long delays or volumes greater than roadway capacity with congestion and possible stopped conditions.

The measures of delay for each level of service rating for unsignalized and signalized intersections are found in **Table 10**. MaineDOT has determined that Levels of Service A-D are acceptable conditions for intersections.

Table 10: Level of Service Criteria		
Level of Service	Unsignalized Average Delay Per Vehicle (sec.)	Signalized Average Delay Per Vehicle (sec.)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤20
C	>20 and ≤30	>20 and ≤35
D	>30 and ≤40	>35 and ≤55
E	>40 and ≤50	>55 and ≤80
F	>50	>80

Synchro and SimTraffic computer models were used to analyze the study intersections. For Synchro, the Highway Capacity Manual Method was used, and for SimTraffic, the Trafficware standard output was used (based on 5 runs of 60 minutes of simulation). Results varied between Synchro and SimTraffic. Because SimTraffic more closely represented conditions observed in the field it is represented in the following tables. The report printouts can be found in **Appendix F** and **Figure 5** also depicts the results.

Table 11 summarizes the results at the unsignalized intersection of Route 26 and Route 26A. It should be noted that vehicles leaving Grover's Pit represent less than 1% of the intersection traffic volume and are making an illegal movement as it is signed as an entrance only. As noted, the intersection operates with little delay and meets level of service standards for all movements.

Table 11: Route 26/Route 26A								
		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	22.3	21.0	0.0	0.0	1.7	0.0	0.6
	LOS	C	C	A	A	A	A	A
	Queue (ft)	37	30	0	10	103	4	N/A
PM Peak	Delay (s)	17.6	0.0	0.0	0.1	14.0	0.1	1.9
	LOS	B	A	A	A	B	A	A
	Queue (ft)	21	0	0	42	151	56	N/A

Table 12 presents results at the signalized intersection of SR26 and Libby Hill Road/Hannaford Drive. This intersection experiences poor levels of service during the AM and PM peak hours for left and through movements from the major and minor approaches. There are some significant queues in the northbound and southbound directions; however the intersection operates at an acceptable level of service overall. This location is the only signalized intersection in the corridor. Anecdotally, peak hour backups on SR26 are longer than **Table 12** would indicate.

Table 12: Route 26/Libby Hill Road/Hannaford												
		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	53.6	26.9	69.3	4.3	46.9	3.2	0.7	19.2	87.5	1.8	52.9
	LOS	D	C	E	A	D	A	A	B	F	A	D
	Queue (ft)	106	170	90	23	327	157	37	53	2288	1777	N/A
PM Peak	Delay (s)	62.0	8.3	72.8	28.5	55.8	4.0	0.8	37.3	9.3	1.8	14.0
	LOS	E	A	E	C	E	A	A	D	A	A	B
	Queue (ft)	137	89	148	120	220	384	150	92	281	89	N/A

Table 13 presents results at the unsignalized North Raymond Road intersection. The table notes a failing level of service for the North Raymond Road approach despite the ability for right turning vehicles to sneak around the left turns onto Route 26. Based on field observation, the excessive delay and queue length on North Raymond Road is overstated by the model and it was noted that drivers along Route 26 were more willing than modeling software allotted to allow vehicles out of North Raymond Road. The long Route 26 northbound queue in the PM Peak hour may also be overestimated in the model as there is some limited ability for through traffic to get around left-turning vehicles. The long delays on North Raymond Road cause the intersection to show an overall failure even though the mainline sees little to no delay.

Table 13: Route 26/North Raymond Road							
		N Raymond		SR26		SR26	
		EBL	EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	408.0	36.8	6.1	0.5	0.1	47.5
	LOS	F	D	A	A	A	E
	Queue (ft)	1222	140	58	76	19	N/A
PM Peak	Delay (s)	1664.5	12.4	4.6	21.5	0.2	108.0
	LOS	F	B	A	C	A	F
	Queue (ft)	2439	93	55	1038	39	N/A

Table 14 presents the results at the unsignalized Weymouth Road intersection. As noted this intersection operates well with some vehicular delay on the Weymouth Road approach during peak hours. Despite this delay, overall the intersection still operates at an acceptable level of service.

Table 14: Route 26/Weymouth Road					
		Weymouth WBLR	SR26 NBTR	SR26 SBLT	Overall
AM Peak	Delay (s)	14.2	0.2	0.2	1.2
	LOS	B	A	A	A
	Queue (ft)	66	5	57	N/A
PM Peak	Delay (s)	46.2	0.0	0.3	5.5
	LOS	E	A	A	A
	Queue (ft)	175	3	40	N/A

2.12 Existing Two-Lane Capacity Analysis

A two-lane capacity analysis of the corridor from Libby Hill Road to North Raymond Road was conducted using methods contained in the 2010 Highway Capacity Manual. In this analysis, the following assumptions were made:

- The roadway is a Type III rural two-lane highway as per MaineDOT;
- The free-flow speed is 45mph although speeds in the corridor were often lower than this;
- There are five drives in the corridor – although more drives are shown they are low use residential driveways and should not significantly lower the speed of vehicles traveling on the corridor.

Results, as provided in **Appendix G**, indicate a level of service E during both AM and PM conditions. This level of service is a function of the ability for vehicles to pass when provided the opportunity and the study corridor limits vehicle passing during the peak hour volume conditions. **Table 15** also summarizes this data. Field observations suggest the speeds compiled during the field review are higher than average and that the speeds provided below are more realistic.

Table 15: Two-Lane Capacity Analysis									
Peak	Direction	Volume	PHF	Truck %	% No Passing	% Time Spent Following	LOS	v/c ratio	Avg Travel Speed
AM	NB	339	.94	12%	56%	59.2	D	.26	29.7 mph
	SB	1044	.83	5%	55%	90.9	D	.75	29.4 mph
PM	NB	1138	.94	3%	56%	90.8	E	.72	28.7 mph
	SB	574	.88	5%	55%	72.7	E	.37	28.0 mph

2.13 Existing Transportation Infrastructure Inventory

2.13.1 Geometry

Lane widths are generally 12 feet in width with 4-6 foot shoulders. The study corridor is approximately 1.3 miles in length. Approximately half of the corridor is a double yellow centerline section while the rest is open for passing opportunities in either the northbound, southbound or both directions. The grade through the corridor is generally flat. North of Libby Hill Road, the right-of-way width is 66 feet.

2.13.2 Existing Sidewalks

Sidewalks exist at the intersection of Route 26 and Libby Hill Road on the northeast, northwest and southeast corners of the intersection. There are detectable warning panels and ramps at the intersection. Sidewalks are not provided at any other location in the study area.

2.13.3 Existing Crosswalks

There are two crosswalks in the corridor connecting Libby Hill Road to Hannaford located on the northern crossing of the intersection and the western crossing. These crosswalks are controlled by the traffic signal and concurrent pedestrian signal phasing is provided (parallel traffic does not stop). The crosswalks connect the sidewalks at the intersection.

2.13.4 Existing Bicycle Facilities

Dedicated bicycle lane facilities are not provided in the corridor. Shoulders and shared travel lanes are the primary facility for bicycles. On Route 26 shoulders generally range from 4-6 feet in width and are generally paved, although the pavement condition is poor in some areas indicating the space is there but repairs are required to make them functional.

2.14 MaineDOT Customer Service Levels

MaineDOT has developed a process for prioritizing highway and bridge candidate projects for the biennial work plan according to Customer Service Levels (CSL). Route 26 is considered to be a Priority 1 Highway (the highest priority) and MaineDOT has provided CSL ratings regarding Safety, Condition, and Service. Facilities are rated on an A-B-C-D-F scale. **Figures 8a through 8c** present the ratings for each of these categories with a summary noted below.

