Appendix A

Sanitary Sewer Evaluation, Mapping and Historical Information

EXISTING SANITARY SEWER CAPACITY EVALUATION

FOR THE

SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

Situated In

South Fayette Township, Allegheny County, Pennsylvania

Prepared For

South Fayette Township
515 Millers Run Road
Morgan, Pennsylvania 15064

October 2010

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EXISTING SANITARY SEWER CAPACITY EVALUATION
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN
SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA

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EXISTING SANITARY SEWER CAPACITY EVALUATION
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN
SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA

Introduction

The purpose of this report is to document an evaluation of the available capacity in certain existing sanitary sewers located in South Fayette Township, Allegheny County, PA and to compare this available capacity with the capacity necessary to accommodate additional sewage infrastructure demand. Traffic Analysis Zones (TAZ's) 1, 2, 3, 4, 5, 6, 7, 8 and 9 on the attached map and the associated downstream sanitary sewers were the focus of this evaluation. Because TAZ's 10, 11, 12, 13, and 14 are almost entirely developed at this time, it was assumed for the purposes of this analysis that no additional sewage flow would be generated in these areas. The basis of this capacity analysis was the Allegheny County Sanitary Authority (ALCOSAN) provided Chartiers Creek Planning Basin Hydraulic and Hydrologic (H&H) Model.

Background

To facilitate meeting the objectives of their Consent Decree with the Department of Justice, the Environmental Protection Agency and the Pennsylvania Department of Environmental Protection, ALCOSAN divided their service area into seven planning basins. The area in question for potential land development is located within the Chartiers Creek Planning Basin (CCPB), specifically South Fayette Township. One of ALCOSAN's objectives was to construct an H&H Model of certain portions of their service area that reasonably replicated existing sewer conveyance system conditions observed during an extensive flow monitoring program undertaken by the region in 2008.

Fortunately, the ALCOSAN H&H Model for the CCPB included a significant portion of the sewer system located downstream of the areas identified for potential future development, which became the basis for this analysis. However, since the provided H&H Model did not extend completely into the areas of interest, the model was extended through the use of GIS information as provided by the Client as follows. The attached map (Appendix A) depicts the original H&H Model extents (purple lines), the areas

where the model was extended (orange lines) and the remaining sanitary sewer lines not included in the model (green lines).

Flow monitoring data was available from the 2008 regional flow monitoring program for ALCOSAN's Basin Planner in development of this H&H Model.

Evaluation Methodology

The purpose of this evaluation is to determine available capacity, or lack thereof, in sanitary sewers located downstream of potential development areas. Typically during dry weather, sanitary sewer systems are more than capable of conveying observed sewage flows. However, during periods of wet weather, certain systems can become induced with an influx of flow that can cause basement backups and/or overtopping manholes. Therefore, for this analysis, the ALCOSAN provided H&H Model, modified as described above, was simulated under certain wet weather design conditions. A 2-year, 24-hour SCS Type II design storm during a summer period and the same design storm return frequency utilizing a locally developed rainfall distribution during a winter period was utilized.

Sewage flow is made up of three components: 1) Base Wastewater Flow (BWWF), i.e. sewage; 2) Groundwater Infiltration (GWI); and 3) Rainfall Dependent Inflow/Infiltration (RDII). Throughout the year BWWF remains fairly constant while both GWI and RDII fluctuate seasonally. This seasonal fluctuation in GWI and RDII can have a significant impact on observed peak flow rates. Therefore, it is typical for any design storm analysis to be performed during both a winter and summer period to account for this fluctuation.

The existing sanitary sewer system was analyzed by estimating existing flows in areas where the model was extended based on meter data and relative sewershed sizes (see below). Potential additional infrastructure impacts were then added to this model and the model was run to determine the impact of additional loading on the sewer systems.

Estimating Existing Flows

Because the ALCOSAN model and flow data were not prepared with the intent of analyzing sanitary sewers for future potential development, it is necessary to make some adjustments to the model and flow information. Specifically, in many cases the flow meters are placed such that they record flow from large sewersheds incorporating several smaller sewersheds. In some cases, in order to analyze the sanitary sewer systems in a more discrete manner relative to potential development areas, it is necessary to divide flow logically into smaller sewersheds. This was done by comparing the aggregate quantity of inch-miles (diameter of pipes multiplied by length of pipe) in a given subshed with the total number of inch-miles in the meter sewershed. For instance, if a subshed contains 20 inch-miles of sewers and the entire sewershed contains 100 inch-miles of sewers, then it is reasonable to estimate that the subshed represents 20% of the total flow from the sewershed.

Refer to Appendix B – Estimates of Existing Sanitary Sewer Loading for Sewer Subsheds for a summary of the estimated flow percentages based on this methodology.

Estimating Additional Infrastructure Demand

The next task in completing this analysis is to add estimated additional infrastructure demand to the model to determine if existing pipes have capacity. The potential additional infrastructure demand from both potential residential and potential commercial/industrial development was estimated by Environmental Planning & Design, LLC (EPD) for fourteen (14) different Traffic Analysis Zones (TAZ's) based on land use, zoning, and other considerations. Because the TAZ boundaries were based on traffic analysis, in most cases portions of a particular TAZ drain into a sewer subshed that originates in an adjacent TAZ. Because of this, it is necessary to divide the potential infrastructure demands based on sewer subsheds. This was done by comparing the area of a particular subshed with the total area of the TAZ. For instance, if a portion of a TAZ draining to a particular subshed contains 200 acres of land and the entire TAZ consists of 1,000 acres, then it is reasonable to estimate that the potential additional infrastructure

demand generated by the subshed area represents 20% of the total potential additional infrastructure demand for the TAZ.

Refer to Appendix C – Estimates of Potential Sanitary Sewer Infrastructure Demand for Sewer Subsheds for a summary of the potential additional infrastructure demands based on this methodology and the total TAZ infrastructure demands provided by EPD.

Evaluating Pipe Capacities

In order to evaluation pipe capacities and determine if the existing sewer system is adequate to accommodate existing and potential flow, three steps were taken. First, the existing pipe capacities (full flow capacity) were calculated using the Mannings Equation based on pipe material, slope, and pipe diameter. Next, the sewage flow was determined using the H&H model. In order to estimate total flow without any surcharge or backing up of the sewer system (no pressure flow), the pipes in the model extents were artificially increased in size to allow all flows to pass through the system by gravity only. Finally, required pipe diameters were determined using the Mannings Equation based on the slopes of the existing pipes, assuming that in most cases that where an increase of sewer size is required, the new sewer would be replaced in a similar alignment to the existing sewers. In addition, where it was necessary to increase the size of a particular pipe segment, but downstream segments could technically remain a smaller size (due to steeper slope), all downstream pipe segments were increased in size. This was done in accordance with sound engineering practice—larger pipes should not flow into smaller ones. Reference the Sanitary Sewer Pipe Capacity Analysis spreadsheets included in Appendix D for detailed calculations.

Results and Potential Improvements Required

Following is a summary of results for each sanitary sewer subshed included in this analysis, as well as a general description of the type and extent of improvements necessary to accommodate the potential additional infrastructure demand produced by complete development within the subshed. Detailed results for specific pipes can be found in Appendix D.

Oakdale Lift Station Tributary Interceptor

This sewer receives flow from sewer subshed areas 1A, 1B, 1C, 1D, 2A, and 2B, as well as surrounding municipalities. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 1,700 LF of 48" sewer, 3,700 LF of 36" sewer, 800 LF of 30" sewer, 6,400 LF of 27" sewer, 1,900 LF of 24" sewer

Thoms Run Interceptor

This sewer receives flow from sewer subshed area 2D and North Fayette Township. Based on this evaluation, no improvements are needed to accommodate potential additional infrastructure demands.

Sygan Hollow Interceptor

This sewer receives flow from sewer subshed areas 2C, 2E, 2F, 6A, 7A, and 7B. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, most of the sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 1,350 LF of 18" sewer, 3,700 LF of 15" sewer, 3,400 LF of 12" sewer

Morgan Hollow Interceptor

This sewer receives flow from sewer subshed area 6B. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 650 LF of 15" sewer, 1,500 LF of 12" sewer

Dolphin Run Interceptor

This sewer receives flow from sewer subshed areas 4A and 5A. Based on this evaluation, no improvements are needed to accommodate potential additional infrastructure demands.

Fishing Run Interceptor

This sewer receives flow from sewer subshed area 4B. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 10,000 LF of 18" sewer, 800 LF of 15" sewer, 3,000 LF of 12" sewer

Millers Run Interceptor

This sewer receives flow from the Sygan Hollow, Morgan Hollow, Dolphin Run, and Fishing Run Interceptors as well as from adjacent sewer subshed areas 2G, 3B, 3C, 4C, 4D, 4E, 6C, 6D, 7C, 8, 9D, 9E, 9F, 9G, and 9H. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 8,900 LF of 42" sewer, 8,700 LF of 36" sewer, 1,300 LF of 30" sewer, 4,250 LF of 24" sewer, 2,500 LF of 18" sewer, 400 LF of 15" sewer

Unnamed Tributary to Coal Run Interceptor (between Bowman Rd. and Alpine Rd.)

This sewer receives flow from sewer subshed area 9B. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 4,600 LF of 15" sewer

Unnamed Tributary to Coal Run Interceptor (Alpine Rd.)

