

Act 209

Roadway Sufficiency Analysis Report

Prepared for
FORKS TOWNSHIP
Northampton County, Pennsylvania



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INTRODUCTION

On behalf of Forks Township, Northampton County, Pennsylvania, this Roadway Sufficiency Analysis report was prepared in accordance with Pennsylvania Act 209 of December 19, 1990 (as amended) which allows municipalities to develop transportation impact fees to assist with the costs of necessary capital improvement projects due to increased development within the Township. According to Act 209, impact fees may be used for costs incurred for offsite improvements designated in the Transportation Capital Improvement Plan that are attributable to new development. However, the municipality still has the power to require onsite improvements for new development of subdivisions in accordance with the municipal subdivision and land development ordinance.

Forks Township appointed an Act 209 Traffic Impact Advisory Committee that assisted in developing land use assumptions for the determination of future growth and development within the Township for the preparation of this Roadway Sufficiency Analysis. As stipulated in Act 209, the Board of Supervisors may periodically review the capital improvements and impact fee charges and make recommendations for revisions based on the following:

1. New subsequent development which has occurred in the Township;
2. Construction of capital improvements contained in the capital improvements plan have been completed;
3. Unavoidable delays in the construction of capital improvements contained in the plan beyond the responsibility of control of the Township;
4. Significant changes in the land use assumptions;
5. Significant changes in the estimated costs of the proposed transportation capital improvements;
6. Significant changes in the projected revenue from all sources listed that is needed for the construction of the transportation capital improvements.

This initial report serves as the basis for establishing the impact fee through adoption of a Transportation Impact Fee Ordinance that would be assessed on new developments on a per trip (PM peak period) basis.

Land Use Assumptions Report

The Forks Township Impact Fee Advisory Committee approved the *Land Use Assumptions Report March 2022*, prepared by Gilmore & Associates, Inc. (G&A), at the March 31, 2022 public hearing. Further, the Board of Supervisors accepted the report through adoption of a municipal resolution on *4-7-2022*.

The *Land Use Assumptions Report March 2022* identified a short-term projection of potential development that is likely to occur before the end of 2040. For residential development, the study reviewed two methods to determine the number of residential units that may be needed to accommodate growth in the Township: population driven model and building-driven model. The population driven model calculated the number of housing units needed to meet the population projection provided by the Lehigh Valley Planning Commission (LVPC). This methodology resulted in a projection of 802 housing units needed by 2030 and 1,614 housing units needed by 2040. The building-driven model is based on if every parcel were to be developed to the maximum density permitted under each zoning district. The methodology resulted in a projection of 2,234 potential housing units. The Act 209 advisory committee reviewed both methodologies and determined that the building driven model should be used to depict the anticipated future development within the Township.

Similarly, the *Land Use Assumptions Report March 2022* identified the short-term projection for potential non-residential development based on the amount of developable land utilizing current zoning. Commercial developments are expected along the Sullivan Trail (SR 2025) corridor, as well along Uhler Road (SR 1009) and Kessler'sville Road (SR 1002). The report identified approximately 7.5 million square

feet of non-residential building area within the Township. **Table 1** summarizes the development projections from the *Land Use Assumptions Report March 2022*.

**Table 1: Land Use Assumptions Report
2040 Development Summary**

Land Use Classification	Development Projection
Residential	2,234 dwelling units
Non-Residential	7,462,818 square feet

Transportation Service Area

A transportation service area (TSA) is a portion of the municipality that has an area with development potential that may necessitate transportation improvements that can be funded by impact fees. In accordance with Act 209, a TSA may not exceed 7 square miles. Therefore, the transportation service area is just less than a total of 7.0 square miles and includes the major arterials within the Township, as well as other roadways that will be impacted by future development. The transportation service area is shown on **Figure 1**.

EXISTING CONDITIONS

Forks Township, Northampton County has a total area of approximately 12.2 square miles and is bordered by the City of Easton and the Delaware River. The principal routes include Sullivan Trail (SR 2025) traversing the Township in a north/south direction and Uhler Road (SR 1002) which is situated in a general east/west direction.

Manual turning movement counts were conducted at 27 intersections during the PM peak period (4:00 p.m. to 6:00 p.m.). The four highest consecutive 15-minute periods constitute the peak hour which was used for the analysis. The traffic counts are provided in **Appendix A**.

Average daily traffic volumes were obtained from PennDOT's Traffic Information Repository (TIRe) for the state routes and are summarized in **Table 2**. The TIRe data is contained in **Appendix B**.