CSL/Safety - The Safety CSL includes consideration of Crash History, Paved Roadway Width, Pavement Rutting, and Bridge Reliability. As shown in **Figure 8a**, the corridor ranges from A-C for this category. Route 26A approaching Route 26 has a safety rating of A. North Raymond Road approaching Route 26 has a safety rating of C due to pavement rutting and pavement width. The study area along Route 26 is given a safety rating of C due to crash history.

CSL/Condition - The Condition CSL includes consideration of Pavement Condition, Roadway Strength, Bridge Condition, and Ride Quality. As shown on **Figure 8b**, the corridor ranges from A to D for this category. Route 26A approaching Route 26 has a condition rating of A. The condition deteriorates as North Raymond Road approaches Route 26 to a rating of B due to ride quality. The Route 26 corridor varies from B to D. Ride quality and pavement condition are constantly providing a level of service B but poor pavement strength in some areas the CSLs C and D.

CSL/Service - The Service CSL includes consideration of posted roads and congestion. As shown in **Figure 8c**, the corridor ranges from B to C for this category. Route 26A approaching Route 26 is given a service rating of B due to congestion. The service level deteriorates as North Raymond Road approaches Route 26 to a rating of C due to road posting. The Route 26 corridor varies between B and C due to fluctuating areas of congestion.

2.15 Access Management

Existing access management deficiencies within the study corridor were generally noted following a review of MaineDOT and Town standards. An assessment of existing driveway conditions was performed and consisted of reviewing: the number of driveways provided for each property; the width of driveways; the spacing of driveways; and how close driveways are to intersections (corner clearance). The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of a transportation system.

MaineDOT Standards

Minimum Entrance Spacing Standards

Posted Speed (MPH)	Entrance Separation (Feet)
25 or less	Not applicable
30	Not applicable
35	Not applicable
40	175
45	265
50	350
55 or more	525

Arterial Corner Clearance - The minimum corner clearance for entrances onto Arterials must be 125 feet.

Number of Entrances - Except for forestry management and farming activities, lots on Arterials will be limited to one two-way or two one-way entrances.

Entrance Width - If 30% or less of the traffic projected to use the proposed entrance will be larger vehicles, the width of a two-way entrance within the highway right of way must be between 22 and 30 feet inclusive. If more than 30% of the traffic projected to use the proposed entrance will be larger vehicles, the width of a two-way entrance within the highway right of way must be between 30 and 42 feet.

Town of Gray Driveway Standards

Street Ordinance

- Private driveways shall be located not less than fifty (50) feet from the tangent point of the travel way edge radius of any intersection of streets.

- When a corner lot is bounded by streets of two different classifications, private driveways to the corner lot shall gain access from the street of lower classification unless, in the opinion of the Town Engineer, there is good reason to do otherwise (e.g., on the higher classification road the driveway can be located more distant from the intersection or sight distances are improved).

- Private driveways shall be located so that the edge of the shoulder closest to a property line is at least ten (10) feet from that property line unless the following conditions are met for a driveway shared between abutting properties:

    - The driveway shall have a minimum travel way width of fourteen (14') feet for the first twenty five (25') feet before dividing into separate driveways.

    - Deeded rights to the driveway shall be issued for both lots serviced by the common driveway and a maintenance agreement specifying rights and responsibilities for its maintenance signed by the parties shall be filed with the driveway permit application.

Zoning Ordinance

- Where a lot has frontage on two (2) or more streets, the primary access to and egress from the lot must be provided from the street where there is less potential for traffic congestion and for traffic and pedestrians hazards. Access from other streets may be allowed if it is safe and does not promote shortcutting through the site.

The following criteria must be used to limit the number of driveways serving a proposed project:

- No use which generates less than one hundred (100) peak hour vehicle trips shall have more than a single two-way driveway onto a single roadway. Such driveway must be no greater than thirty (30) feet wide.

- No use which generates one hundred (100) or more peak hour vehicle trips shall have more than two points of entry from and two points of egress to a single roadway. The combined width of all accessways must not exceed sixty (60) feet.

Accessway Width - Accessways must meet the following width standards:

- The dimensions of driveways shall be designed to accommodate adequately the volume and character of vehicles anticipated to be attracted daily to the development for which a site plan is prepared. The required minimum dimensions for driveways are indicated in **Table 16**. Driveway entrances and exits serving traffic of over fifteen percent (15%) truck traffic shall be designed with adequate width to avoid a turning vehicle from tracking into the opposing travel lane.

Table 16: Required Minimum Access Drive Widths

	One-Way Operation	Two-Way Operation Driveways* Width (feet)
3 to 10 dwelling units	10	18
10 dwelling units or over	12	20
Commercial, Industrial & Institutional	16	24

*All driveways shall be five (5) feet wider at the curbline, and this additional width shall be maintained for a distance of twenty (20) feet into the site.

Accessway Location and Spacing - Accessways must meet the following standards:

- Private entrances/exits must be located at least fifty (50) feet from the closest unsignalized intersection and one hundred fifty (150) feet from the closest signalized intersection, as measured from the point of

tangency for the corner to the point of tangency for the accessway. This requirement may be reduced if the shape of the site does not allow conformance with this standard.

- Private accessways in or out of a development must be separated by a minimum of seventy-five (75) feet where possible.

Based upon a review of both MaineDOT and Town standards, **Table 17** highlights some general deficiencies in the corridor.

Table 17: Access Management Deficiencies

Type	Location	Deficiency
Residence	NE of 26A	Multiple Entrances
		Entry Width Exceeded
Residence	NE of 26A	Multiple Entrances
		Corner Clearance
Health Center	North of Dunn	Entry Width Exceeded
Residence	SW of Libby Hill	Corner Clearance
Residence	NW of Libby Hill	Corner Clearance
Residence	NE of Libby Hill	Corner Clearance
		Multiple Entrances
Residence	SE of Adler	Multiple Entrances
		Corner Clearance
Residence	NE of Adler	Corner Clearance
Residence	NE of Fairview	Corner Clearance
		Multiple Entrances
Thurlows	Along Shaker (West)	Entry Width Exceeded
Frank's Garage	Algon Shaker (East)	Entry Width Exceeded
Shell Gas Station	SW of N Raymond	Entry Width Exceeded
		Multiple Entrances
		Corner Clearance
Old General Store	NW of N Raymond	Corner Clearance
		Multiple Entrances
		Entry Width Exceeded
Residence	NE of N Raymond	Entry Width Exceeded
Pizzaria	Across from Weymouth	Entry Width Exceeded

3.0 Future Transportation Data

3.1 No-Build Future Background Growth Projections

Analysis was conducted for a 22-year growth of the study area traffic volumes, thus representing the year 2035. Per direction from MaineDOT, a non compounding 1% annual growth factor was applied to volumes along the mainline and force balanced through the corridor. The 2035 AM and PM peak hour volumes for the study intersections are depicted on **Figure 9.** For comparison purposes, **Table 18** shows the volume increases at selected locations on the corridor.

Table 18: **Future Background Traffic Growth between 2012 and 2035**

Location	AM Peak Hour		PM Peak Hour	
	%	Vehicles	%	Vehicles
Route 26 n/o Weymouth	+22%	+182	+20%	+201
Weymouth e/o Route 26	+22%	+53	+34%	+79
North Raymond w/o Route 26	+22%	+157	+22%	+181
Route 26 s/o N. Raymond	+22%	+306	+22%	+379
Hannaford e/o Route 26	0%	0	0%	0
Libby Hill Road w/o Route 26	0%	0	0%	0
Route 26 s/o Libby Hill	+18%	+303	+18%	+339
Route 26 e/o Route 26A	+17%	+129	+18%	+141
Route 26A s/o Route 26	+15%	+179	+18%	+210

3.2 Development of Trip Generation Data for Scenarios Three, Four and Five

Initially, as will be discussed further in **Section 5**, three land use development scenarios (Scenarios 1-3) were developed for a public meeting held on February 25, 2014 in order to test the impacts of various proposed zoning recommendations on the Route 26 corridor and obtain public feedback. Based on the heavy traffic volumes generated by these land use options, and public feedback, the first two alternatives were eliminated from further analysis and replaced by two less intensive land use development scenarios (Scenarios 4 and 5).