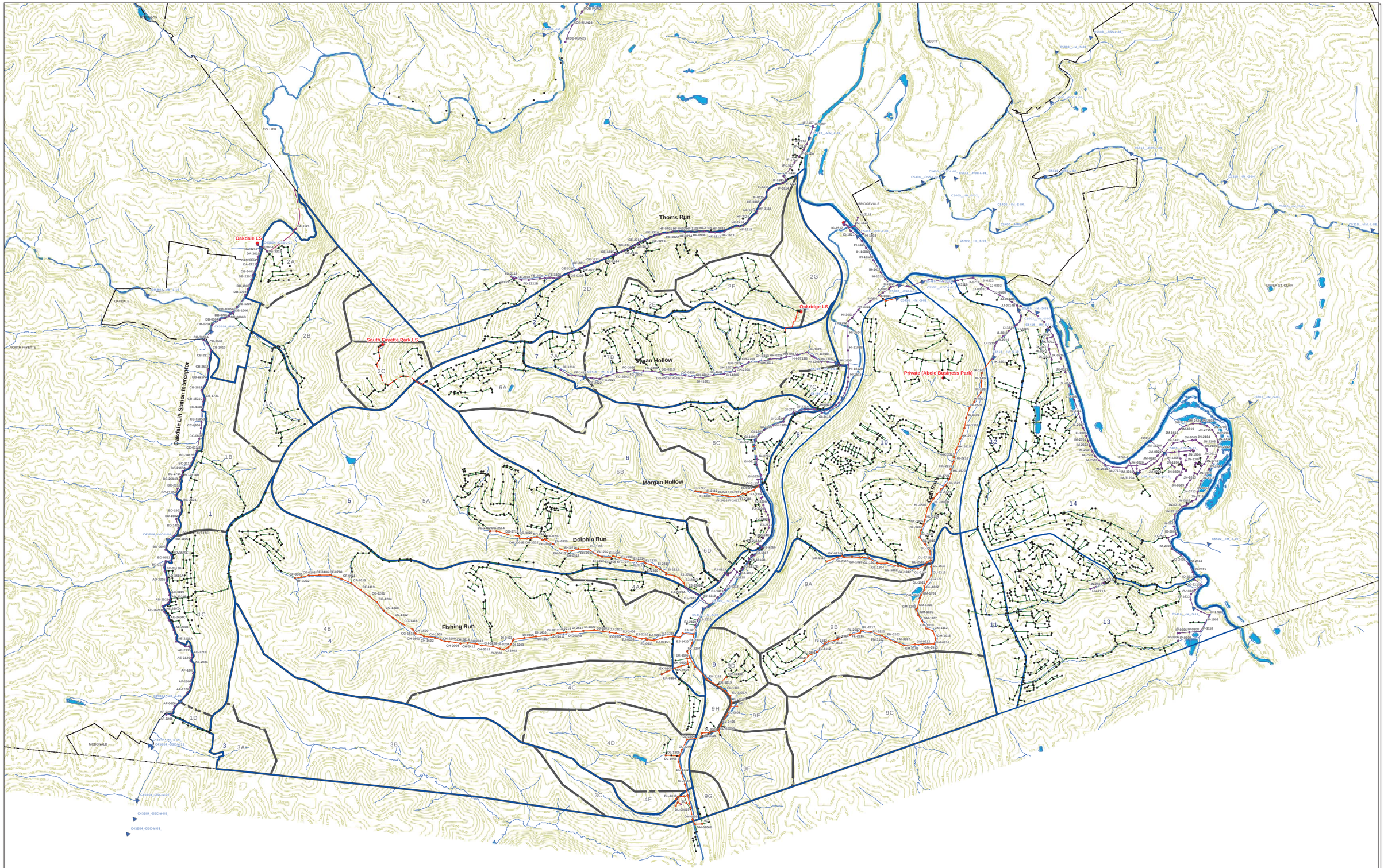
This sewer receives flow from sewer subshed area 9A. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 3,200 LF of 10" sewer

Coal Run Interceptor

This sewer receives flow from the two unnamed tributary interceptors noted above, from developed areas in TAZ 10 and 12, and from sewer subshed area 9C. To accommodate potential additional infrastructure demand without surcharging the interceptor sewer, the entire sewer interceptor would need to be increased in size. The approximate lengths and sizes of sewer required are as follows: 3,100 LF of 21" sewer, 10,100 LF of 18" sewer, 400 LF of 12" sewer

APPENDIX A

SEWERSHED ANALYSIS AREAS
AND MODEL EXTENTS



Sources:
Sewer System: South Fayette Township Municipal Authority (SFMA)
Existing Model Information: South Fayette Township Municipal Authority
Added Model Info: Added by LSSE based on SFMA information
Meter Locations: Added by LSSE based on SFMA information
Traffic Analysis Zones: Environmental Planning and Design, LLC (EPD)
Sewer Subsheds: Created by LSSE based on TAZ's and topography

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Sewershed Analysis Areas and Model Extents
South Fayette Township Comprehensive Plan

0 500 1,000 2,000 3,000 4,000 5,000 Feet
1 inch = 1,000 feet

Sewer Service
- 3RWW Flow Monitor Points

InterceptorStructures

ModelExten
- CCPB Model Extents
- LSSE Added
- SFT_SEWER_MANHOLES

InterceptorLines

ModelExten
- CCPB Model Extents
- LSSE Added
- Pump Stations
- Sewer Lines
- Force Mains
- Traffic Analysis Zones (TAZ's)
- Sanitary Sewer Subsheds

APPENDIX B

ESTIMATES OF EXISTING
SANITARY SEWER LOADING FOR
SEWER SUBSHEDS

SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN
ESTIMATES OF EXISTING SANITARY SEWER
LOADING FOR SEWER SUBSHEDS

Meter	Subshed Area No.	Inch-Miles of Sewers in Area	% of Total Inch-Miles (Estimated % of Flow)
C5416_-IM_-S-10_	9A	28.450	23.15%
	9B	18.617	15.15%
	10	75.802	61.69%
	Total	122.869	100.00%

Meter	Downstream MH No.	Inch-Miles of Sewers in Area	% of Total Inch-Miles (Estimated % of Flow)
C5416_-IM_-S-07_	EK-1801B	70.751	70.55%
	EK-1206	9.872	9.84%
	EK-1219	9.092	9.07%
	DL-2007	2.170	2.16%
	DL-1319A	1.890	1.88%
	DM-1806B(1)	2.380	2.37%
	DM1806B	2.097	2.09%
	All Other Pipes	2.039	2.03%
	Total	100.290	100.00%

Meter	Downstream MH No.	Inch-Miles of Sewers in Area	% of Total Inch-Miles (Estimated % of Flow)
C5416_-IM_-S-05_	GI-0910A	12.229	17.91%
	GI-0121B	6.438	9.43%
	FJ-1017C	9.301	13.62%
	All Other Pipes	40.300	59.03%
	Total	68.268	100.00%

APPENDIX C

ESTIMATES OF POTENTIAL
SANITARY SEWER
INFRASTRUCTURE DEMAND FOR
SEWER SUBSHEDS

SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN
ESTIMATES OF ADDITIONAL SANITARY SEWER LOADING

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
1	1A	163	23.80%
	1B	244	35.62%
	1C	262	38.25%
	1D	16	2.34%
	Total	685	100.00%

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
2	2A	123	9.08%
	2B	271	20.00%
	2C	128	9.45%
	2D	495	36.53%
	2E	44	3.25%
	2F	164	12.10%
	2G	130	9.59%
	Total	1,355	100.00%

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
3	3A	83	8.96%
	3B	745	80.45%
	3C	98	10.58%
	Total	926	100.00%

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
4	4A	60	2.82%
	4B	1,411	66.24%
	4C	341	16.01%
	4D	283	13.29%
	4E	35	1.64%
	Total	2,130	100.00%

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
5	5A	1,207	100.00%
	Total	1,207	100.00%

SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN
ESTIMATES OF ADDITIONAL SANITARY SEWER LOADING

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
6	6A	231	21.47%
	6B	569	52.88%
	6C	242	22.49%
	6D	34	3.16%
	Total	1,076	100.00%

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
7	7A	72	11.76%
	7B	540	88.24%
	Total	612	100.00%

Comments: Area 7C (approx. 53 acres) excluded from calculations and total area as this area is currently fully developed.

TAZ Area	Subshed Area No.	Area of Subshed (Acres)	% of Total TAZ Area (Estimated % of Demand)
9	9A	236	15.52%
	9B	474	31.16%
	9C	464	30.51%
	9D	93	6.11%
	9E	60	3.94%
	9F	163	10.72%
	9G	31	2.04%
	Total	1,521	100.00%

Comments: Area 9H (approx. 29 acres) excluded from calculations and total area as this area is currently fully developed.