Table 2: Existing Transportation Network

Roadway Name	Classification	Ownership	Posted Speed Limit (MPH)	ADT
North Delaware Drive (SR 0611)	Minor Arterial	State	45	4,506
Uhler Road (SR 1002)	Minor Arterial	State	45	9,708
Kessler'sville Road (SR 1009)	Major Collector	State	25	2,868
Bushkill Drive (SR 2019)	Major Collector	State	45	7,345
Richmond Road (SR 2021)	Minor Collector	State	45	2,120
Sullivan Trail (SR 2025) Uhler Road to Township Line	Minor Arterial	State	40	8,966
Sullivan Trail (SR 2025) Meco Road to Uhler Road	Minor Arterial	State	45	7,414
Sullivan Trail/Knox Avenue (SR 2025) Meco Road to Township Line	Minor Arterial	State	35	14,271
Zucksville Road (SR 2036)	Local Road	State	35	4,573
Frost Hollow Road (SR 2038)	Local Road	State	35	645
Church Lane (T621)	Local Road	Township	35	--
East Braden Blvd	Local Road	Township	Not posted	--
Padula Road (T625)	Local Road	Township	25	--
Kuebler Road (T792)	Local Road	Township	25	--
Glover Road (T524)	Local Road	Township	25	--
Newlins Road (T499)	Local Road	Township	25	--
Broadway Road (T526)	Local Road	Township	30	--
Danser Hill Road (T500)	Local Road	Township	25	--
Kessler'sville Road (T839)	Local Road	Township	25	--
Meco Road (T623)	Local Road	Township	35	--
Old River Road (T532)	Local Road	Township	Not posted	--
Rensselaer Avenue	Private Road	Private	35	--
Town Center Boulevard (T905)	Local Road	Township	25	--
Austin Drive	Private Road	Private	Not posted	--
Old Mill Road (T519)	Local Road	Township	25	--
West Paxinosa Drive (T782)	Local Road	Township	25	--
Paxinosa Road (T517)	Local Road	Township	25	--

Table 3 below categorizes each intersection evaluated for the study.

Table 3: Study Intersections

Int.	East/West Approach	North/South Approach	Traffic Control
1	Church Lane	Sullivan Trail (SR 2025)	Stop-controlled
2	Church Lane	Kessler'sville Road (SR 1009)	Stop-controlled
3	Uhler Road (SR 1002)	Bushkill Drive (SR 2019)	Signalized
4	Uhler Road (SR 1002)	Sullivan Trail (SR 2025)	Signalized
5	Uhler Road (SR 1002)	Kessler'sville Road (SR 1009)	Signalized
6	Uhler Road (SR 1002)	East Braden Boulevard	Stop-controlled
7	Padula Road	Richmond Road (SR 2021)	Stop-controlled
8	Kuebler Road	Kessler'sville Road (SR 1009)	Stop-controlled
9	Glover Road	Richmond Road (SR 2021)	Stop-controlled
10	Newlins Road W	Richmond Road (SR 2021)	Stop-controlled
11	Newlins Road W	Broadway Road	Stop-controlled
12	Danser Hill Road	N. Delaware Drive (SR 0611)	Stop-controlled
13	Newlins Road W	Bushkill Drive (SR 2019)	Stop-controlled
14	Newlins Road W (westbound)	Sullivan Trail (SR 2025)	Stop-controlled
15	Newlins Road W (eastbound)	Sullivan Trail (SR 2025)	Stop-controlled
16	Kessler'sville Road	Bushkill Drive (SR 2019)	Stop-controlled
17	Kessler'sville Road	Sullivan Trail (SR 2025)	Stop-controlled
18	Meco Road	Sullivan Trail (SR 2025)	Signalized
19	Frost Hollow Road (SR 2038)	Old River Road	Stop-controlled
20	Frost Hollow Road (SR 2038)	N. Delaware Drive (SR 0611)	Stop-controlled
21	Zucksville Road (SR 2036)	Bushkill Drive (SR 2019)	Stop-controlled
22	Zucksville Road (SR 2036)/ Rensselaer Avenue	Sullivan Trail (SR 2025)	Signalized
23	Town Center Boulevard/ Austin Drive	Sullivan Trail (SR 2025)	Signalized
24	Old Mill Road/Sullivan Trail	Knox Avenue/ Sullivan Trail (SR 2025)	Signalized
25	Old Mill Road	Town Center Boulevard	Stop-controlled
26	Paxinosa Road W	Knox Avenue (SR 2025)	Stop-controlled
27	Paxinosa Road E	Richmond Road (SR 2021)/ Sullivan Trail	Stop-controlled