All scenarios have the same base access drive layout with two new intersections equally spaced between Libby Hill Road and North Raymond Road. MaineDOT conducted an evaluation of the Route 26 corridor between Libby Hill Road and North Raymond Road and determined that two major development access drive intersections would be permitted. Two locations were identified in consultation with the town and the future land use scenario plans and based upon that information the two locations identified were opposite Fairview Drive and located approximately halfway between the Fairview Heights intersection and North Raymond Road.

Trip generation volumes for land use type and size were obtained from the Trip Generation Manual, Institute of Transportation Engineers, 9th Edition. To calculate the internal trip loss Tables 7.1 and 7.2 from the Trip Generation Manual were applied to simplify calculations; pass by trips were only implemented for the retail trips, the rest of the categories were treated simply as new trips.

3.3 Scenario One Land Use Summary

Scenario One, depicted on **Figure 10**, has a heavy concentration of retail around the center of the corridor as well as other concentrated areas up by the North Raymond and Weymouth Road Intersection. Areas devoted to high density and standard residential, manufacturing and light commercial are split fairly evenly. High density residential is concentrated by the new connector road to the west, south of Libby Hill Road, and by residential uses near Tim's Run. There were two concentrations of residential uses: the Adler/Spruce/Tim's Run section and north of North Raymond Road. Manufacturing is centered on the proposed easterly connector road and light commercial is sprinkled by Fairview Drive and along Route 26 near Libby Hill Road. This scenario did not advance for further analysis per feedback at the Public Workshop.

3.4 Scenario Two Land Use Summary

In Scenario Two, depicted on **Figure 11**, types of development were more mixed through the corridor. Light commercial and retail areas were spread fairly evenly along Route 26 along the mainline of the corridor. Residential areas are located primarily where they currently exist. The high density residential was located near Weymouth Road, next to the existing residential uses by Adler Road, by the proposed westerly connector road, and down by Sea Gull Road. Manufacturing was located, although a smaller area, by the easterly connector road as in Scenario One. This scenario did not advance for further analysis per feedback at the Public Workshop.

3.5 Scenario Three Land Use and Trip Generation Summary

Scenario Three, depicted on **Figure 12**, consists of a reduced amount of retail use than Scenario Two. Retail development would be concentrated around the proposed connector roads, the Dry Mills area and at the Libby Hill Road intersection. Light commercial use would be smaller than in Scenario Two, although still mostly concentrated along Route 26 between Fairview Drive and the Dry Mills area; a small section would be located along Weymouth Road, down by Dunn Drive and by the retail proposed along the proposed connector roads. Residential areas iincrease over Scenarios One and Two. Single-family residential housing would remain in its current location with small increases concentrated along the northerly project limits and near the Libby Hill Road intersection. High density residential housing would be located off of Weymouth Road, just off the westerly connector road, north of Sea Gull Road and next to the existing residential areas by Adler Road.

The tables found in **Appendix I** contain the calculations for trip volumes with land use code assumptions and a summary of the new trips generated by Scenario Three can be found in **Table 19**. According to the calculations, nearly 2000 trips would be generated during the AM Peak Hour and more than 3600 trips generated during the PM Peak Hour. Trips were distributed based on land use location, census journey-to-work data for the Town of Gray obtained from MaineDOT, and existing traffic volume patterns.

Table 19: Scenario Three Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
831,680 SF of Retail	948	2,820
514,400 SF of Light Commercial	685	590
99,900 SF of Manufacturing	34	27
654 Units of High Density Residential	191	64
216 Units of Residential Single-Family	108	136
Total	**1,966**	**3,637**

3.6 Scenario Four Land Use and Trip Generation Summary

Scenario Four, developed following the first public workshop is depicted on **Figure 13.** This scenario would yield considerably fewer trips than Scenario Three. While there would be considerably less in retail building area, there would still be a concentration of retail development at the northerly connector road intersection. Residential zoning would be high in both single-family residential development and high density residential development. The tables found in **Appendix I** contain the calculations for trip volumes with land use code assumptions. According to the calculations, over 800 trips would be generated during the AM Peak Hour and more than 1700 trips generated during the PM Peak Hour, less than half of the trips generated by Scenario Three. As described in Scenario Three, trips were distributed based on land use location, Census Journey-to-work data for the Town of Gray obtained from MaineDOT, and existing Scenario Three traffic volume patterns. **Table 20** provides a brief summary.

Table 20: Scenario Four Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
371,840 SF of Retail	260	1,109
178,640 SF of Light Commercial	242	209
589 Units of High Density Residential	168	195
320 Units of Residential Single-Family	170	217
Total	**840**	**1,730**

3.7 Scenario Five Land Use and Trip Generation Summary

Scenario Five developed following the first public workshop and depicted in **Figure 14**, would also yields considerably fewer trips than Scenario Three. As with Scenarios Three and Four, the tables found in **Appendix I** contain the calculations for trip volumes with land use code assumptions. This scenario would focus heavily on residential growth zoning. As summarized in **Table 21**, nearly 500 trips would be generated during the AM Peak Hour and approximately 800 trips generated during the PM Peak Hour.

Table 21: Scenario Five Trip Generation Summary		
Development Scenario and Build-Out Assumptions	AM Peak Hour Total Trips	PM Peak Hour Total Trips
227,840 SF of Retail	160	411
666 Units of Residential Single-Family	318	407
Total	**478**	**818**

4.0 Future Intersection Analysis

The following sections summarize the effects of 2035 future volumes on the corridor starting with the No-Build Background Growth analysis and continuing into various recommendations.

4.1 2035 No-Build Background Growth Analysis

Tables 22 through 25 summarize the results of a SimTraffic analysis of background future volume growth assuming existing corridor layout. As can be seen in the following table the Route 26 and 26A intersection does not operate at acceptable levels in the future. While it should be noted that the delay at Grover's Pit is not of consequence as this should be an entry only, the northbound approach deteriorates to a failing level of service in the PM Peak Hour and queues become significant.

Table 22: 2035 No-Build: Route 26/Route 26A

		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	20.7	11.5	0.0	0.0	1.7	0.0	0.6
	LOS	C	B	A	A	A	A	A
	Queue (ft)	40	34	0	9	100	4	N/A
PM Peak	Delay (s)	0.0	99.8	0.3	87.9	36.7	2.1	44.1
	LOS	A	F	A	F	D	A	E
	Queue (ft)	0	115	52	233	219	319	N/A

Table 23 notes that the Route 26 and Libby Hill Road intersection will have failing conditions during the PM Peak Hour. There are failing movements for some portion of every approach and significant queues form.

Table 23: 2035 No-Build: Route 26/Libby Hill Road/Hannaford

		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	76.4	21.3	62.7	5.5	31.5	2.0	0.5	19.9	516.1	5.0	245.0
	LOS	E	C	E	A	C	A	A	B	F	A	F
	Queue (ft)	229	103	80	27	293	134	39	64	7480	182	N/A
PM Peak	Delay (s)	66.7	11.1	63.6	51.4	69.1	33.9	0.9	710.5	343.6	1.7	103.0
	LOS	E	B	E	D	E	C	A	F	F	A	F
	Queue (ft)	180	103	170	157	481	1465	172	181	4045	79	N/A

Table 24 presents results at the Route 26 and North Raymond Road intersection. As with 2013 existing no-build conditions, there are significant delays on the eastbound North Raymond Road approach. It should be noted that with the existing modeling, these delays were higher than field observations would suggest; however, significant failing levels of service and significant queues can be expected in 2035.