APPENDIX D

SANITARY SEWER PIPE CAPACITY ANALYSIS SPREADSHEETS

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS								REQUIRED SEWER SIZES					
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (MGD)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (MGD)	Full Flow Cap. (GPD)
OAKDALE LIFT STATION TRIBUTARY SEWER INTERCEPTOR																				
DA-3019	DA-3019	DA-3217B	882.42	881.72	323.988	0.22%	24	0.013	10.6	3.4	6.8	6,826,415	16,020,000	YES	48	0.013	67.2	5.4	43.4	43,445,300
DA-2820A	DA-2820A	DA-3019	883.09	882.42	217.8	0.31%	24	0.013	12.6	4.0	8.2	8,151,569	16,020,000	YES	48	0.013	80.3	6.4	51.9	51,878,963
DA-2721	DA-2721	DA-2820A	883.36	883.09	163.166	0.17%	24	0.013	9.2	2.9	6.0	5,966,337	16,020,000	YES	48	0.013	58.8	4.7	38.0	37,971,513
DB-2401	DB-2401	DA-2721	883.79	883.36	263.358	0.16%	24	0.013	9.2	2.9	5.9	5,930,068	16,010,000	YES	48	0.013	58.4	4.6	37.7	37,740,681
DB-2302	DB-2302	DB-2401	884.19	883.79	183.829	0.22%	24	0.013	10.6	3.4	6.9	6,857,946	15,130,000	YES	48	0.013	67.5	5.4	43.6	43,645,972
DB-1903	DB-1903	DB-2302	884.6	884.19	344.026	0.12%	24	0.013	7.8	2.5	5.1	5,066,865	15,130,000	YES	48	0.013	49.9	4.0	32.2	32,247,007
DB-1704	DB-1704	DB-1903	884.55	884.48	223.838	0.03%	24	0.013	4.0	1.3	2.6	2,586,108	15,120,000	YES	48	0.013	25.5	2.0	16.5	16,458,747
DB-1205	DB-1205	DB-1704	885.56	884.55	505.498	0.20%	24	0.013	10.2	3.2	6.6	6,568,721	15,110,000	YES	36	0.013	30.0	4.2	19.4	19,392,978
DB-1005A	DB-1005A	DB-1205	886.08	885.56	222.605	0.23%	24	0.013	11.0	3.5	7.1	7,105,158	15,100,000	YES	36	0.013	32.5	4.6	21.0	20,976,713
DB-0905A	DB-0905A	DB-1005A	887.15	886.08	103.183	1.04%	24	0.013	23.1	7.4	15.0	14,957,369	11,710,000	NO	36	0.013	68.3	9.7	44.2	44,158,964
Unknown	Unknown	DB-0705	890	889.9	71.925	0.14%	18	0.013	3.9	2.2	2.5	2,540,311	7,023,000	YES	36	0.013	25.0	3.5	16.2	16,167,278
DB-0705	DB-0705	DB-0806B	888.74	887.96	150.41	0.52%	18	0.013	7.6	4.3	4.9	4,908,662	7,024,000	YES	36	0.013	48.3	6.8	31.2	31,240,155
CB-3008	CB-3008	CB-3006A	893.59	892.37	172.161	0.71%	18	0.013	8.9	5.0	5.7	5,737,234	7,021,000	YES	36	0.013	56.5	8.0	36.5	36,513,429
DB-0504	DB-0504	Unknown	890.15	890	104.717	0.14%	18	0.013	4.0	2.3	2.6	2,576,603	7,020,000	YES	36	0.013	25.4	3.6	16.4	16,398,251
DB-0806B	DB-0806B	DB-0905A	887.96	887.53	102.961	0.42%	18	0.013	6.8	3.9	4.4	4,405,219	7,026,000	YES	36	0.013	43.4	6.1	28.0	28,036,103
DB-0204	DB-0204	DB-0504	890.7	890.15	330.542	0.17%	18	0.013	4.3	2.4	2.8	2,776,089	7,015,000	YES	36	0.013	27.3	3.9	17.7	17,667,844
CB-3405	CB-3405	DB-0204	891.02	890.7	226.804	0.14%	18	0.013	4.0	2.2	2.6	2,558,521	7,009,000	YES	36	0.013	25.2	3.6	16.3	16,283,174
CB-3006A	CB-3006A	CB-3405	891.72	891.02	394.504	0.18%	18	0.013	4.4	2.5	2.9	2,866,593	7,006,000	YES	36	0.013	28.2	4.0	18.2	18,243,835
CB-3010	CB-3010	CB-3008	894.37	893.59	262.038	0.30%	18	0.013	5.8	3.3	3.7	3,719,526	7,030,000	YES	36	0.013	36.6	5.2	23.7	23,672,146
CB-2812	CB-2812	CB-3010	895.44	894.37	276.1	0.39%	18	0.013	6.6	3.7	4.2	4,244,194	7,040,000	YES	36	0.013	41.8	5.9	27.0	27,011,292
CB-2514	CB-2514	CB-2812	897.09	895.44	389.672	0.42%	18	0.013	6.9	3.9	4.4	4,431,488	7,047,000	YES	36	0.013	43.6	6.2	28.2	28,203,284
CB-2217A	CB-2217A	CB-2514	897.26	897.09	376.392	0.05%	18	0.013	2.2	1.3	1.4	1,445,392	7,051,000	YES	36	0.013	14.2	2.0	9.2	9,198,897
CB-1818	CB-1818	CB-2217A	901.16	897.26	393.517	0.99%	18	0.013	10.5	5.9	6.8	6,782,913	7,053,000	YES	30	0.013	41.1	8.4	26.5	26,530,926
CB-1721	CB-1721	CB-1818	902.79	901.16	298.467	0.55%	18	0.013	7.8	4.4	5.0	5,034,725	7,049,000	YES	30	0.013	30.5	6.2	19.7	19,693,001
CB-1621C	CB-1621C	CB-1721	902.88	902.79	102.108	0.09%	18	0.013	3.1	1.8	2.0	2,021,253	7,046,000	YES	30	0.013	12.2	2.5	7.9	7,906,002
CC-1402	CC-1402	CB-1621C	903.46	902.88	284.286	0.20%	18	0.013	4.8	2.7	3.1	3,077,475	7,040,000	YES	27	0.013	14.1	3.5	9.1	9,085,695
CC-1105B	CC-1105B	CC-1402	904.34	903.46	123.518	0.71%	18	0.013	8.9	5.0	5.7	5,749,359	7,035,000	YES	27	0.013	26.3	6.6	17.0	16,973,956
CC-0906	CC-0906	CC-1105B	904.76	904.34	208.081	0.20%	18	0.013	4.7	2.7	3.1	3,062,352	6,722,000	YES	27	0.013	14.0	3.5	9.0	9,041,048
CC-0608	CC-0608	CC-0906	905.96	904.76	380.742	0.32%	18	0.013	5.9	3.4	3.8	3,824,148	6,713,000	YES	27	0.013	17.5	4.4	11.3	11,290,115
CC-0311B	CC-0311B	CC-0608	907.27	905.96	399.466	0.33%	18	0.013	6.0	3.4	3.9	3,902,261	6,703,000	YES	27	0.013	17.8	4.5	11.5	11,520,730
BC-3412B	BC-3412B	CC-0311B	909.12	907.27	294.617	0.63%	15	0.013	5.1	4.2	3.3	3,318,527	6,333,000	YES	27	0.013	24.7	6.2	15.9	15,941,269
BC-3113	BC-3113	BC-3412B	910.63	909.12	306.499	0.49%	15	0.013	4.5	3.7	2.9	2,940,282	6,327,000	YES	27	0.013	21.9	5.5	14.1	14,124,287
BC-2913A	BC-2913A	BC-3113	911.62	910.63	297.307	0.33%	15	0.013	3.7	3.0	2.4	2,416,504	6,318,000	YES	27	0.013	18.0	4.5	11.6	11,608,208
BC-2814B	BC-2814B	BC-2913A	914.25	913.79	132.166	0.35%	15	0.013	3.8	3.1	2.5	2,470,331	6,314,000	YES	27	0.013	18.4	4.6	11.9	11,866,775
BC-2714	BC-2714	BC-2814B	914.73	914.25	101.155	0.48%	15	0.013	4.5	3.6	2.9	2,886,106	6,308,000	YES	27	0.013	21.5	5.4	13.9	13,864,042
BC-2614B	BC-2614B	BC-2714	915.08	914.73	90.279	0.39%	15	0.013	4.0	3.3	2.6	2,608,443	6,304,000	YES	27	0.013	19.4	4.9	12.5	12,530,227
BC-2316	BC-2316	BC-2614B	916.01	915.08	305.9571	0.30%	15	0.013	3.6	2.9	2.3	2,308,885	6,307,000	YES	27	0.013	17.2	4.3	11.1	11,091,234
BC-2117A	BC-2117A	BC-2316	916.71	916.01	241.096	0.29%	15	0.013	3.5	2.8	2.3	2,255,093	6,325,000	YES	27	0.013	16.8	4.2	10.8	10,832,834
BC-2121	BC-2121	BC-2117A	917.86	916.71	335.657	0.34%	15	0.013	3.8	3.1	2.5	2,452,520	6,020,000	YES	27	0.013	18.2	4.6	11.8	11,781,216
BD-1801	BD-1801	BC-2121	918.92	917.86	373.231	0.28%	15	0.013	3.5	2.8	2.2	2,231,643	6,033,000	YES	27	0.013	16.6	4.2	10.7	10,720,184
BD-1602	BD-1602	BD-1801	919.6	918.92	234.469	0.29%	15	0.013	3.5	2.8	2.3	2,255,093	6,038,000	YES	27	0.013	16.8	4.2	10.8	10,832,834
BD-1405	BD-1405	BD-1602	920.97	919.6	328.24	0.42%	15	0.013	4.2	3.4	2.7	2,704,167	6,042,000	YES	27	0.013	20.1	5.1	13.0	12,990,058
BD-1105	BD-1105	BD-1405	922.01	920.97	300.699	0.35%	15	0.013	3.8	3.1	2.5	2,463,222	6,042,000	YES	27	0.013	18.3	4.6	11.8	11,832,626
BD-0905A	BD-0905A	BD-1105	922.72	922.01	250.782	0.28%	15	0.013	3.4	2.8	2.2	2,227,710	6,040,000	YES	27	0.013	16.6	4.2	10.7	10,701,294
BD-0610C	BD-0610C	BD-0607	925.41	924.07	285.241	0.47%	15	0.013	4.4	3.6	2.9	2,870,876	6,033,000	YES	27	0.013	21.3	5.4	13.8	13,790,881
BD-0607	BD-0607	BD-0905A	924.07	922.72	357.213	0.38%	15	0.013	4.0	3.2	2.6	2,574,610	6,037,000	YES	27	0.013	19.1	4.8	12.4	12,367,701
BD-0511	BD-0511	BD-0610C	926.37	925.41	179.409	0.54%	15	0.013	4.7	3.9	3.1	3,062,967	5,886,000	YES	27	0.013	22.8	5.7	14.7	14,713,635
BD-0310B	BD-0310B	BD-0511	926.75	926.37	165.356	0.23%	15	0.013	3.1	2.5	2.0	2,008,304	5,884,000	YES	27	0.013	14.9	3.8	9.6	9,647,327
BD-0111	BD-0111	BD-0310B	927.75	926.75	248.688	0.40%	15	0.013	4.1	3.3	2.7	2,655,086	5,879,000	YES	27	0.013	19.7	5.0	12.8	12,754,284
BD-0113B	BD-0113B	BD-0111	927.94	927.75	134.591	0.14%	15	0.013	2.4	2.0	1.6	1,572,443	5,875,000	YES	27	0.013	11.7	2.9	7.6	7,553,576
AD-3415A	AD-3415A	BD-0113B	928.91	927.94	250.355	0.39%	15	0.013	4.0	3.3	2.6	2,605,079	5,869,000	YES	24	0.013	14.1	4.5	9.1	9,137,372
AD-3216	AD-3216	AD-3415A	929.57	928.91	143.914	0.46%	15	0.013	4.4	3.6	2.8	2,837,082	5,865,000	YES	24	0.013	15.4	4.9	10.0	9,951,125

AD-3119	AD-3119	AD-3216	930.44	929.57	435.176	0.20%	15	0.013	2.9	2.4	1.9	1,872,753	5,859,000	YES	24	0.013	10.2	3.2	6.6	6,568,721
AD-3021B	AD-3021B	AD-3119	930.99	930.44	159.414	0.35%	15	0.013	3.8	3.1	2.5	2,459,660	5,849,000	YES	24	0.013	13.3	4.3	8.6	8,627,310
AD-2921	AD-2921	AD-3021B	931.33	930.99	121.098	0.28%	15	0.013	3.4	2.8	2.2	2,219,825	5,845,000	YES	24	0.013	12.0	3.8	7.8	7,786,082
AD-2621B	AD-2621B	AD-2921	932.11	931.33	236.622	0.33%	15	0.013	3.7	3.0	2.4	2,405,595	5,840,000	YES	24	0.013	13.1	4.2	8.4	8,437,675
AE-2501A	AE-2501A	AD-2621B	932.69	932.11	202.493	0.29%	15	0.013	3.5	2.8	2.2	2,239,487	5,834,000	YES	24	0.013	12.2	3.9	7.9	7,855,048
AE-2404C	AE-2404C	AE-2501A	933.57	932.69	325.323	0.27%	15	0.013	3.4	2.8	2.2	2,179,968	5,825,000	YES	24	0.013	11.8	3.8	7.6	7,646,285