Existing Level of Service

The manual turning movement traffic counts were projected to the existing year (2021) by using a background growth rate of 0.52% per year, which was obtained from the Bureau of Planning and Research, Growth Factors for August 2021 to July 2022. These traffic volumes were used to conduct a detailed level of service analysis, in accordance with procedures outlined in the *Highway Capacity Manual*, the industry standard for capacity calculations. These procedures are described in detail in **Appendix C** for both signalized and unsignalized intersections. The existing year volumes are shown on **Figure 2**. Results of the analysis are summarized on **Table 4** and on **Figure 3**.

Table 4: Level of Service

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Sullivan Trail (SR 2025) and Church Lane							
EB	LTR	C		C		F	B
WB	LTR	C		C		F	C
NB	L	A		A		A	A
	TR	-		-		-	
SB	L	A		A		A	A
	TR	-		-		-	
Overall		A		A		F	A
Kesslersville Road (SR 1009) and Church Lane							
EB	LR	B		B		E	B
NB	L	A		B		B	B
Overall		A		A		A	A
Uhler Road (SR 1002) and Bushkill Road (SR 2019)							
EB	L	A		B		D	B
	TR			C		F	C
WB	L	A		B		C	B
	TR			A		F	A
NB	LT	C		C		D	C
	R	B		C		D	C
SB	LTR	C		C		D	C
Overall		B		B		F	B
Uhler Road (SR 1002) and Sullivan Trail (SR 2025)							
EB	L	C		D		F	D
	T						C
	R						C
WB	L	C		C		F	C
	TR						D
NB	L	C		D		F	D
	T	B		D		F	D
	R						C
SB	L	B		C		C	D
	T	B		D		C	D
	R			C		B	D
Overall		B		D		F	D

Table 4: Level of Service (cont.)

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Uhler Road (SR 1002) and Kesslersville Road (SR 1009)							
EB	L	A		B		F	B
	T						C
	R						B
WB	L	A		A		F	C
	T						C
	R						C
NB	LTR	B		B		B	B
SB	LTR	B		B		C	C
Overall		A		B		F	C
Uhler Road (SR 1002) and Braden Boulevard / Private Driveway							
EB	L	A		A		A	A
	TR	-		-		-	B
WB	L	A		A		B	A
	TR	-		-		-	A
NB	LT	B		B		F	C
	R	A		A		B	A
SB	LTR	A		A		A	A
Overall		A		A		E	B
Padula Road and Richmond Road (SR 2021)							
EB	LR	A		A		B	
NB	L	A		A		A	
Overall		A		A		A	
Kuebler Road / Private Driveway and Kesslersville Road (SR 1009)							
EB	LTR	A		A		A	
WB	LTR	B		B		D	
NB	L	A		A		A	
SB	L	A		A		A	
Overall		A		A		A	
Glover Road and Richmond Road (SR 2021)							
EB	LR	A		A		B	
NB	L	A		A		A	
Overall		A		A		A	

Table 4: Level of Service (cont.)

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Newlins Road and Richmond Road (SR 2021)							
EB	LTR	B		B		E	B
WB	LTR	B		B		D	B
NB	L	A		A		A	C
	TR	-		-		-	
SB	L	A		A		A	D
	TR	-		-		-	
Overall		A		A		B	C
Newlins Road and Broadway Road							
EB	LR	A		A		A	
NB	L	A		A		A	
Overall		A		A		A	
Danser Hill Road and North Delaware Drive (SR 0611)							
WB	LR	A		A		A	
NB	L	A		A		A	
Overall		A		A		A	
Newlins Road and Bushkill Drive (SR 2019)							
WB	LR	B		B		D	
SB	L	A		A		A	
Overall		A		A		A	
Newlins Road W and Sullivan Trail (SR 2025)							
WB	LR	B		D		F	
SB	L	A		B		B	
Overall		A		A		F	
Newlins Road W and Sullivan Trail (SR 2025)							
EB	LR	D		E	C	D	
NB	L	A		B	A	F	
	T	-		-			
SB	TR	-		-	A	F	
Overall		A		A	B	F	

Table 4: Level of Service (cont.)