Table 24: 2035 No-Build: Route 26/North Raymond Road							
		N Raymond		SR26		SR26	
		EBL	EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	1466.2	59.3	9.3	1.2	6.4	164.9
	LOS	F	F	A	A	A	F
	Queue (ft)	2615	136	61	126	263	N/A
PM Peak	Delay (s)	2753.6	10.2	7.2	305.0	0.2	256.5
	LOS	F	B	A	F	A	F
	Queue (ft)	2708	35	54	7216	44	N/A

Table 25 shows the effects of the increased traffic at the Route 26 and Weymouth Road intersection. The intersection operates at an overall good level of service with the exception of vehicles turning from Weymouth Road during the AM and PM Peak Hours due to difficulty getting onto Route 26.

Table 25: Route 26/Weymouth Road					
		Weymouth	SR26	SR26	
		WBLR	NBTR	SBLT	Overall
AM Peak	Delay (s)	52.5	0.1	3.2	5.8
	LOS	F	A	A	A
	Queue (ft)	148	4	222	N/A
PM Peak	Delay (s)	86.8	0.0	0.6	12.1
	LOS	F	A	A	B
	Queue (ft)	298	4	80	N/A

Table 26 shows the effect of increased vehicular traffic on the two lane segment between Libby Hill Road and North Raymond Road. Levels of Service still indicate a level of service E as in the 2013 existing condition, however volume to capacity ratios increase, average travel speeds decrease and percent time spent following increases.

Table 26: Two-Lane Capacity Analysis									
Peak Hour	Direction	Volume	PHF	Truck %	% No Passing	% Time Spent Following	LOS	v/c ratio	Avg Travel Speed
AM	NB	339	.94	12%	61%	60.7	E	.27	29.1 mph
	SB	1044	.83	5%	86%	95.2	E	.87	25.7 mph
PM	NB	1138	.94	3%	56%	94.2	E	.91	26.6 mph
	SB	574	.88	5%	55%	81.1	E	.47	24.9 mph

4.2 Short-Term Improvements

Because of the existing failing levels of service, several short term improvements were evaluated in order to correct existing corridor deficiencies. These short-term improvements focus on improving traffic operations at the Route 26/Libby Hill Road/Hannaford Drive intersection and addressing safety and traffic congestion at the Route 26/North Raymond Road intersection.

4.2.1 Route 26/Libby Hill Road/Hannaford Drive

At the Route 26/Libby Hill Road/Hannaford Drive intersection, two key intersection improvements are required to improve the overall operation:

- Change the lane assignment on the Hannaford Drive and Libby Hill Road approaches to a dedicated left and shared through-right lane (from a shared left-through lane and a right lane)
- Upgrade the traffic signal system for improved detection and reevaluate phasing and signal timing

These improvements can be seen graphically in **Appendix J** on **Plan Sheet 3a**. **Table 27** shows the results of the analysis with the implemented improvements. The left lane on the Hannaford Drive approach continues to show a failing level of service, or 56.7 seconds of delay, however this is just 1.7 seconds longer than a level of service D (the cutoff is 55 seconds) and brings the overall intersection up to an acceptable level of service.

Table 27: Short Term Improvements at Route 26/Libby Hill Road/Hannaford Drive

		Libby Hill		Hannaford		SR26			SR26			
		EBL	EBTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	47.3	31.2	56.7	44.8	41.2	3.0	0.6	6.2	41.0	1.3	30.8
	LOS	D	C	E	D	D	A	A	A	D	A	C
	Queue (ft)	106	189	54	66	308	172	40	60	1598	173	N/A
PM Peak	Delay (s)	48.5	34.3	50.5	35.0	6.7	5.1	0.6	25.2	5.1	0.4	10.6
	LOS	D	C	D	C	A	A	A	C	A	A	B
	Queue (ft)	74	135	89	142	169	452	149	74	226	74	N/A

Table 28 compares the results of the proposed short term improvements (ST) for the AM and PM Peak Hours for the 2013 existing no-build (existing with no improvements), the 2013 existing year with short term improvements, and the 2035 future year with the short term improvements. It can be seen that while the improvements are significant and improve the existing flow of the intersection, as shown, conditions for the 2035 condition with the short term improvement degrade to failing levels of service.

Table 28: Year 2013 Comparison at Route 26/Libby Hill Road/Hannaford

		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	2013 Existing	D	C	E	A	D	A	A	B	F	A	D
	2013 ST	D	C	E	D	D	A	A	A	D	A	C
	2035 ST	D	D	D	D	E	A	A	A	F	A	E
PM Peak	2013 Existing	E	A	E	C	E	A	A	D	A	A	B
	2013 ST	D	C	D	C	A	A	A	C	A	A	B
	2035 ST	D	D	D	E	B	C	A	E	B	A	C

4.2.2 Route 26/North Raymond Road

At the Route 26/North Raymond Road intersection, several improvements will improve the safety and efficiency of the intersection including:

- Install traffic signals at North Raymond Road to facilitate the movement of vehicles to and from North Raymond Road;
- Construct formal dedicated left and right turn lanes on the North Raymond Road approach to Route 26;
- Construct a formal dedicated left-turn lane on northbound Route 26;
- Implement access management improvements
- Improve sight distance where possible

Conceptual plans for these proposed short-term improvements can be found in **Appendix J**, specifically on **Sheet 12a.** The level of service results (existing traffic volumes) following implementation of the improvements are shown in **Tables 29 and 30**. Please note that these do not see the effects of access management or sight distance improvements as that is beyond the capabilities of the modeling software.

Table 29 presents the level of service conclusion assuming the Route 26 and North Raymond Road intersection is signalized and the other improvements noted above are constructed. As noted in the table, a significant positive impact will result with the improvements as all movements will operate at acceptable levels of service.

Table 29: Short Term Improvements at Route 26/North Raymond Road

		N Raymond		SR26		SR26	
		EBL	EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	10.1	13.3	21.0	3.7	13.9	11.8
	LOS	B	B	C	A	B	B
	Queue (ft)	142	205	82	153	328	N/A
PM Peak	Delay (s)	21.1	8.1	18.7	1.7	16.9	10.9
	LOS	C	A	B	A	B	B
	Queue (ft)	64	83	269	271	297	N/A

Table 30 compares the results of the Short-Term improvements (ST) for the existing and future volumes. As with the improvements at Libby Hill Road, while the improvements are significant and improve the existing flow of the intersection (and safety), conditions for the 2035 condition with the short term improvement degrade to failing levels of service and more substantial long term improvements are necessary to improve the flow of traffic through the intersection.

Table 30: Year 2013 Comparison at Route 26/North Raymond Road

		N Raymond		SR26		SR26	
		EBL	EBR	NBL	NBT	SBTR	Overall
AM Peak	2013 Existing	F	D	A	A	A	E
	2013 Existing ST	B	B	C	A	B	B
	2035 Future ST	F	C	E	B	A	F
PM Peak	2013 Existing	F	B	A	C	A	F
	2013 Existing ST	C	A	B	A	B	B
	2035 Future ST	C	B	C	A	B	B

4.3 Long-Term Improvements to Route 26/North Raymond Road and Route 26/Weymouth Road

As the short term improvements do not address long-term traffic growth , even without the additional trips from the various scenarios, several improvement scenarios were evaluated. In order to evaluate the long term improvements individually as separate intersections, Synchro was used to develop the conceptual layouts.

The following tables are presented in order of increasing improvements required, first the No-Build scenario and what is required to bring the intersection up to an acceptable level of service, then Scenario Five and the improvements required as it yields the least trips, followed by Scenarios Four and Three and their required improvements.

4.3.1 Realigned/Signalized Four-Way Intersection

One of the options discussed for the corridor is to align the intersections of North Raymond Road and Weymouth Road so as to create a four-leg signalized intersection as shown conceptually on **Sheet 12, Appendix J**. The exact location of the intersection and alignment of the side roads requires further evaluation. **Table 31** summarizes what is required to make each scenario operate at acceptable levels in this four way combined intersection.