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
	THOMS RUN INTERCEPTOR																	
IF-2709	IF-2709	IF-3007	806	804.62	388.445	0.36%	15	0.013	3.9	3.1	2,495,052	1,118,000	NO	15	0.013	3.9	3.1	2,495,052
IF-2510	IF-2510	IF-2709	806.39	806.1	236.034	0.12%	15	0.013	2.3	1.9	1,468,649	1,118,000	NO	15	0.013	2.3	1.9	1,468,649
IF-2311	IF-2311	IF-2510	806.74	806.45	207.717	0.14%	15	0.013	2.4	2.0	1,566,858	1,119,000	NO	15	0.013	2.4	2.0	1,566,858
IF-2012A	IF-2012A	IF-2311	806.82	806.74	284.94	0.03%	15	0.013	1.1	0.9	700,720	148,700	NO	15	0.013	1.1	0.9	700,720
IF-1712	IF-1712	IF-2012A	807.24	806.82	249.08	0.17%	15	0.013	2.7	2.2	1,721,507	148,500	NO	15	0.013	2.7	2.2	1,721,507
IF-1513	IF-1513	IF-1712	807.74	807.24	265.91	0.19%	15	0.013	2.8	2.3	1,815,701	148,600	NO	15	0.013	2.8	2.3	1,815,701
IF-1113	IF-1113	IF-1513	808.41	807.74	353.12	0.19%	15	0.013	2.8	2.3	1,825,334	148,900	NO	15	0.013	2.8	2.3	1,825,334
IF-1115	IF-1115	IF-1113	808.72	808.41	153.35	0.20%	15	0.013	2.9	2.4	1,882,093	148,900	NO	15	0.013	2.9	2.4	1,882,093
IF-1015	IF-1015	IF-1115	814.07	808.72	162.02	3.30%	15	0.013	11.8	9.6	7,609,463	148,900	NO	15	0.013	11.8	9.6	7,609,463
IF-0814	IF-0814	IF-1015	817.57	814.07	242.19	1.45%	15	0.013	7.8	6.4	5,033,840	148,900	NO	15	0.013	7.8	6.4	5,033,840
IF-0413	IF-0413	IF-0814	822.52	817.57	320.76	1.54%	15	0.013	8.0	6.6	5,201,738	148,900	NO	15	0.013	8.0	6.6	5,201,738
IF-0115	IF-0115	IF-0413	828.41	822.52	389.28	1.51%	15	0.013	8.0	6.5	5,150,922	148,800	NO	15	0.013	8.0	6.5	5,150,922
HF-3315	HF-3315	IF-0115	831.47	828.41	206.85	1.48%	15	0.013	7.9	6.4	5,092,717	148,800	NO	15	0.013	7.9	6.4	5,092,717
HF-3116	HF-3116	HF-3315	833.43	831.47	231.15	0.85%	15	0.013	6.0	4.9	3,856,234	148,700	NO	15	0.013	6.0	4.9	3,856,234
HF-3016	HF-3016	HF-3116	835.92	833.43	77.84	3.20%	15	0.013	11.6	9.4	7,489,841	148,600	NO	15	0.013	11.6	9.4	7,489,841
HF-2716	HF-2716	HF-3016	838.4	835.92	324.75	0.76%	15	0.013	5.7	4.6	3,660,262	148,700	NO	15	0.013	5.7	4.6	3,660,262
HF-2416	HF-2416	HF-2716	844.22	838.4	298.47	1.95%	15	0.013	9.0	7.4	5,847,669	148,900	NO	15	0.013	9.0	7.4	5,847,669
HF-2215	HF-2215	HF-2416	846.77	844.22	192.08	1.33%	15	0.013	7.5	6.1	4,825,747	149,000	NO	15	0.013	7.5	6.1	4,825,747
HF-2114	HF-2114	HF-2215	849.66	846.77	165.65	1.75%	15	0.013	8.6	7.0	5,531,758	149,000	NO	15	0.013	8.6	7.0	5,531,758
HF-1813	HF-1813	HF-2114	853.42	849.66	331.81	1.13%	15	0.013	6.9	5.6	4,457,388	149,900	NO	15	0.013	6.9	5.6	4,457,388
HF-1613	HF-1613	HF-1813	855.9	853.42	147.54	1.68%	15	0.013	8.4	6.8	5,429,369	149,900	NO	15	0.013	8.4	6.8	5,429,369
HF-1512	HF-1512	HF-1613	857.84	855.9	170.55	1.14%	15	0.013	6.9	5.6	4,465,249	149,900	NO	15	0.013	6.9	5.6	4,465,249
HF-1410B	HF-1410B	HF-1512	859.89	857.84	142.2	1.44%	15	0.013	7.8	6.3	5,028,612	149,900	NO	15	0.013	7.8	6.3	5,028,612
HF-1309	HF-1309	HF-1410B	862.38	859.89	213.76	1.17%	15	0.013	7.0	5.7	4,519,896	149,900	NO	15	0.013	7.0	5.7	4,519,896
HF-1108	HF-1108	HF-1309	864.53	862.38	198.01	1.09%	15	0.013	6.8	5.5	4,363,956	148,900	NO	15	0.013	6.8	5.5	4,363,956
HF-0906	HF-0906	HF-1108	867.8	864.53	268.77	1.22%	15	0.013	7.1	5.8	4,619,668	148,900	NO	15	0.013	7.1	5.8	4,619,668
HF-0704	HF-0704	HF-0906	870.41	867.8	215.27	1.21%	15	0.013	7.1	5.8	4,610,168	148,800	NO	15	0.013	7.1	5.8	4,610,168
HF-0603	HF-0603	HF-0704	873.25	870.41	219.29	1.30%	15	0.013	7.4	6.0	4,765,411	148,800	NO	15	0.013	7.4	6.0	4,765,411
HF-0401	HF-0401	HF-0603	875.67	873.25	209.85	1.15%	15	0.013	7.0	5.7	4,496,557	148,700	NO	15	0.013	7.0	5.7	4,496,557
HE-0322	HE-0322	HF-0401	878.57	875.67	214.33	1.35%	15	0.013	7.5	6.1	4,870,958	148,700	NO	15	0.013	7.5	6.1	4,870,958
HE-0121	HE-0121	HE-0322	881.4	878.57	207.27	1.37%	15	0.013	7.6	6.2	4,892,511	148,900	NO	15	0.013	7.6	6.2	4,892,511
GE-3320	GE-3320	HE-0121	884.09	881.4	187.61	1.43%	15	0.013	7.8	6.3	5,014,643	149,000	NO	15	0.013	7.8	6.3	5,014,643
GE-3219	GE-3219	GE-3320	886.21	884.09	168.26	1.26%	15	0.013	7.3	5.9	4,700,573	149,100	NO	15	0.013	7.3	5.9	4,700,573
GE-2919A	GE-2919A	GE-3219	889.81	886.21	232.24	1.55%	15	0.013	8.1	6.6	5,213,523	149,100	NO	15	0.013	8.1	6.6	5,213,523
GE-2718	GE-2718	GE-2919A	892.96	889.81	207.94	1.52%	15	0.013	8.0	6.5	5,154,325	149,100	NO	15	0.013	8.0	6.5	5,154,325
GE-2618	GE-2618	GE-2718	895.3	892.96	169.21	1.38%	15	0.013	7.6	6.2	4,924,664	149,100	NO	15	0.013	7.6	6.2	4,924,664
GE-2417	GE-2417	GE-2618	897.74	895.3	181.34	1.35%	15	0.013	7.5	6.1	4,858,341	149,100	NO	15	0.013	7.5	6.1	4,858,341
GE-2116	GE-2116	GE-2417	901.21	897.74	261.21	1.33%	15	0.013	7.5	6.1	4,825,747	149,100	NO	15	0.013	7.5	6.1	4,825,747
GE-1915B	GE-1915B	GE-2116	906.03	901.21	296.26	1.63%	15	0.013	8.3	6.7	5,341,451	149,000	NO	15	0.013	8.3	6.7	5,341,451
GE-1815	GE-1815	GE-1915B	907.5	906.03	105.41	1.40%	15	0.013	7.7	6.2	4,945,983	149,000	NO	15	0.013	7.7	6.2	4,945,983
GE-1514	GE-1514	GE-1815	910.92	907.5	300.33	1.14%	15	0.013	6.9	5.6	4,469,175	148,900	NO	15	0.013	6.9	5.6	4,469,175
GE-1112	GE-1112	GE-1514	915.62	910.92	399.02	1.18%	15	0.013	7.0	5.7	4,545,044	148,800	NO	15	0.013	7.0	5.7	4,545,044
GE-0811	GE-0811	GE-1112	920.02	915.62	341.45	1.29%	15	0.013	7.4	6.0	4,754,359	148,800	NO	15	0.013	7.4	6.0	4,754,359
GE-0711	GE-0711	GE-0811	922.38	920.02	110.79	2.13%	15	0.013	9.5	7.7	6,111,605	149,000	NO	15	0.013	9.5	7.7	6,111,605
GE-0611A	GE-0611A	GE-0711	923.83	922.38	78.41	1.85%	15	0.013	8.8	7.2	5,694,216	149,100	NO	15	0.013	8.8	7.2	5,694,216
GE-0310	GE-0310	GE-0611A	927.55	923.83	265.32	1.40%	15	0.013	7.7	6.3	4,958,376	149,100	NO	15	0.013	7.7	6.3	4,958,376
GE-0209	GE-0209	GE-0310	929.38	927.55	139	1.32%	15	0.013	7.4	6.1	4,805,719	149,200	NO	15	0.013	7.4	6.1	4,805,719
FE-3308	FE-3308	GE-0209	935.47	929.38	373.27	1.63%	15	0.013	8.3	6.7	5,349,652	149,200	NO	15	0.013	8.3	6.7	5,349,652

FE-3106	FE-3106	FE-3308	941.29	935.47	296.13	1.97%	15	0.013	9.1	7.4	5,870,117	149,300	NO	15	0.013	9.1	7.4	5,870,117
FE-2804	FE-2804	FE-3106	946.56	941.29	359.62	1.47%	15	0.013	7.8	6.4	5,068,557	149,300	NO	15	0.013	7.8	6.4	5,068,557
FD-2322	FD-2322	FE-2804	956.85	946.56	629.64	1.63%	15	0.013	8.3	6.8	5,352,929	149,200	NO	15	0.013	8.3	6.8	5,352,929