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Newlins Road W & Sullivan Trail (SR 2025) – new realigned intersection							
EB	L						D
	TR						C
WB	L						D
	TR						C
NB	L						C
	T						C
	R						A
SB	L						B
	T						C
	R						B
Overall							C
Kesslersville Road and Bushkill Drive (SR 2019)							
WB	LR	C		C		D	
SB	L	A		A		A	
Overall		A		A		A	
Kesslersville Road (SR 1009) and Sullivan Trail (SR 2025)							
EB	LTR	C	C	C		C	C
WB	LTR	E	C	C		D	D
NB	L	A	A	A		F	A
	T						A
	R						A
SB	LTR	B	A	A		B	B
Overall		A	A	A		D	B
Meco Road and Sullivan Trail (SR 2025)							
EB	L	D		D		C	D
	TR	D		D		C	E
WB	L	D		D		E	D
	TR	D		D		C	D
NB	L	A		A		D	B
	TR	A		A		B	C
SB	L	A		B		C	C
	T	A		A		F	B
	R						B
Overall		B		B		C	C

Table 4: Level of Service (cont.)

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Frost Hollow Road and Old River Road							
EB	L	A		A		A	
SB	LR	A		A		A	
Overall		A		A		A	
Frost Hollow Road and North Delaware Drive (SR 0611)							
EB	LTR	B		B		B	
WB	LTR	A		A		A	
NB	L	A		A		A	
SB	L	A		A		A	
Overall		A		A		A	
Zucksville Road (SR 2036) and Bushkill Drive (SR 2019)							
WB	LR	F	B	B		C	B
NB	T		B	B		C	B
	R						A
SB	L	B	A	B		F	B
	T	-					B
Overall		C	B	B		F	B
Zucksville Road (SR 2036) / Rensselaer Avenue and Sullivan Trail (SR 2036)							
EB	L	C		C		D	D
	T	C		C		C	D
	R						C
WB	L	C		C		C	D
	TR	C		C		C	E
NB	L	B		B		F	B
	T	A		A		F	C
SB	L	B		B		F	B
	T	A		B		F	A
	R						A
Overall		B		B		F	C

Table 4: Level of Service (cont.)

Approach	Move- ment	2021 Existing	2021 Existing Improved	2040 Pass Through	2040 Pass Through Improved	2040 Developed	2040 Developed Improved
Town Center Boulevard / Austin Drive and Sullivan Trail (SR 2025)							
EB	LT	C		D		F	C
	R	C		C		C	C
WB	LTR	C		C		C	D
NB	L	A		B		B	D
	TR	A		A		A	C
SB	L	B		B		B	D
	T	B		B		F	D
Overall		B		B		F	C
Old Mill Road / Sullivan Trail and Knox Avenue (SR 2025) / Sullivan Trail (SR 2025)							
EB	LTR	C		C		C	D
WB	LTR	C		C		C	D
NB	L	A		A		B	B
	TR	B		B		F	C
SB	L	A		A		B	B
	TR	A		A		A	A
Overall		A		B		C	B
Old Mill Road and Town Center Boulevard							
EB	L	A		A		B	C
	T	-		-		-	
WB	TR	-		-		-	A
SB	L	C		C		F	B
	R	B		B		B	D
Overall		A		A		A	C
Paxinosa Road W / Private Driveway and Knox Avenue (SR 2025)							
EB	LTR	D		D		F	C
WB	LTR	A		A		F	C
NB	L	A		A		B	A
	TR	-		-		-	
SB	L	A		A		B	A
	TR	-		-		-	
Overall		A		A		E	A
Paxinosa Road E / Private Driveway and Sullivan Trail / Richmond Road (SR 2021)							
EB	LTR	A		A		A	
WB	LTR	B		B		B	
NB	L	A		A		A	
SB	L	A		A		A	
Overall		A		A		A	

Preferred Level of Service

In accordance with the Act 209, the Transportation Impact Fee Advisory Committee established the preferred level of service (LOS) for intersections within the TSA. If an intersection operates below the preferred level of service, the intersection must be improved to minimally meet the preferred standards. The preferred level of service may be waived for a particular road segment or intersection if the municipality finds that improvements cannot be made due to geometric design limitation, topographic limitations or the unavailability of the necessary right-of-way. **Table 5** shows the preferred LOS established by the Transportation Impact Fee Advisory Committee.

Table 5: Preferred Level of Service

Intersection Type	Preferred Level of Service	
Signalized	D	All movements
	D	Overall intersection
Unsignalized	D	Critical movements

Mitigation of Existing Conditions

The Existing 2021 PM peak hour traffic volumes were analyzed at each of the study intersections to determine the levels of service. The results were compared to the preferred level of service identified for signalized and unsignalized intersections to understand the extent of any required improvements. Of the 27 intersections that were analyzed under the existing conditions, two intersections either did not meet the preferred level of service or can be improved with low impact improvements, as described below.