Table 31: Combined North Raymond and Weymouth Road Intersection Configuration

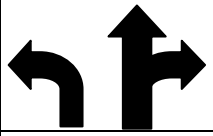
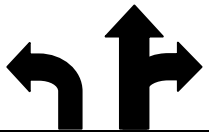
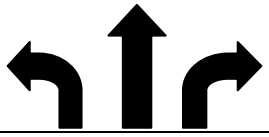
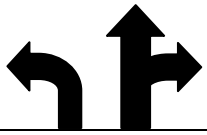
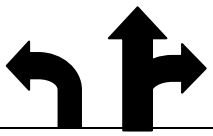
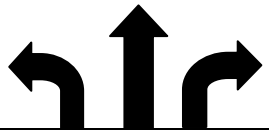
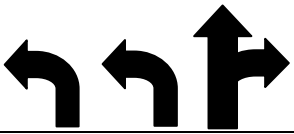
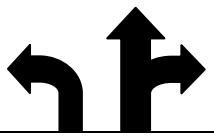
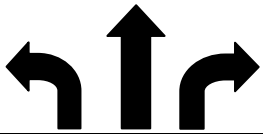
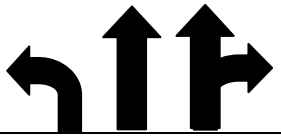
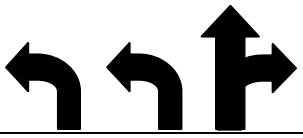
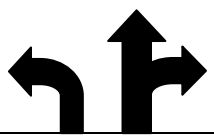
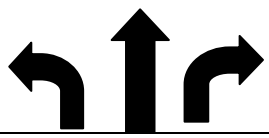
	Southbound	Northbound	Westbound	Eastbound
2035 No-Build				
2035 Scenario 5				
2035 Scenario 4				
2035 Scenario 3				

Table 32 shows the effect of the realignment of the North Raymond Road and Weymouth Road intersection under the 2035 No-Build traffic volume forecast. As noted, the intersection is projected to operate at acceptable levels of service during both peak hours. In order to do this, the intersection requires a left turn lane on all approaches with an additional channelized right lane on the eastbound North Raymond Road approach.

Table 32: 2035 No-Build Route 26/North Raymond Road/Weymouth Road (Signalized Four-Way intersection)											
		North Raymond			Weymouth		SR26		SR26		Overall
		EBL	EBT	EBR	WBL	WBTR	NBL	NBTR	SBL	SBTR	
AM Peak	Delay (s)	29.3	39.2	0.7	40.4	35.8	8.9	9.5	7.1	22.0	14.7
	LOS	C	D	A	D	D	A	A	A	C	B
	Queue (ft)	106	73	0	89	16	34	187	8	557	N/A
PM Peak	Delay (s)	42.3	40.5	16.0	47.3	34.4	51.8	24.1	10.8	39.2	34.1
	LOS	D	D	B	D	C	D	C	B	D	C
	Queue (ft)	83	25	69	144	52	576	853	10	479	N/A

Table 33 presents the realigned intersection under the Scenario Five volumes.

Table 33: 2035 Scenario Five Route 26/North Raymond Road/Weymouth Road (Signalized Four-Way intersection)											
		North Raymond			Weymouth		SR26		SR26		Overall
		EBL	EBT	EBR	WBL	WBTR	NBL	NBTR	SBL	SBTR	
AM Peak	Delay (s)	48.8	36.1	14.2	36.7	34.5	0.0	34.3	46.5	7.6	27.3
	LOS	D	D	B	D	C	A	C	D	A	C
	Queue (ft)	83	26	66	129	64	0	791	81	159	N/A
PM Peak	Delay (s)	44.6	39.6	14.1	34.1	34.5	44.9	31.8	52.3	40.1	35.5
	LOS	D	D	B	C	C	D	C	D	D	D
	Queue (ft)	93	53	71	174	90	316	886	41	479	N/A

Table 34 displays the effects of the Scenario Four trip generation on the realigned Route 26/North Raymond Road/Weymouth Road intersection. Above and beyond the Scenario Five requirements, additional trips generated by this scenario require a second through lane on southbound Route 26 and a second left turn lane northbound.

Table 34: Scenario Four Route 26/North Raymond Road/Weymouth Road (Signalized Four-Way intersection)											
		North Raymond			Weymouth		SR26		SR26		
		EBL	EBT	EBR	WBL	WBTR	NBL	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	28.5	46.4	26.9	49.9	33.0	44.6	49.0	10.9	10.5	41.5
	LOS	C	D	C	D	C	D	D	B	B	D
	Queue (ft)	66	29	131	239	57	283	993	7	42	N/A
PM Peak	Delay (s)	37.6	54.4	19.1	50.5	39.7	48.9	48.2	17.1	15.7	42.3
	LOS	D	D	B	D	D	D	D	B	B	D
	Queue (ft)	85	34	94	316	72	351	1472	11	74	N/A

Table 35 presents the results of the analysis for Scenario Three volumes where two through lanes are required for Route 26 northbound and southbound approaches. Side roads will remain as proposed in the previous scenarios.

Table 35: Scenario Three Route 26/North Raymond Road/Weymouth Road (Signalized Four-Way intersection)											
		North Raymond			Weymouth		SR26		SR26		
		EBL	EBT	EBR	WBL	WBTR	NBL	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	34.9	42.1	0.9	43.0	20.2	11.9	21.9	16.2	20.5	18.6
	LOS	C	D	A	D	C	B	C	B	C	B
	Queue (ft)	164	80	0	260	25	46	472	25	223	N/A
PM Peak	Delay (s)	0.0	42.9	12.6	48.6	13.6	37.4	1.4	12.9	9.6	23.6
	LOS	A	D	B	D	B	D	A	B	A	C
	Queue (ft)	0	83	63	310	56	709	30	35	131	N/A

4.3.2 Roundabout

As part of the long term alternatives, a roundabout was considered at the Route 26/North Raymond Road/Weymouth Road intersection. An analysis was performed for the 2035 No-Build traffic volume conditions, assuming a one lane roundabout, and using methods contained in the 2010 Highway Capacity Manual. The calculations can be found in **Appendix K** and the results following in **Table 36**. As a note, the v/c ratio shown in the summary table expresses the volume to capacity – a v/c ratio of 1.0 is completely maximized and indicates a failing condition while a v/c ratio of 0.0 indicates no vehicles present.

As can be seen, for the North Raymond Road/Weymouth Road intersection, while the one lane roundabout would operate acceptably in the AM Peak hour, the volumes in the PM Peak hour would cause the roundabout to fail for the Route 26 approaches. The roundabout would therefore be required to

be two lanes or a hybrid or both, and, due to the limited space, this alternative was not evaluated further for additional scenarios.

Table 36: Route 26/North Raymond Road/Weymouth Road (Single-lane Roundabout)

		North Raymond Rd	Weymouth Rd	SR26	
		Eastbound	Westbound	Northbound	Southbound
AM Peak	Delay (s)	2.6	5.9	7.4	13.7
	LOS	A	A	A	B
	v/c	0.33	0.01	0.37	0.67
PM Peak	Delay (s)	1.8	40.9	155.5	32.4
	LOS	A	E	F	D
	v/c	0.13	0.67	1.33	0.77

4.3.3 Triangle Alternative

A final option evaluated was to create a new four-way signalized intersection with North Raymond Road and Weymouth Road (with North Raymond Road under a new northerly alignment) while maintaining the existing North Raymond approach to Route 26, but prohibiting eastbound left-turn movements. A graphical image of this is shown in **Appendix J, Sheet 12b**. The exact location of the intersection and alignment of the side roads requires further evaluation. **Table 37** summarizes the layout required to have the proposed alternative operate at an acceptable level of service for each scenario.