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
FISHING RUN SEWER INTERCEPTOR (TAZ 4)																		
BF-3202	BF-3202	CF-0103	1098.05	1084.58	218.85	6.16%	10	0.013	5.4	10.0	3,518,972	2,595,000	NO	10	0.013	5.4	10.0	3,518,972
CF-0103	CF-0103	CF-0406	1084.58	1072.86	373.82	3.14%	10	0.013	3.9	7.1	2,511,427	2,595,000	YES	12	0.013	6.3	8.1	4,086,340
CF-0406	CF-0406	CF-0708	1072.86	1067.52	379.04	1.41%	10	0.013	2.6	4.8	1,683,671	2,595,000	YES	12	0.013	4.2	5.4	2,739,500
CF-0708	CF-0708	CF-0911	1067.52	1060.28	390.09	1.86%	10	0.013	3.0	5.5	1,932,372	2,595,000	YES	12	0.013	4.9	6.2	3,144,161
CF-0911	CF-0911	CF-1015	1060.28	1053.32	384.54	1.81%	10	0.013	3.0	5.4	1,908,276	2,595,000	YES	12	0.013	4.8	6.1	3,104,953
CF-1015	CF-1015	CF-1119	1053.32	1044.88	392.95	2.15%	10	0.013	3.2	5.9	2,078,830	2,595,000	YES	12	0.013	5.2	6.7	3,382,462
CF-1119	CF-1119	CG-1201	1044.88	1038.1	390.92	1.73%	10	0.013	2.9	5.3	1,867,783	2,595,000	YES	12	0.013	4.7	6.0	3,039,067
CG-1201	CG-1201	CG-1204	1038.1	1030.81	303.34	2.40%	10	0.013	3.4	6.2	2,198,764	2,595,000	YES	12	0.013	5.5	7.1	3,577,607
CG-1204	CG-1204	CG-1208	1030.81	1022.05	393.02	2.23%	10	0.013	3.3	6.0	2,117,663	2,595,000	YES	12	0.013	5.3	6.8	3,445,647
CG-1208	CG-1208	CG-1312	1022.05	1017.19	386.13	1.26%	10	0.013	2.5	4.5	1,591,529	2,595,000	YES	15	0.013	7.3	5.9	4,698,707
CG-1312	CG-1312	CG-1416	1017.19	1012.79	396.65	1.11%	10	0.013	2.3	4.2	1,493,714	2,595,000	YES	15	0.013	6.8	5.6	4,409,926
CG-1416	CG-1416	CG-1519	1012.79	1008.46	395.15	1.10%	10	0.013	2.3	4.2	1,484,934	5,020,000	YES	18	0.013	11.0	6.2	7,133,205
CG-1519	CG-1519	CH-1500	1008.46	1006.2	176.56	1.28%	10	0.013	2.5	4.6	1,604,748	5,020,000	YES	18	0.013	11.9	6.8	7,708,758
CH-1500	CH-1500	CH-1601	1006.2	1004.52	194.62	0.86%	10	0.013	2.0	3.7	1,317,672	5,020,000	YES	18	0.013	9.8	5.5	6,329,725
CH-1601	CH-1601	CH-1602	1004.52	1003.64	121.97	0.72%	10	0.013	1.9	3.4	1,204,396	5,020,000	YES	18	0.013	9.0	5.1	5,785,582
CH-1602	CH-1602	CH-1905	1003.64	1000.14	377.23	0.93%	10	0.013	2.1	3.9	1,366,394	5,019,000	YES	18	0.013	10.2	5.8	6,563,771
CH-1905	CH-1905	CH-2008	1000.14	996.86	363.5	0.90%	10	0.013	2.1	3.8	1,347,116	5,019,000	YES	18	0.013	10.0	5.7	6,471,168
CH-2008	CH-2008	CH-2109	996.86	995.68	144.52	0.82%	10	0.013	2.0	3.6	1,281,288	5,018,000	YES	18	0.013	9.5	5.4	6,154,949
CH-2109	CH-2109	CH-2412	995.68	992.29	397.1	0.85%	10	0.013	2.0	3.7	1,310,783	5,017,000	YES	18	0.013	9.7	5.5	6,296,633
CH-2412	CH-2412	CH-2614	992.29	989.88	247.94	0.97%	10	0.013	2.2	4.0	1,398,411	5,016,000	YES	18	0.013	10.4	5.9	6,717,575
CH-2614	CH-2614	CH-2817	989.88	986.98	324.78	0.89%	10	0.013	2.1	3.8	1,340,379	5,014,000	YES	18	0.013	10.0	5.6	6,438,803
CH-2817	CH-2817	CH-3019	986.98	985.13	168.11	1.10%	10	0.013	2.3	4.2	1,487,641	5,012,000	YES	18	0.013	11.1	6.3	7,146,210
CH-3019	CH-3019	CH-3222	985.13	981.35	382.48	0.99%	10	0.013	2.2	4.0	1,409,874	5,011,000	YES	18	0.013	10.5	5.9	6,772,638
CH-3222	CH-3222	CI-3302	981.35	978.86	249.71	1.00%	10	0.013	2.2	4.0	1,416,281	5,012,000	YES	18	0.013	10.5	6.0	6,803,415
CI-3302	CI-3302	CI-3403	978.86	975.84	138.24	2.19%	10	0.013	3.2	6.0	2,096,658	5,012,000	YES	18	0.013	15.6	8.8	10,071,755
CI-3403	CI-3403	DI-0204	975.84	972.14	177.96	2.08%	10	0.013	3.2	5.8	2,045,168	5,012,000	YES	18	0.013	15.2	8.6	9,824,414
DI-0204	DI-0204	DI-0203	972.14	961.63	123.2	8.53%	10	0.013	6.4	11.8	4,142,875	5,012,000	YES	18	0.013	30.8	17.4	19,901,205
DI-0203	DI-0203	DI-0403	961.63	950.77	141.45	7.68%	10	0.013	6.1	11.2	3,930,302	5,012,000	YES	18	0.013	29.2	16.5	18,880,064
DI-0403	DI-0403	DI-0805	950.77	946.57	63.87	6.58%	10	0.013	5.6	10.3	3,637,330	5,013,000	YES	18	0.013	27.0	15.3	17,472,712
DI-0805	DI-0805	DI-1107	946.57	942.83	396.07	0.94%	10	0.013	2.1	3.9	1,378,122	5,013,000	YES	18	0.013	10.2	5.8	6,620,113
DI-1107	DI-1107	DI-1410	942.83	939.2	385.96	0.94%	10	0.013	2.1	3.9	1,375,931	5,014,000	YES	18	0.013	10.2	5.8	6,609,585
DI-1410	DI-1410	DI-1611	939.2	937.6	152.21	1.05%	10	0.013	2.3	4.1	1,454,130	5,014,000	YES	18	0.013	10.8	6.1	6,985,231
DI-1611	DI-1611	DI-1812	937.6	935.72	211.42	0.89%	10	0.013	2.1	3.8	1,337,373	5,014,000	YES	18	0.013	9.9	5.6	6,424,366
DI-1812	DI-1812	DI-2014B	935.72	930.19	317.56	1.74%	10	0.013	2.9	5.3	1,871,549	5,015,000	YES	18	0.013	13.9	7.9	8,990,395
DI-2014B	DI-2014B	DI-2215	930.19	928.64	197	0.79%	10	0.013	1.9	3.6	1,258,314	5,015,000	YES	18	0.013	9.4	5.3	6,044,589
DI-2215	DI-2215	DI-2517	928.64	924.56	388	1.05%	10	0.013	2.3	4.1	1,454,821	5,015,000	YES	18	0.013	10.8	6.1	6,988,553
DI-2517	DI-2517	DI-2820	924.56	920.43	381	1.08%	10	0.013	2.3	4.2	1,476,782	5,016,000	YES	18	0.013	11.0	6.2	7,094,047
DI-2820	DI-2820	DJ-3001	920.43	917.68	300	0.92%	10	0.013	2.1	3.9	1,358,271	5,017,000	YES	18	0.013	10.1	5.7	6,524,753
DJ-3001	DJ-3001	DJ-3102	917.68	913.72	226	1.75%	10	0.013	2.9	5.3	1,877,452	5,017,000	YES	18	0.013	14.0	7.9	9,018,752
DJ-3102	DJ-3102	DJ-3304	913.72	910.13	229	1.57%	10	0.013	2.7	5.0	1,776,130	5,018,000	YES	18	0.013	13.2	7.5	8,532,031
DJ-3304	DJ-3304	DJ-3406	910.13	907.28	223	1.28%	10	0.013	2.5	4.6	1,603,494	5,018,000	YES	18	0.013	11.9	6.7	7,702,733
DJ-3406	DJ-3406	EJ-0108	907.28	904.11	239	1.33%	10	0.013	2.5	4.6	1,633,329	5,018,000	YES	18	0.013	12.1	6.9	7,846,052
EJ-0108	EJ-0108	EJ-0310	904.11	900.73	234	1.44%	10	0.013	2.6	4.8	1,704,455	5,019,000	YES	18	0.013	12.7	7.2	8,187,720
EJ-0310	EJ-0310	EJ-0411	900.73	898.23	222	1.13%	10	0.013	2.3	4.3	1,505,120	5,019,000	YES	18	0.013	11.2	6.3	7,230,172