Sullivan Trail (SR 2025) and Kesslerville Road (SR 1009)

While the overall level of service is an A, the individual intersection movements do not meet the preferred LOS criteria and could be improved by converting the stop-controlled intersection to a signalized intersection. There is insufficient data to know whether a traffic signal would be warranted. However, the available data does satisfy the criteria for Warrant Two, the four-hour vehicular volume warrant. A traffic signal at this location would reduce the delay on the westbound approach of Kesslerville Road (SR 1009), which is currently stop-controlled. The level of service of the westbound approach would improve from a LOS E to a C.

Bushkill Drive (SR 2019) and Zucksville Road (SR 2036)

The existing T-intersection of Bushkill Drive (SR 2019) and Zucksville Road (SR 2036) is stop-controlled along the Zucksville Road approach. This movement experiences a level of service F. To mitigate this movement to the preferred level of service criteria, a traffic signal could be installed which would improve the LOS for the westbound movement from a LOS F to a B.

FUTURE PASS-THROUGH CONDITIONS

In accordance with the Act 209 legislation, the Transportation Capital Improvements Plan should utilize a minimum 5-year projection of future conditions. To be consistent with the LUAR, the future year of 2040 was analyzed.

Future Pass-Through Traffic

Pass-through traffic is regional traffic that passes through the TSA to and from external destinations. The traffic utilizes portions of the study area roadways and needs to be included in the intersection analyses. Pass-through traffic is determined by identifying significant known future development within Forks Township that is outside of the TSA, as well as within neighboring municipalities, that will contribute to an increase in volume on the study area roadways. The following development is included within the pass-through traffic:

- Chrin Lot 4 Development (345,504 square feet manufacturing / 337,770 square feet warehousing)

The trip generation information for the development is extracted from the traffic study and is provided in **Appendix D**. The trips are distributed through the TSA, as noted on the volume spreadsheets in **Appendix E**. Additionally, an annual growth rate of 0.52% per year is applied to the existing 2021 traffic volumes to project to Year 2040 to account for the regional traffic growth. The Future 2040 Pass-Through volumes are indicated on **Figure 4**.

Future Pass-Through Level of Service Analysis

The Future 2040 Pass-Through volumes shown on **Figure 4** are subjected to a detailed level of service analysis, in accordance with the procedures described in **Appendix C** to identify forecasted deficiencies created by the pass-through trips due to regional growth outside of the Transportation Service Area. The Future Pass-Through analysis includes the mitigation of the existing 2021 conditions. The detailed results of the analysis are provided in **Appendix F** and summarized in **Table 4** and on **Figure 5A**.

Mitigation of Future Pass-Through Conditions

The Future Pass-Through PM peak hour traffic volumes were analyzed at each of the study intersections to determine the levels of service. The results were compared to the preferred level of service identified for signalized and unsignalized intersections to understand the extent of any required improvements. Of the 27 intersections that were analyzed, one intersection either did not meet the preferred level of service or can be improved with low impact improvements, as described below.

Newlins Road West and Sullivan Trail (SR 2025)

The existing T- intersection of West Newlins Road and Sullivan Trail (SR 2025) is stop-controlled along the eastbound approach. This movement experiences a level of service E. To mitigate this movement to the preferred level of service criteria, a traffic signal could be installed which would improve the eastbound movement from LOS E to LOS C.

FUTURE DEVELOPMENT CONDITIONS

A large portion of the future traffic within the TSA is the traffic generated by developments proposed within Forks Township. Information regarding the proposed developments is provided in **Appendix G**. The following future proposed developments were identified in the *Land Use Assumptions Report March 2022* and by the Township within the TSA:

Residential

- Pheasant Ridge V (50 proposed single family dwelling units)
- Sullivan Park Apartments (102 approved multifamily dwelling units)
- Lafayette Hills at Bushkill (216 proposed attached and detached single family dwelling units)
- Riverview Estates – Phase VI (108 proposed multifamily dwelling units)
- Riverview Estates – Phase V (72 proposed single family dwelling units)

Non-Residential

- Accredited Dermatology (1,600 square feet of approved office)
- Daniels Sharpsmart, Inc. (18,700 square feet of approved manufacturing)
- Crafted Landscaping Corporation (6,900 square feet of approved retail)