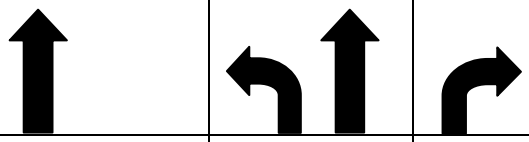
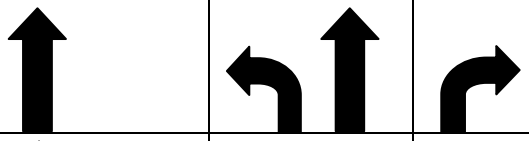
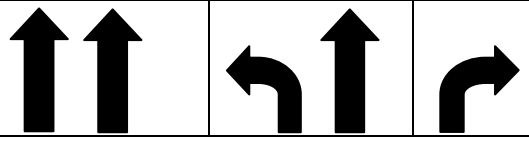
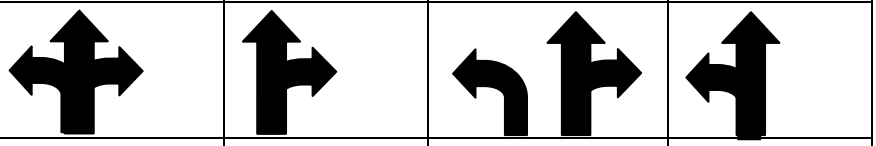
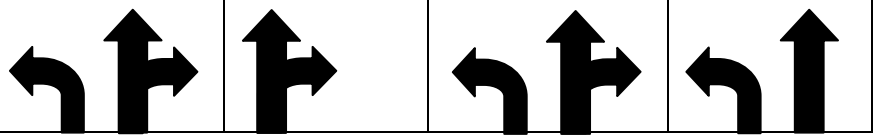
Table 37: Triangle Alternative Intersection Configuration				
	Intersection of North Raymond Road and Route 26			
	Southbound	Northbound	Eastbound	
2035 No-Build				
2035 Scenarios 4 and 5				
2035 Scenario 3				
	Intersection of Weymouth Road and Route 26			
	Southbound	Northbound	Westbound	Eastbound
2035 No-Build				
2035 Scenarios 3 - 5				

Table 38 illustrates the level of service results at the southerly North Raymond Road intersection under the No-Build condition. As noted the intersection is estimated to operate at an acceptable level of service. All approaches have one lane with the exception of the Route 26 northbound approach requiring a left turn lane.

Table 38: 2035 No-Build (Triangle Alternative) Route 26/North Raymond Road (South)						
		N Raymond	SR26		SR26	
		EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	37.5	0.4	0.3	18.2	20.4
	LOS	D	A	A	B	C
	Queue (ft)	343	0	0	405	N/A
PM Peak	Delay (s)	3.8	5.2	1.0	5.2	3.4
	LOS	A	A	A	A	A
	Queue (ft)	21	18	0	119	N/A

Table 39 illustrates the level of service results at northerly intersection of the Triangle alternative. All movements are projected to operate at acceptable levels of service. The westbound approach contains a left turn lane and all other approaches have single lanes.

Table 39: 2035 No-Build (Triangle Alternative) Route 26/North Raymond Road/Weymouth Road (North)						
		N Raymond/ Weymouth		SR26		Overall
		EBLTR	WBLTR	NBTR	SBLTR	
AM Peak	Delay (s)	29.8	23.0	4.7	8.6	11.4
	LOS	C	C	A	A	B
	Queue (ft)	107	58	82	243	N/A
PM Peak	Delay (s)	23.2	25.6	11.3	5.4	11.7
	LOS	C	C	B	A	B
	Queue (ft)	53	86	487	137	N/A

Table 40 illustrates the level of service results at the southerly North Raymond Road intersection under the Scenario Five volume condition. As noted the intersection is estimated to operate at an acceptable level of service. No additional improvements are required above those required for the No-Build condition.

Table 40: Scenario Five (Triangle Alternative) Route 26/North Raymond Road (South)						
		N Raymond	SR26		SR26	Overall
		EBR	NBL	NBT	SBTR	
AM Peak	Delay (s)	8.5	24.0	3.6	1.3	9.0
	LOS	A	C	A	A	A
	Queue (ft)	20	656	213	36	N/A
PM Peak	Delay (s)	38.9	2.7	1.6	7.1	12.5
	LOS	C	A	A	A	B
	Queue (ft)	230	139	68	0	N/A

Table 41 illustrates the level of service for Scenario Five results at northerly intersection of the Triangle alternative. This intersection requires the addition of left turn lanes in the southbound and eastbound directions in order to operate at an acceptable level of service. This is in addition to the westbound turn lane required by the No-Build condition.

Table 41: Scenario Five (Triangle Alternative) Route 26/North Raymond Road/Weymouth Road (North)									
		N Raymond/Weymouth				SR26			Overall
		EBL	EBTR	WBL	WBTR	NBTR	SBL	SBTR	
AM Peak	Delay (s)	45.6	38.9	33.5	37.6	35.7	44.1	7.3	29.6
	LOS	D	D	C	D	D	D	A	C
	Queue (ft)	81	27	131	67	817	72	156	N/A
PM Peak	Delay (s)	50.6	44.4	48.3	42.1	25.4	47.5	9.1	26.4
	LOS	D	D	D	D	C	D	A	C
	Queue (ft)	96	55	186	95	930	40	244	N/A

Table 42 illustrates the level of service results at the southerly North Raymond Road intersection for Scenario Four. As noted the intersection is estimated to operate at an acceptable level of service and no additional improvements are required.

Table 42: Scenario Four (Triangle Alternative) Route 26/North Raymond Road (South)						
		N Raymond	SR26		SR26	
		EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	49.8	13.2	0.3	53.7	39.3
	LOS	D	B	A	D	D
	Queue (ft)	452	53	0	589	N/A
PM Peak	Delay (s)	31.5	6.2	34.8	1.7	17.0
	LOS	C	A	C	A	B
	Queue (ft)	441	271	387	0	N/A

Table 43 illustrates the level of service results at northerly intersection of the Triangle alternative. All movements are projected to operate at acceptable levels of service with the improvement recommended previously in Scenario Five.

Table 43: Scenario Four (Triangle Alternative) Route 26/North Raymond Road/Weymouth Road (North)									
		N Raymond/Weymouth				SR26			Overall
		EBL	EBTR	WBL	WBTR	NBTR	SBL	SBTR	
AM Peak	Delay (s)	26.0	37.6	42.2	29.9	11.9	8.4	17.2	19.7
	LOS	C	D	D	C	B	A	B	B
	Queue (ft)	99	69	132	16	246	11	536	N/A
PM Peak	Delay (s)	37.4	46.0	52.8	35.6	35.1	7.3	4.7	34.4
	LOS	D	D	D	D	D	A	A	C
	Queue (ft)	68	30	248	59	1158	8	66	N/A

Table 44 illustrates the level of service results at the southerly North Raymond Road intersection under the Scenario Three volume condition. As noted in the table, the intersection is estimated to operate at an acceptable level of service. In order to do this, an additional Route 26 southbound through lane is required.

Table 44: Scenario Three (Triangle Alternative) Route 26/North Raymond Road (South)						
		N Raymond	SR26		SR26	
		EBR	NBL	NBT	SBTR	Overall
AM Peak	Delay (s)	0.9	0.6	21.4	31.4	16.9
	LOS	A	A	C	C	B
	Queue (ft)	6	0	249	398	N/A
PM Peak	Delay (s)	9.5	20.1	7.1	14.2	12.3
	LOS	A	C	A	B	B
	Queue (ft)	73	328	466	461	NA

Table 45 illustrates the level of service results at northerly intersection of the Triangle alternative under Scenario Three. An additional Route 26 northbound through lane is required for movements to operate acceptably.