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
EJ-0411	EJ-0411	EJ-0513	898.23	893.03	145	3.59%	10	0.013	4.2	7.6	2,686,006	5,019,000	YES	18	0.013	20.0	11.3	12,902,817
EJ-0513	EJ-0513	EJ-0715	893.03	890.74	250	0.92%	10	0.013	2.1	3.9	1,357,530	5,019,000	YES	18	0.013	10.1	5.7	6,521,194
EJ-0715	EJ-0715	EJ-0916	890.74	888.91	287	0.64%	10	0.013	1.8	3.2	1,132,954	5,018,000	YES	18	0.013	8.4	4.8	5,442,391
EJ-0916	EJ-0916	EJ-1117	888.91	887.46	208	0.70%	10	0.013	1.8	3.4	1,184,181	5,018,000	YES	18	0.013	8.8	5.0	5,688,474
EJ-1117	EJ-1117	EJ-1218	887.46	883.06	175	2.51%	10	0.013	3.5	6.4	2,248,974	5,018,000	YES	18	0.013	16.7	9.5	10,803,440
EJ-1218	EJ-1218	EJ-1619	883.06	878.61	234.6	1.90%	10	0.013	3.0	5.5	1,953,599	5,017,000	YES	18	0.013	14.5	8.2	9,384,542
EJ-1619	EJ-1619	EJ-2120	878.61	871.17	376.2	1.98%	10	0.013	3.1	5.7	1,994,872	5,016,000	YES	18	0.013	14.8	8.4	9,582,803
DOLPHIN RUN SEWER INTERCEPTOR (TAZ 5)																		
DG-2412	DG-2412	DG-2514	976.5	974.17	222.5	1.05%	10	0.013	2.2	4.1	1,451,360	437,900	NO	10	0.013	2.2	4.1	1,451,360
DG-2514	DG-2514	DG-2717	974.17	970.09	397.13	1.03%	10	0.013	2.2	4.1	1,437,431	438,000	NO	10	0.013	2.2	4.1	1,437,431
DG-2717	DG-2717	DG-3020	970.09	963.8	399.58	1.57%	10	0.013	2.8	5.1	1,779,525	438,100	NO	10	0.013	2.8	5.1	1,779,525
DG-3020	DG-3020	DH-3001B	963.8	962.56	87.42	1.42%	8	0.013	1.4	4.1	930,873	438,100	NO	8	0.013	1.4	4.1	930,873
DH-3001B	DH-3001B	DH-3202	962.56	960.08	241	1.03%	10	0.013	2.2	4.1	1,438,830	438,200	NO	10	0.013	2.2	4.1	1,438,830
DH-3202	DH-3202	DH-3303	960.08	959.16	149	0.62%	10	0.013	1.7	3.2	1,114,152	438,200	NO	10	0.013	1.7	3.2	1,114,152
DH-3303	DH-3303	EH-0104	959.16	955.3	207	1.87%	10	0.013	3.0	5.5	1,937,052	438,300	NO	10	0.013	3.0	5.5	1,937,052
EH-0104	EH-0104	EH-0206	955.3	950.92	226	1.94%	10	0.013	3.1	5.6	1,974,598	438,300	NO	10	0.013	3.1	5.6	1,974,598
EH-0206	EH-0206	EH-0308	950.92	949	90	2.13%	10	0.013	3.2	5.9	2,071,559	438,400	NO	10	0.013	3.2	5.9	2,071,559
EH-0308	EH-0308	EH-0310	949	945.73	278	1.18%	10	0.013	2.4	4.4	1,538,174	438,400	NO	10	0.013	2.4	4.4	1,538,174
EH-0310	EH-0310	EH-0413	945.73	943.96	313	0.57%	10	0.013	1.6	3.0	1,066,169	438,400	NO	10	0.013	1.6	3.0	1,066,169
EH-0413	EH-0413	EH-0515	943.96	937.28	248	2.69%	10	0.013	3.6	6.6	2,328,095	438,400	NO	10	0.013	3.6	6.6	2,328,095
EH-0515	EH-0515	EH-0716	937.28	933.84	150	2.29%	10	0.013	3.3	6.1	2,147,850	438,400	NO	10	0.013	3.3	6.1	2,147,850
EH-0716	EH-0716	EH-0917	933.84	932	233	0.79%	10	0.013	2.0	3.6	1,260,710	438,400	NO	10	0.013	2.0	3.6	1,260,710
EH-0917	EH-0917	EH-1119	932	930.73	348	0.37%	10	0.013	1.3	2.4	856,936	438,000	NO	10	0.013	1.3	2.4	856,936
EH-1119	EH-1119	EI-1202	930.73	920.33	388	2.68%	10	0.013	3.6	6.6	2,322,037	437,900	NO	10	0.013	3.6	6.6	2,322,037
EI-1202	EI-1202	EI-1303	920.33	919.01	115	1.15%	10	0.013	2.4	4.3	1,519,752	437,700	NO	10	0.013	2.4	4.3	1,519,752
EI-1303	EI-1303	EI-1505	919.01	916.43	297	0.87%	10	0.013	2.0	3.8	1,322,244	437,500	NO	10	0.013	2.0	3.8	1,322,244
EI-1505	EI-1505	EI-1605	916.43	915.73	98	0.71%	10	0.013	1.9	3.4	1,198,536	437,600	NO	10	0.013	1.9	3.4	1,198,536
EI-1605	EI-1605	EI-1707	915.73	913.43	221	1.04%	10	0.013	2.2	4.1	1,447,195	437,700	NO	10	0.013	2.2	4.1	1,447,195
EI-1707	EI-1707	EI-1910	913.43	910.84	365	0.71%	10	0.013	1.8	3.4	1,195,174	437,900	NO	10	0.013	1.8	3.4	1,195,174
EI-1910	EI-1910	EI-2112	910.84	906.26	306	1.50%	10	0.013	2.7	4.9	1,735,452	438,100	NO	10	0.013	2.7	4.9	1,735,452
EI-2112	EI-2112	EI-2214	906.26	902.52	180	2.08%	10	0.013	3.2	5.8	2,044,676	438,100	NO	10	0.013	3.2	5.8	2,044,676
EI-2214	EI-2214	EI-2315	902.52	901.87	85	0.77%	10	0.013	1.9	3.5	1,240,602	438,200	NO	10	0.013	1.9	3.5	1,240,602
EI-2315	EI-2315	EI-2416	901.87	899.65	200	1.11%	10	0.013	2.3	4.2	1,494,388	438,200	NO	10	0.013	2.3	4.2	1,494,388
EI-2416	EI-2416	EI-2418	899.65	896.86	183	1.53%	10	0.013	2.7	5.0	1,751,607	438,200	NO	10	0.013	2.7	5.0	1,751,607
EI-2418	EI-2418	EI-2520	896.86	893.9	161	1.84%	10	0.013	3.0	5.5	1,923,502	438,300	NO	10	0.013	3.0	5.5	1,923,502
EI-2520	EI-2520	EI-2522	893.9	891	239	1.21%	10	0.013	2.4	4.4	1,562,184	438,300	NO	10	0.013	2.4	4.4	1,562,184
EI-2522	EI-2522	EJ-2703B	891	887.62	68	4.97%	10	0.013	4.9	9.0	3,162,450	438,300	NO	10	0.013	4.9	9.0	3,162,450
EJ-2703B	EJ-2703B	EJ-2704	887.62	885.68	157.6	1.23%	10	0.013	2.4	4.5	1,573,732	438,300	NO	10	0.013	2.4	4.5	1,573,732
EJ-2704	EJ-2704	EJ-2807	885.68	881.64	250.5	1.61%	10	0.013	2.8	5.1	1,801,437	438,200	NO	10	0.013	2.8	5.1	1,801,437
EJ-2807	EJ-2807	EJ-2709A	881.64	878.15	170.2	2.05%	10	0.013	3.1	5.8	2,031,350	438,200	NO	10	0.013	3.1	5.8	2,031,350
EJ-2709A	EJ-2709A	EJ-2709B	878.15	877.54	64.418	0.95%	10	0.013	2.1	3.9	1,380,309	438,200	NO	10	0.013	2.1	3.9	1,380,309
EJ-2709B	EJ-2709B	EJ-2813	877.54	874.79	383.609	0.72%	10	0.013	1.9	3.4	1,201,050	438,100	NO	10	0.013	1.9	3.4	1,201,050
EJ-2813	EJ-2813	EJ-2915	874.79	871.67	261.641	1.19%	10	0.013	2.4	4.4	1,548,601	437,900	NO	10	0.013	2.4	4.4	1,548,601
EJ-2915	EJ-2915	EJ-2919B	871.67	867.82	314.911	1.22%	10	0.013	2.4	4.5	1,568,609	456,310	NO	10	0.013	2.4	4.5	1,568,609