- Follett Building Expansion (90,344 square feet of approved manufacturing)
- Padula Road Distribution Center (213,900 square feet of approved warehousing)
- Sullivan Trail Land Development Drive-Thru (7,500 square feet of approved restaurant)
- 600 Kuebler Redevelopment (220,100 square feet of proposed warehousing)
- Glover Commercial Development (160,000 square feet of proposed industrial space)
- Gnap Development Richmond Rd (10,000 square feet of proposed warehousing)
- Leader of the Pack Canine (26,125 square feet of proposed veterinarian office space)
- Lot 6 Conroy Place (55,000 square feet of proposed manufacturing)
- Posh Properties (10,000 square feet proposed mixed-used development)

In addition to the developments that are either under construction or under review, there are numerous vacant parcels identified within the *Land Use Assumptions Report March 2022* that can be developed. The maximum number of PM trips that can be generated for each parcel is described in the following section.

Transportation Service Area Development Trip Generation

Based on residential and non-residential development projections identified in the *Land Use Assumptions Report March 2022*, the anticipated trip generation was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. The PM peak hour trips are summarized on **Table 6**.

Table 6: Transportation Service Area Trip Generation Summary

Land Use Description	Land Use Code (LUC)	Independent Variable	Weekday PM Peak Trips		
			In	Out	Total
Industrial Park	130	1,544,651 SF	116	409	525
Manufacturing	140	397,297 SF	91	203	294
Warehousing	150	4,342,175 SF	230	606	826
Single-Family Detached	210	1357 Units	802	474	1276
Single-Family Attached	215	72 Units	22	17	39
Multifamily Housing (MR)	221	1321 Units	328	208	536
Nursery Garden Center	817	6,900 SF	24	24	48
Shopping Center	820	250,898 SF	473	518	991
Strip Retail Plaza (<40K)	822	31,332 SF	68	68	136
Fast Casual Restaurant	930	1,400 SF	17	12	29
High Turnover Restaurant	932	15,610	49	31	80
Coffee/Donut Shop	937	1,994 SF	21	21	42
Dog Kennels	--	26,125 SF	6	9	15
Total			2247	2590	4837

Future Development Trip Distribution

Future Development traffic consists of the traffic generated by developments within the Township that are proposed but not yet constructed and will utilize study area roadways. The trip generation volume in **Table 6** were distributed through the study area intersections based on the existing travel trends.

identified from the existing traffic count information. The trip distribution and resultant volumes are summarized in the volume worksheet in **Appendix H**. The resultant Future Development volumes are shown on **Figure 7**.

Future Development Level of Service Analysis

The Future 2040 Development volumes shown on **Figure 7** were subjected to a detailed level of service analysis in accordance with the procedures described in **Appendix C** to identify forecasted deficiencies created by the future development trips. The Future Development analysis includes the mitigation improvements from both the Existing 2021 and Future Pass-Through conditions. The detailed results of the analysis are provided in **Appendix F** and summarized in **Table 4** and on **Figure 8A**.

Mitigation of Future Development Conditions

The Future Development PM peak hour traffic volumes were analyzed at each of the study intersections to determine the levels of service. The results were compared to the preferred level of service identified for signalized and unsignalized intersections to understand the extent of any required improvements.

The Uhler Road (SR 1002) corridor between the western township line and Kessler'sville Road (SR 1009) will require significant mitigation to accommodate the expected increase in traffic. Increasing the cross section of the corridor from two to four lanes will alleviate the congestion during the PM peak hours. This corridor is critical as the population and residential homes increase. It is expected that many will access Pennsylvania Route 33 via the interchange in Palmer Township through Tatamy Borough. Revisions to the signalized intersections along Uhler Road (SR 1002) will need to be completed.

Similarly, congestion along the Sullivan Trail (SR 2025) corridor, particularly in the Town Center district, will continue to rise. A four-lane section between Meco Road and Old Mill Road will alleviate this congestion, as this is the main artery between the residential neighborhoods and the commercial retail developments. Revisions to the traffic signal timings at all the existing signalized intersections will need to be completed.

Of the 27 intersections that were analyzed, 15 intersections either did not meet the preferred level of service or can be improved with low impact improvements, as described below.