Table 45: Scenario Three (Triangle Alternative) Route 26/North Raymond Road/Weymouth Road (North)									
		N Raymond/Weymouth				SR26			Overall
		EBL	EBTR	WBL	WBTR	NBTR	SBL	SBTR	
AM Peak	Delay (s)	34.6	37.8	53.5	17.4	21.0	10.3	19.9	26.0
	LOS	C	D	D	B	C	B	B	C
	Queue (ft)	151	69	269	22	512	18	486	N/A
PM Peak	Delay (s)	0.0	38.1	46.9	11.5	20.3	11.8	15.8	23.4
	LOS	A	D	D	B	C	B	B	C
	Queue (ft)	0	76	283	50	418	33	352	N/A

Based upon the evaluation of the alternatives previously summarized for this area, the Triangle Alternative provides the best traffic operational benefit and is more easily implemented as a second phase to the Short-term improvements identified.

4.4 Long-Term Improvements to Route 26/Libby Hill Road/Hannaford: Capacity Expansion

As was shown previously in the 2035 No-Build analysis (**Section 4.2**), the levels of service at the Route 26/Libby Hill Road/Hannaford Drive intersection will fail without further improvements - even when the short term improvements are implemented. This section addresses the improvements required at the Route 26/Libby Hill Road/Hannaford intersection in order to address capacity needs for each of the scenarios, No-Build, Scenario Five, Four, and Three.

Table 46 notes the level of service for the 2035 No-Build condition. In addition to the short term improvements previously noted in **Section 4.2**, a second through lane in the southbound direction will be required.

Table 46: 2035 No-Build Route 26/Libby Hill Road/Hannaford												
		Libby Hill		Hannaford		SR26			SR26			
		EB LT	EB R	WB LT	WB R	NB L	NB T	NBR	SB L	SB T	SB R	Overall
AM Peak	Delay (s)	47.7	18.7	45.5	50.9	37.7	8.0	1.0	8.9	34.9	2.6	27.3
	LOS	D	B	D	D	D	A	A	A	C	A	C
	Queue (ft)	89	69	45	71	316	189	8	11	562	28	N/A
PM Peak	Delay (s)	53.6	39.6	50.9	32.3	4.6	40.4	0.4	12.3	8.5	0.7	27.2
	LOS	D	D	D	C	A	D	A	B	A	A	C
	Queue (ft)	89	122	75	143	25	1005	1	13	121	7	N/A

Table 47 contains the results of the Scenario Five improvements required at Libby Hill Road. These improvements require a second northbound through lane (in addition to the SB lane required in the No-Build condition) in order for the intersection to operate acceptably with the additional trips.

Table 47: Scenario Five Route 26/Libby Hill Road/Hannaford												
		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	26.4	23.8	26.0	19.2	10.4	20.1	1.2	19.1	17.9	1.6	17.8
	LOS	C	C	C	B	B	C	A	B	B	A	B
	Queue (ft)	84	107	68	87	69	418	20	46	246	11	N/A
PM Peak	Delay (s)	32.0	12.5	34.9	17.0	40.1	21.9	1.4	27.6	21.7	3.2	20.8
	LOS	C	B	C	B	D	C	A	C	C	A	C
	Queue (ft)	82	65	89	96	193	471	19	58	224	24	N/A

Table 48 presents the results of the Route 26/Libby Hill Road/Hannaford intersection with the addition of the trips generated by Scenario Four. No additional improvements above those required for Scenario Five are necessary to make the intersection operate at an acceptable level of service.

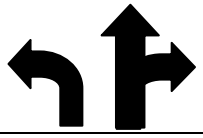
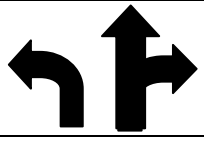
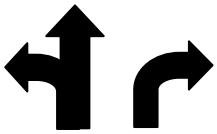
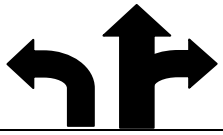
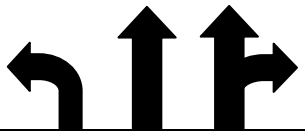
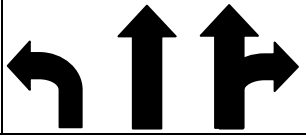
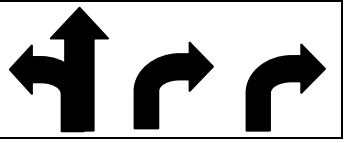
Table 48: Scenario Four Route 26/Libby Hill Road/Hannaford												
		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	31.5	18.0	29.2	28.8	35.0	35.9	1.1	25.8	31.8	2.0	30.0
	LOS	C	B	C	C	C	D	A	C	C	A	C
	Queue (ft)	100	86	102	125	215	820	21	71	562	20	N/A
PM Peak	Delay (s)	34.9	18.7	35.1	37.8	42.5	31.6	1.0	34.5	27.6	2.1	28.6
	LOS	D	B	D	D	D	C	A	C	C	A	C
	Queue (ft)	114	94	116	155	257	848	20	66	506	22	N/A

Scenario Three requires no additional improvements and as shown in **Table 49** operates acceptably with the increased trips potentially produced by the proposed land uses.

Table 49: Scenario Three Route 26/Libby Hill Road/Hannaford												
		Libby Hill		Hannaford		SR26			SR26			
		EBLT	EBR	WBLT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Overall
AM Peak	Delay (s)	51.2	36.0	43.0	45.7	45.4	3.4	0.1	12.0	52.5	1.3	33.1
	LOS	D	D	D	D	D	A	A	B	D	A	C
	Queue (ft)	91	145	61	111	314	88	0	27	802	18	N/A
PM Peak	Delay (s)	34.2	38.3	52.7	26.9	47.3	54.0	0.6	50.8	26.1	1.1	39.7
	LOS	C	D	D	C	D	D	A	D	C	A	D
	Queue (ft)	86	127	260	166	203	882	12	70	476	11	N/A

4.5 Long-Term Improvements to Route 26/Route 26A/Grover's Pit: Capacity Expansion

Several improvements are required in order to increase the capacity at the Route 26/Route 26A/Grover's Pit intersection. There are no changes recommended for the Route 26/26A intersection in the 2035 No-Build Year. **Table 50** summarizing the required intersection layout and a summary of the Synchro results follows. It should be noted that the addition of traffic from the development scenarios triggers the need for a signal at this intersection.

Table 50: Route 26 and 26A Intersection Configuration			
	Southbound	Northbound	Eastbound
2035 No-Build			
2035 Scenarios 4 and 5			
2035 Scenario 3			

While it is noted in **Table 51** that the westbound left-through approach shows failing levels of service, these movements have less than 10 cars each and thus upgrades for a such minor volume of vehicles is not recommended for this scenario. In addition, the eastbound movement should be an entrance only and delays at this approach do not require remediation. Finally, the PM Peak shows a failing level of service for the free channelized right turn lane. It is believed that the modeling may not be estimating the delay correctly, and that this movement will operate at an acceptable level of service, thus the overall level of service is expected to be acceptable.

Table 51: 2035 No-Build Route 26 and Route 26A								
		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	742.6	907.0	19.2	0.0	11.1	0.0	11.2
	LOS	F	F	C	A	B	A	B
	Queue (ft)	28	48	110	0	69	0	N/A
PM Peak	Delay (s)	0.0	502.5	502.5	0.0	15.3	0.0	129.8
	LOS	A	F	F	A	B	A	F
	Queue (ft)	0	1116	1116	0	71	0	N/A

The addition of a northbound through lane is required to make this intersection operate at an acceptable level with Scenario Five traffic volumes. With the addition of a traffic signal at this location the intersection operates well for all movements. The result of this is seen in **Table 49**.

Table 52: Scenario Five Route 26 and Route 26A								
		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	0.0	48.2	0.9	24.6	42.5	1.0	16.8
	LOS	A	D	A	C	D	A	B
	Queue (ft)	0	25	0	998	440	81	N/A
PM Peak	Delay (s)	0.0	32.7	1.7	23.8	23.0	1.1	13.2
	LOS	A	C	A	C	C	A	B
	Queue (ft)	0	20	0	327	452	68	N/A

Table 53 contains the results for the Scenario Four analysis of the signalized intersection at Route 26/26A. No additional improvements are required for this Scenario above and beyond Scenario Five.