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
MORGAN HOLLOW SEWER INTERCEPTOR (TAZ 6)																		
FI-1808	FI-1808	FI-2112	900.68	891.11	400	2.39%	10	0.013	3.4	6.2	2,193,726	2,283,000	YES	12	0.013	5.5	7.0	3,569,409
FI-2112	FI-2112	FI-2314	891.11	883.95	350	2.05%	10	0.013	3.1	5.8	2,028,872	2,283,000	YES	12	0.013	5.1	6.5	3,301,175
FI-2314	FI-2314	FI-2415	883.95	882.03	138	1.39%	10	0.013	2.6	4.7	1,672,882	2,283,000	YES	12	0.013	4.2	5.4	2,721,945
FI-2415	FI-2415	FI-2416	882.03	880.71	58	2.28%	10	0.013	3.3	6.1	2,139,873	2,283,000	YES	12	0.013	5.4	6.9	3,481,784
FI-2416	FI-2416	FI-2617	880.71	874.61	231	2.64%	10	0.013	3.6	6.5	2,305,080	2,283,000	NO	12	0.013	5.8	7.4	3,750,593
FI-2617	FI-2617	FI-2718	874.61	870.84	138	2.73%	10	0.013	3.6	6.7	2,344,456	2,283,000	NO	12	0.013	5.9	7.5	3,814,662
FI-2718	FI-2718	FI-2819	870.84	867.42	177	1.93%	10	0.013	3.1	5.6	1,971,539	2,283,000	YES	12	0.013	5.0	6.3	3,207,889
FI-2819	FI-2819	FI-2919	867.42	866.96	83	0.55%	10	0.013	1.6	3.0	1,055,739	2,283,000	YES	15	0.013	4.8	3.9	3,116,882
FI-2919	FI-2919	FI-3120	866.96	864.08	116.1	2.48%	10	0.013	3.5	6.3	2,234,165	2,283,000	YES	15	0.013	10.2	8.3	6,595,973
FI-3120	FI-3120	FI-3321	864.08	858.86	216.4	2.41%	10	0.013	3.4	6.3	2,202,878	2,283,000	YES	15	0.013	10.1	8.2	6,503,605
FI-3321	FI-3321	GI-0121B	858.86	849.28	234	4.09%	10	0.013	4.4	8.1	2,869,959	2,283,000	NO	15	0.013	13.1	10.7	8,473,043
SYGAN HOLLOW SEWER INTERCEPTOR (TAZ 7)																		
FF-1210	FF-1210	FF-1314	1052.02	1043.39	312.56	2.76%	8	0.013	2.0	5.8	1,298,930	1,066,000	NO	8	0.013	2.0	5.8	1,298,930
FF-1314	FF-1314	FF-1415	1043.39	1035.71	241.734	3.18%	8	0.013	2.2	6.2	1,393,353	1,066,000	NO	8	0.013	2.2	6.2	1,393,353
FF-1415	FF-1415	FF-1618	1035.71	1026.28	283.937	3.32%	8	0.013	2.2	6.3	1,424,581	1,066,000	NO	8	0.013	2.2	6.3	1,424,581
FF-1618	FF-1618	FF-1820	1026.28	1020.39	274.061	2.15%	8	0.013	1.8	5.1	1,145,964	1,066,000	NO	8	0.013	1.8	5.1	1,145,964
FF-1820	FF-1820	FF-2022	1020.39	1014.95	273.344	1.99%	8	0.013	1.7	4.9	1,102,755	1,066,000	NO	8	0.013	1.7	4.9	1,102,755
FF-2022	FF-2022	FG-2201	1014.95	1009	284.579	2.09%	8	0.013	1.7	5.0	1,130,394	1,066,000	NO	8	0.013	1.7	5.0	1,130,394
FG-2201	FG-2201	FG-2503	1009	1001.74	352.813	2.06%	8	0.013	1.7	5.0	1,121,438	1,066,000	NO	8	0.013	1.7	5.0	1,121,438
FG-2503	FG-2503	FG-2905	1001.74	994.67	377.411	1.87%	8	0.013	1.7	4.7	1,069,847	2,200,000	YES	12	0.013	4.9	6.2	3,158,527
FG-2905	FG-2905	FG-3006	994.67	990.04	217.946	2.12%	8	0.013	1.8	5.1	1,139,279	2,200,000	YES	12	0.013	5.2	6.6	3,363,512
FG-3006	FG-3006	FG-3308	990.04	983.34	321.689	2.08%	8	0.013	1.7	5.0	1,128,229	2,200,000	YES	12	0.013	5.2	6.6	3,330,891
FG-3308	FG-3308	GG-0110B	983.34	976.97	299.326	2.13%	8	0.013	1.8	5.1	1,140,351	2,199,000	YES	12	0.013	5.2	6.6	3,366,678
GG-0110B	GG-0110B	GG-0213	976.97	971.33	263.658	2.14%	8	0.013	1.8	5.1	1,143,294	2,631,000	YES	12	0.013	5.2	6.7	3,375,368
GG-0213	GG-0213	GG-0314	971.33	968.45	128.74	2.24%	8	0.013	1.8	5.2	1,169,192	2,631,000	YES	12	0.013	5.3	6.8	3,451,825
GG-0314	GG-0314	GG-0516	968.45	963.44	269.247	1.86%	10	0.013	3.0	5.5	1,934,971	2,631,000	YES	12	0.013	4.9	6.2	3,148,393
GG-0516	GG-0516	GG-0617	963.44	959.99	174.797	1.97%	10	0.013	3.1	5.7	1,992,851	2,631,000	YES	12	0.013	5.0	6.4	3,242,570
GG-0617	GG-0617	GG-0819	959.99	953.33	324.878	2.05%	10	0.013	3.1	5.8	2,030,852	2,630,000	YES	12	0.013	5.1	6.5	3,304,401
GG-0819	GG-0819	GH-1001	953.33	946.75	345.849	1.90%	10	0.013	3.0	5.6	1,956,684	2,630,000	YES	12	0.013	4.9	6.3	3,183,722
GH-1001	GH-1001	GH-1202	946.75	941.79	278.761	1.78%	10	0.013	2.9	5.4	1,891,861	2,630,000	YES	12	0.013	4.8	6.1	3,078,249
GH-1202	GH-1202	GH-1604	941.79	934.87	380.172	1.82%	10	0.013	3.0	5.4	1,913,336	2,630,000	YES	12	0.013	4.8	6.1	3,113,518
GH-1604	GH-1604	GH-1806	934.87	930.03	355.581	1.36%	10	0.013	2.6	4.7	1,654,743	3,208,000	YES	15	0.013	7.6	6.2	4,885,337
GH-1806	GH-1806	GH-2208	930.03	921.43	397.395	2.16%	10	0.013	3.2	5.9	2,086,556	3,205,000	YES	15	0.013	9.5	7.8	6,160,190
GH-2208	GH-2208	GH-2207	921.43	918.86	119.443	2.15%	10	0.013	3.2	5.9	2,080,762	3,203,000	YES	15	0.013	9.5	7.7	6,143,086
GH-2207	GH-2207	GH-2509	918.86	912.87	267.011	2.24%	10	0.013	3.3	6.0	2,124,301	3,201,000	YES	15	0.013	9.7	7.9	6,271,626
GH-2509	GH-2509	GH-2709	912.87	906.8	264.551	2.29%	10	0.013	3.3	6.1	2,148,316	3,198,000	YES	15	0.013	9.8	8.0	6,342,525
GH-2709	GH-2709	GH-3011	906.8	899.6	340.414	2.12%	10	0.013	3.2	5.9	2,062,797	3,194,000	YES	15	0.013	9.4	7.7	6,090,047
GH-3011	GH-3011	GH-3313	899.6	890.63	400.488	2.24%	10	0.013	3.3	6.0	2,122,880	3,189,000	YES	15	0.013	9.7	7.9	6,267,430
GH-3313	GH-3313	HH-0216	890.63	881.84	376.585	2.33%	10	0.013	3.4	6.2	2,166,964	3,182,000	YES	15	0.013	9.9	8.1	6,397,583
HH-0216	HH-0216	HH-0417	881.84	872.49	192.939	4.85%	10	0.013	4.8	8.9	3,122,433	3,178,000	YES	15	0.013	14.3	11.6	9,218,435
HH-0417	HH-0417	HH-0719B	872.49	868.46	400.56	1.01%	10	0.013	2.2	4.0	1,422,657	3,876,000	YES	15	0.013	6.5	5.3	4,200,147
HH-0719B	HH-0719B	HH-1020	868.46	857.06	326.574	3.49%	10	0.013	4.1	7.5	2,650,186	3,870,000	YES	15	0.013	12.1	9.9	7,824,208
HH-1020	HH-1020	HI-1101A	857.06	853.97	211.24	1.46%	10	0.013	2.7	4.9	1,715,630	3,864,000	YES	15	0.013	7.8	6.4	5,065,096
HI-1101A	HI-1101A	HI-1101B	853.97	853.46	65.598	0.78%	10	0.013	1.9	3.5	1,250,293	3,858,000	YES	18	0.013	9.3	5.3	6,006,064
HI-1101B	HI-1101B	HI-1102	853.46	850.94	65.797	3.83%	10	0.013	4.3	7.9	2,775,880	3,856,000	YES	18	0.013	20.6	11.7	13,334,563