Table 7: Mitigation Improvement Summary

Intersection	2021 Existing Conditions		2040 Pass-Through Conditions		2040 Future Development Conditions	
	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement
Church Lane & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Install traffic signal
Church Lane & Kesslersville Road (SR 1009)	No	N/A	No	N/A	Yes	Install northbound left turn lane; Install southbound right turn lane
Uhler Road (SR 1002) & Bushkill Drive (SR 2019)	No	N/A	No	N/A	Yes	Add a through lane in the eastbound and westbound directions; Modify traffic signal
Uhler Road (SR 1002) & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Add a through lane in the eastbound and westbound directions; Add a northbound left turn lane with a protected left turn phase; Install 150-ft northbound right turn lane; Modify traffic signal
Uhler Road (SR 1002) & Kesslersville Road (SR 1009)	No	N/A	No	N/A	Yes	Add a through lane in the eastbound and westbound directions; Install eastbound right turn lane; Install westbound left turn lane; Install westbound right turn lane; Modify traffic signal

Table 7: Mitigation Improvement Summary (cont.)

Intersection	2021 Existing Conditions		2040 Pass-Through Conditions		2040 Future Development Conditions	
	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement
Uhrer Road (SR 1002) & E Braden Boulevard	No	N/A	No	N/A	Yes	Install traffic signal
Padula Road & Richmond Road (SR 2021)	No	N/A	No	N/A	No	N/A
Kuebler Road & Kesslersville Road (SR 1009)	No	N/A	No	N/A	No	N/A
Glover Road & Richmond Road (SR 2021)	No	N/A	No	N/A	No	N/A
Newlins Road West & Richmond Road (SR 2021)	No	N/A	No	N/A	Yes	Install all-way stop control
Newlins Road West & Broadway Road	No	N/A	No	N/A	No	N/A
Danser Hill Road & N Delaware Drive (SR 0611)	No	N/A	No	N/A	No	N/A
Newlins Road W & Bushkill Drive (SR 2019)	No	N/A	No	N/A	No	N/A

Table 7: Mitigation Improvement Summary (cont.)

Intersection	2021 Existing Conditions		2040 Pass-Through Conditions		2040 Future Development Conditions	
	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement
Newlins Road W (westbound) & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Realign the offset approaches of Newlins Road West to be a standard four-leg intersection; Install eastbound and westbound left turn lanes; Install northbound left turn lane;
Newlins Road W (eastbound) & Sullivan Trail (SR 2025)	No	N/A	Yes	Install traffic signal	Yes	Install northbound right turn lane; Install southbound left turn lane; Install southbound right turn lane
Kesslersville Road & Bushkill Drive (SR 2019)	No	N/A	No	N/A	No	N/A
Kesslersville Road & Sullivan Trail (SR 2025)	Yes	Install traffic signal	No	N/A	Yes	Install northbound left turn lane; Install northbound right turn lane
Meco Road & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Add a through lane in the southbound direction; Add westbound left turn lane Modify traffic signal

Table 7: Mitigation Improvement Summary (cont.)

Intersection	2021 Existing Conditions		2040 Pass-Through Conditions		2040 Future Development Conditions	
	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement
Frost Hollow Road (SR 2038) & Old River Road	No	N/A	No	N/A	No	N/A
Frost Hollow Road (SR 2038) & N Delaware Drive (SR 0611)	No	N/A	No	N/A	No	N/A
Zucksville Road (SR 2036) & Bushkill Drive (SR 2019)	Yes	Install traffic signal	No	N/A	Yes	Install northbound right turn lane; Install southbound left turn lane
Zucksville Road (SR 2036) / Rensselaer Avenue & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Add through lane in the northbound and southbound direction; Install eastbound right turn lane; Modify traffic signal
Town Center Boulevard / Austin Drive & Sullivan Trail (SR 2025)	No	N/A	No	N/A	Yes	Add though lanes in the northbound and southbound directions;
Old Mill Road / Sullivan Trail & Knox Avenue / Sullivan Trail (SR 2025)	No	N/A	No	N/A	No	N/A

Table 7: Mitigation Improvement Summary (cont.)

Intersection	2021 Existing Conditions		2040 Pass-Through Conditions		2040 Future Development Conditions	
	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement	LOS Mitigation Required	Improvement
Old Mill Road & Town Center Boulevard	No	N/A	No	N/A	Yes	Install traffic signal
Paxinosa Drive W / Private Driveway & Knox Avenue (SR 2025)	No	N/A	No	N/A	Yes	Install traffic signal
Paxinosa Road E & Richmond Road (SR 2021) / Sullivan Trail	No	N/A	No	N/A	Yes	N/A

SUMMARY OF FINDINGS

This Roadway Sufficiency Analysis Report analyzed the roadway conditions at twenty-seven intersections within Forks Township to determine improvements necessary for the Existing, Future Pass-Through and Future Development scenarios to meet the preferred level of services at each location. This report was prepared as part of an effort to establish an appropriate Act 209 Transportation Impact Fee for new development within the Township.