Table 53: Scenario Four Route 26 and Route 26A								
		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	0.0	53.0	1.9	37.7	38.5	1.6	21.1
	LOS	A	D	A	D	D	A	C
	Queue (ft)	0	26	0	703	778	159	N/A
PM Peak	Delay (s)	0.0	48.2	1.9	34.3	39.2	1.6	20.0
	LOS	A	D	A	C	D	A	C
	Queue (ft)	0	25	0	646	738	151	N/A

Table 54 contains the results of the Scenario Three analysis of the signalized intersection at Route 26/26A. An additional eastbound right is required.

Table 54: Scenario Three Route 26 and Route 26A								
		Grover's Pit	SR26		SR26A	SR26		
		EBLTR	WBLT	WBR	NBTR	SBL	SBTR	Overall
AM Peak	Delay (s)	44.5	45.1	1.5	31.2	27.7	5.6	15.4
	LOS	D	D	A	C	C	A	B
	Queue (ft)	13	20	0	304	158	173	N/A
PM Peak	Delay (s)	0.0	54.8	2.4	30.4	54.7	1.9	20.8
	LOS	A	D	A	C	D	A	C
	Queue (ft)	0	25	0	733	730	195	N/A

From these analysis results, a draft set of plans was put together in **Appendix J** for preliminary discussion purposes.

A roundabout was examined conceptually at this location. Based upon use of the Highway Capacity Manual methods, a two-lane roundabout would operate at failing conditions in 2035. The key capacity constraint is the conflict between heavy southbound left turning vehicles and northbound Route 26 through vehicles.

4.6 Long Term General Route 26 Corridor Improvements

4.6.1 Roadway Cross-Section

Between Libby Hill Road and North Raymond Road the long-term improvements plan is recommended to provide a three-lane section, where one travel lane would be provided in each direction and a center lane would be available for left-turn movements. The key trigger for when this change would be required will be a function of development activity within the corridor and increase in turning traffic onto and off of Route 26, although it should be noted that the development proposed in Scenario Three would trigger a 5 lane section as previously noted. The concept improvement graphics illustrate **(Appendix J)** the recommended three-lane section within the corridor. As graphically noted, the center lane would transition into dedicated left-turn lanes at the planned major development intersections.

4.6.2 Bicycle Facility Provisions

Route 26 serves local and regional bicycle travel needs and as such adequate facilities are suggested. It is suggested that for the corridor a minimum of 5-foot paved shoulders be provided. Although these may not be necessarily signed and marked as a formal bicycle lane, the shoulder width is considered to be a safe facility. In addition to the general needs for shoulder space, intersections that are being improved should be cognizant of bicycle mode needs and therefore may include special facility design. For example, to avoid right-turning vehicle conflicts, it may beneficial to mark a bicycle lane between a through lane and a dedicated right-turn lane.

It should be noted that the 2013 Gray Maine Bicycle-Pedestrian Plan identified recommendations for this study area and these strategies should be considered as improvements are considered. Specifically, the Plan recommended that coordination occur with town staff to insure bicycle and pedestrian elements are incorporated whenever possible into large development projects. When Route 26 is rebuilt/resurfaced,

extend the pavement to the outside edge of each shoulder, as the varied height of the current roadway poses hazards for bicyclists.

4.6.3 Pedestrian Facilities

Given the mixed land-use nature of the area and particularly the proximity of schools within the study area, sidewalks should be provided. In the short-term a sidewalk should be considered along the east side of Route 26 linking the Fairview Drive neighborhood with the Hannaford Supermarket and the traffic signal, so that a safe crossing to the school can be accomplished. As future development occurs the provision of sidewalks and how they would integrate into the existing sidewalk system should be considered. Additionally, all intersection improvements should consider crosswalks and pedestrian signal control.

It should be noted that the 2013 Gray Maine Bicycle-Pedestrian Plan identified recommendations for this study area and these strategies should be considered as improvements are considered. Specifically, the Plan recommended the following:

- Proposed sidewalk link on Libby Hill Road from existing sidewalk on north side of Libby Hill Road to Middle School .

- Proposed sidewalk link along Libby Hill Road from the intersection of Shaker Road extending to the Middle School along the south side.

- Hannaford – Proposed sidewalk link from the short existing sidewalk adjacent to Hannaford entrance, extending north on Shaker Road to Fairview Avenue - east side.

- Hannaford/Schools- extending sidewalk from Route 26 at Libby Hill Road to the intersection with Fairview Avenue along west side.

- North Raymond Road- sidewalk and/or expanded shoulders beginning at the intersection of Shaker Road/Route 26 and extending along North Raymond Road to the intersection with Mayberry Road. Extend shoulders along N. Raymond to create safer access to Egypt Road intersection is preferred. (This stretch of road is especially busy during the summer when people are using Wilkie's Beach).

- Schools/Libby Hill Recreation/Hannaford Area- Install a signalized crosswalk across Route 26 adjacent to Pine Drive to insure safer access to pedestrians using trail to reach schools and Libby Hill.

4.6.4 Connector Roads and Access Management

The Scenario Land Use plans include the provision of connector roads. These connector roads provide several benefits including:

- Allowing for inter-parcel connectivity, thus reducing unnecessary use of Route 26.
- Allowing traffic direct access to a development destination, for motorist originating from outside the area again minimizing impacts to Route 26. An example of this would be provision of a roadway connecting North Raymond Road to development towards the south. This provision will reduce the traffic loading on the Route 26/North Raymond Road intersection.
- Spreads traffic volumes so volumes are not concentrated at a single location.

MaineDOT conducted a traffic evaluation of corridor conditions as it relates to determining the number of major new intersections that would be allowed between Libby Hill Road and North Raymond Road. Assuming two major intersections between Libby Hill Road and North Raymond Road, 40 mph progression speed (at the posted speed) would be attainable with traffic signals. This assumed 80-second cycle lengths and intersection spacing of approximately 0.44 mile (2300 feet). Accordingly, two major intersections would be permitted between Libby Hill Road and North Raymond Road.

5.0 Public Outreach Meetings

During the initial evaluation and development of the land use alternatives and corridor improvements, two public meetings were held. The first meeting, a public workshop, was held on February 25, 2014 at the Gray Town Hall. The second meeting, a public meeting, was held on May 14, 2014 also at the Gray Town Hall. Located on the Town of Gray Website (http://www.graymaine.org/projects-planning/pages/route-26-corridor), a video from each meeting can be viewed. In addition, the presentation slides from the May 24 public meeting are available in PDF format. A DVD of this information is included with the deliverables provided to MaineDOT.

A summary of the posted agenda from the first public meeting is located below:
February 25, 2014 Public Meeting

- Introductions
- Project Purpose and Goals and Objectives
- Transportation Study
  - ✓ General Scope of Work
  - ✓ Existing Conditions Analysis
- Overview of Potential Development Scenarios
  - ✓ Land Use
  - ✓ Transportation
  - ✓ Schedule / Next Steps
- Public Comments

At this public meeting workshop, Scenarios One, Two, and Three were presented to the public along with a summary of the existing traffic conditions analysis highlighting existing transportation facility deficiencies. From this meeting, Scenarios Four and Five were developed, producing a smaller volume of trips generated.

A second public meeting was held three months later, presenting the newly produced Scenarios Four and Five for comment along with a future conditions analysis. Draft improvement needs required to make background growth and Scenarios Three, Four and Five operate successfully in the future 2035 year were presented to the public. A summary of the agenda is located below:

May 14, 2014 Public Meeting

- Introductions
- Study Purpose and Goals and Objectives
- Overview of Potential Development Scenarios
- Transportation Study
  - ✓ General Scope of Work
  - ✓ Existing Conditions Analysis
  - ✓ Future Conditions Analysis
  - ✓ Draft Improvement Needs
- Schedule / Next Steps
- Public Comments

From this meeting, this document, the draft final report was produced.