The results of this analysis were used to prepare the Transportation Capital Improvements Plan that quantifies the probable costs for the identified improvements in order to calculate an impact fee that will fund capital improvement projects within the Township. Once approved by the Township via an impact fee ordinance, the fee can be assessed on new proposed developments based on the anticipated weekday afternoon peak hour trip generation and will assist with implementing off-site improvements.

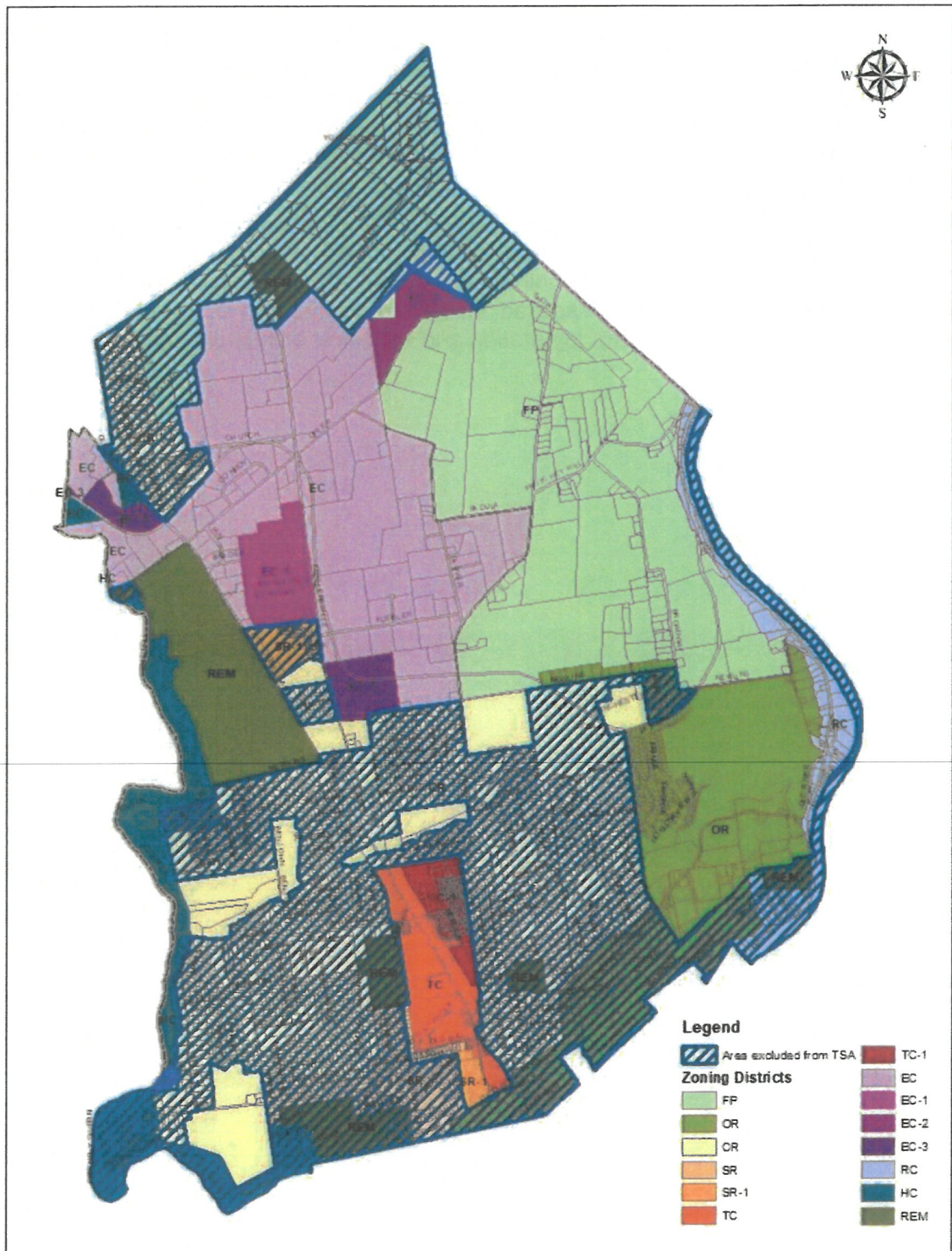


Figure 1: Transportation Service Area