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
HI-1102	HI-1102	HI-1205	850.94	845.11	261.616	2.23%	10	0.013	3.3	6.0	2,117,186	3,852,000	YES	18	0.013	15.7	8.9	10,170,376
HI-1205	HI-1205	HI-1306	845.11	838.48	211.056	3.14%	10	0.013	3.9	7.1	2,513,827	3,849,000	YES	18	0.013	18.7	10.6	12,075,730
HI-1306	HI-1306	HI-1508	838.48	833.97	274.487	1.64%	10	0.013	2.8	5.2	1,818,110	3,844,000	YES	18	0.013	13.5	7.7	8,733,698
HI-1508	HI-1508	HI-1609	833.97	832.28	97.293	1.74%	10	0.013	2.9	5.3	1,869,396	3,841,000	YES	18	0.013	13.9	7.9	8,980,062
HI-1609	HI-1609	HI-1610	832.28	830.99	89.907	1.44%	10	0.013	2.6	4.8	1,699,133	3,839,000	YES	18	0.013	12.6	7.2	8,162,165
HI-1610	HI-1610	HI-1812B	830.99	827.45	287.235	1.23%	10	0.013	2.4	4.5	1,574,370	3,836,000	YES	18	0.013	11.7	6.6	7,562,837
COAL RUN INTERCEPTOR (TAZ 12)																		
35	Dummy1	GM-0816	986.52	982.52	400	1.00%	10	0.013	2.2	4.0	1,418,409	1,958,000	YES	12	0.013	3.6	4.5	2,307,893
GM-0816	GM-0816	GM-1015	982.52	981.05	186	0.79%	10	0.013	2.0	3.6	1,260,709	3,906,000	YES	18	0.013	9.4	5.3	6,056,099
GM-1015	GM-1015	GM-1112	981.05	978.85	295	0.75%	10	0.013	1.9	3.5	1,225,098	3,904,000	YES	18	0.013	9.1	5.2	5,885,032
GM-1112	GM-1112	GM-1010	978.85	977	230.5	0.80%	10	0.013	2.0	3.6	1,271,040	3,901,000	YES	18	0.013	9.4	5.3	6,105,724
GM-1010	GM-1010	GM-1107	977	974.32	290	0.92%	10	0.013	2.1	3.9	1,363,444	3,894,000	YES	18	0.013	10.1	5.7	6,549,609
GM-1107	GM-1107	GM-1105	974.32	972.04	242	0.94%	10	0.013	2.1	3.9	1,376,660	3,885,000	YES	18	0.013	10.2	5.8	6,613,097
GM-1105	GM-1105	GM-1203	972.04	969.13	208.5	1.40%	10	0.013	2.6	4.8	1,675,884	3,875,000	YES	18	0.013	12.5	7.1	8,050,486
GM-1203	GM-1203	GM-1303	969.13	968.53	57	1.05%	10	0.013	2.3	4.1	1,455,511	3,866,000	YES	18	0.013	10.8	6.1	6,991,874
GM-1303	GM-1303	GM-1601	968.53	963.43	364	1.40%	10	0.013	2.6	4.8	1,678,883	3,867,000	YES	18	0.013	12.5	7.1	8,064,891
GM-1601	GM-1601	GM-1701	963.43	962.9	105	0.51%	10	0.013	1.6	2.9	1,007,969	3,871,000	YES	18	0.013	7.5	4.2	4,842,004
GM-1701	GM-1701	GL-1822	962.9	956.53	224.5	2.84%	10	0.013	3.7	6.8	2,389,082	3,872,000	YES	18	0.013	17.8	10.1	11,476,490
GL-1822	GL-1822	GL-1921	956.53	954.37	143	1.51%	10	0.013	2.7	4.9	1,742,970	3,874,000	YES	18	0.013	13.0	7.3	8,372,745
GL-1921	GL-1921	GL-2120	954.37	950.49	175	2.22%	10	0.013	3.3	6.0	2,111,953	3,875,000	YES	18	0.013	15.7	8.9	10,145,238
GL-2120	GL-2120	GL-2319	950.49	946.91	253.5	1.41%	10	0.013	2.6	4.8	1,685,461	3,876,000	YES	18	0.013	12.5	7.1	8,096,490
GL-2319	GL-2319	GL-2617	946.91	942	307.5	1.60%	10	0.013	2.8	5.1	1,792,478	3,878,000	YES	18	0.013	13.3	7.5	8,610,569
GL-2617	GL-2617	GL-2716A	942	937.98	208	1.93%	10	0.013	3.1	5.6	1,972,047	3,880,000	YES	18	0.013	14.7	8.3	9,473,170
GL-2716A	GL-2716A	GL-2913	937.98	934.83	323	0.98%	10	0.013	2.2	4.0	1,400,566	4,857,000	YES	18	0.013	10.4	5.9	6,727,934
GL-2913	GL-2913	GL-3010	934.83	931.5	300	1.11%	10	0.013	2.3	4.2	1,494,386	4,859,000	YES	18	0.013	11.1	6.3	7,178,619
GL-3010	GL-3010	GL-3007	931.5	927.7	297	1.28%	10	0.013	2.5	4.6	1,604,119	4,860,000	YES	18	0.013	11.9	6.8	7,705,746
GL-3007	GL-3007	GL-3206	927.7	924.81	245	1.18%	10	0.013	2.4	4.4	1,540,786	4,861,000	YES	18	0.013	11.5	6.5	7,401,511
GL-3206	GL-3206	GL-3405	924.81	922.38	233	1.04%	10	0.013	2.2	4.1	1,448,583	4,863,000	YES	18	0.013	10.8	6.1	6,958,595
GL-3405	GL-3405	HL-0104	922.38	921.05	152	0.88%	10	0.013	2.1	3.8	1,326,800	4,864,000	YES	18	0.013	9.9	5.6	6,373,580
HL-0104	HL-0104	HL-0502	921.05	916.8	420	1.01%	10	0.013	2.2	4.1	1,426,894	4,867,000	YES	18	0.013	10.6	6.0	6,854,404
HL-0502	HL-0502	HL-0801B	916.8	914.78	336	0.60%	10	0.013	1.7	3.1	1,099,610	4,873,000	YES	18	0.013	8.2	4.6	5,282,222
HL-0801B	HL-0801B	HL-0801A	914.78	911.14	49	7.43%	10	0.013	6.0	11.0	3,866,042	4,875,000	YES	18	0.013	28.7	16.3	18,571,398
HL-0801A	HL-0801A	HL-1001	911.14	909.61	181	0.85%	10	0.013	2.0	3.7	1,303,856	4,878,000	YES	18	0.013	9.7	5.5	6,263,366
HL-1001	HL-1001	HK-1322	909.61	902.46	246	2.91%	10	0.013	3.7	6.9	2,418,376	4,879,000	YES	18	0.013	18.0	10.2	11,617,212
HK-1322	HK-1322	HK-1522	902.46	901.35	188	0.59%	10	0.013	1.7	3.1	1,089,500	4,880,000	YES	18	0.013	8.1	4.6	5,233,659
HK-1522	HK-1522	HK-1721	901.35	899.88	247	0.60%	10	0.013	1.7	3.1	1,094,107	4,881,000	YES	18	0.013	8.1	4.6	5,255,789
HK-1721	HK-1721	HK-1920	899.88	894.11	196	2.94%	10	0.013	3.8	6.9	2,433,718	4,880,000	YES	18	0.013	18.1	10.2	11,690,910
HK-1920	HK-1920	HK-2019	894.11	892.41	150	1.13%	10	0.013	2.3	4.3	1,509,789	4,880,000	YES	18	0.013	11.2	6.4	7,252,611
HK-2019	HK-2019	HK-2218	892.41	887.54	290	1.68%	10	0.013	2.8	5.2	1,837,920	4,878,000	YES	18	0.013	13.7	7.7	8,828,863
HK-2218	HK-2218	HK-2317	887.54	886.54	133	0.75%	10	0.013	1.9	3.5	1,230,015	4,874,000	YES	18	0.013	9.1	5.2	5,908,651
HK-2317	HK-2317	HK-2615	886.54	882.84	278	1.33%	10	0.013	2.5	4.6	1,636,403	4,871,000	YES	18	0.013	12.2	6.9	7,860,831
HK-2615	HK-2615	HK-2913	882.84	876.58	397	1.58%	10	0.013	2.8	5.1	1,781,219	4,862,000	YES	18	0.013	13.2	7.5	8,556,482
HK-2913	HK-2913	HK-3311	876.58	872.61	405	0.98%	10	0.013	2.2	4.0	1,404,153	4,847,000	YES	18	0.013	10.4	5.9	6,745,163
HK-3311	HK-3311	IK-0109	872.61	869.8	350	0.80%	10	0.013	2.0	3.6	1,271,040	4,841,000	YES	18	0.013	9.4	5.3	6,105,724
IK-0109	IK-0109	IK-0508	869.8	862.79	354	1.98%	10	0.013	3.1	5.7	1,995,878	4,844,000	YES	18	0.013	14.8	8.4	9,587,646
IK-0508	IK-0508	IK-0807	862.79	859.18	287	1.26%	10	0.013	2.5	4.5	1,590,896	4,847,000	YES	18	0.013	11.8	6.7	7,642,223

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
IK-0807	IK-0807	IK-1107	859.18	855.13	390	1.04%	10	0.013	2.2	4.1	1,445,107	4,849,000	YES	18	0.013	10.7	6.1	6,941,896
IK-1107	IK-1107	IK-1404	855.13	851.1	390	1.03%	10	0.013	2.2	4.1	1,441,622	4,852,000	YES	18	0.013	10.7	6.1	6,925,156
IK-1404	IK-1404	IK-1602	851.1	849.84	266	0.47%	10	0.013	1.5	2.8	976,541	4,855,000	YES	21	0.013	11.0	4.6	7,079,727
IK-1602	IK-1602	IK-2201	849.84	842.93	624.212	1.11%	10	0.013	2.3	4.2	1,492,365	4,861,000	YES	21	0.013	16.7	7.0	10,819,350
IK-2201	IK-2201	IJ-2322	841.49	839.05	88.006	2.77%	10	0.013	3.7	6.7	2,361,980	4,861,000	YES	21	0.013	26.5	11.0	17,123,884
IJ-2322	IJ-2322	IJ-2519	839.05	835.05	365.373	1.10%	10	0.013	2.3	4.2	1,484,255	4,863,000	YES	21	0.013	16.7	6.9	10,760,548
IJ-2519	IJ-2519	IJ-2719	835.05	834.31	141.686	0.52%	10	0.013	1.6	2.9	1,024,794	4,865,000	YES	21	0.013	11.5	4.8	7,429,551
IJ-2719	IJ-2719	IJ-3019	834.31	827.16	321.877	2.22%	10	0.013	3.3	6.0	2,113,857	4,867,000	YES	21	0.013	23.7	9.9	15,325,040
IJ-3019	IJ-3019	IJ-3319	827.16	826.29	265.588	0.33%	10	0.013	1.3	2.3	812,341	4,868,000	YES	21	0.013	9.1	3.8	5,889,308
IJ-3319	IJ-3319	JJ-0119	826.29	823.75	274.129	0.93%	10	0.013	2.1	3.9	1,365,656	4,869,000	YES	21	0.013	15.3	6.4	9,900,730
JJ-0119	JJ-0119	JJ-0219	823.75	822.34	64.325	2.19%	10	0.013	3.2	6.0	2,100,011	5,050,000	YES	21	0.013	23.6	9.8	15,224,660
JJ-0219	JJ-0219	JJ-0419	822.34	820.77	185.908	0.85%	10	0.013	2.0	3.7	1,303,856	5,050,000	YES	21	0.013	14.6	6.1	9,452,696
JJ-0419	JJ-0419	JJ-0518B	820.77	820.02	146.919	0.51%	10	0.013	1.6	2.9	1,012,946	5,049,000	YES	21	0.013	11.4	4.7	7,343,658
JJ-0518B	JJ-0518B	JJ-0616	819.32	816.77	241.945	1.05%	10	0.013	2.3	4.1	1,456,202	5,049,000	YES	21	0.013	16.3	6.8	10,557,173
JJ-0616	JJ-0616	JJ-0714B	816.77	815.46	154.702	0.85%	10	0.013	2.0	3.7	1,305,398	5,047,000	YES	21	0.013	14.6	6.1	9,463,876
UNNAMED TRIBUTARY TO COAL RUN INTERCEPTOR - ALPINE ROAD (TAZ 10)																		
GK-0113	GK-0113	GK-0515	1043.12	1035.28	393.8	1.99%	8	0.013	1.7	4.9	1,103,031	987,300	NO	8	0.013	1.7	4.9	1,103,031
GK-0515	GK-0515	GK-0616A	1035.28	1025.69	163.7	5.86%	8	0.013	2.9	8.4	1,892,025	987,400	NO	8	0.013	2.9	8.4	1,892,025
GK-0616A	GK-0616A	GK-0616B	1025.69	1024.77	69.8	1.32%	8	0.013	1.4	4.0	897,449	987,400	YES	10	0.013	2.5	4.6	1,628,394
GK-0616B	GK-0616B	GK-0818	1024.77	1016.67	275	2.95%	8	0.013	2.1	5.9	1,341,513	987,400	NO	10	0.013	3.8	6.9	2,434,134
GK-0818	GK-0818	GK-1020	1016.67	1008.16	294	2.90%	8	0.013	2.1	5.9	1,330,076	987,500	NO	10	0.013	3.7	6.9	2,413,382
GK-1020	GK-1020	GK-1121	1008.16	1007	70	1.66%	8	0.013	1.6	4.5	1,006,267	987,500	NO	10	0.013	2.8	5.2	1,825,842
GK-1121	GK-1121	GL-1201	1007.00	1003.92	241	1.28%	8	0.013	1.4	3.9	883,726	987,600	YES	10	0.013	2.5	4.6	1,603,494
GL-1201	GL-1201	GL-1304	1003.92	994.35	325	2.95%	8	0.013	2.1	5.9	1,341,513	987,600	NO	10	0.013	3.8	6.9	2,434,134
GL-1304	GL-1304	GL-1606	994.35	986.97	327.2	2.26%	8	0.013	1.8	5.2	1,174,145	987,700	NO	10	0.013	3.3	6.0	2,130,450
GL-1606	GL-1606	GL-1709	986.97	981.09	285	2.06%	8	0.013	1.7	5.0	1,122,798	987,700	NO	10	0.013	3.2	5.8	2,037,283
GL-1709	GL-1709	GL-1810	981.09	977.26	117.8	3.25%	8	0.013	2.2	6.3	1,409,485	987,800	NO	10	0.013	4.0	7.3	2,557,469
GL-1810	GL-1810	GL-1910	977.26	971.25	102.3	5.88%	8	0.013	2.9	8.4	1,894,768	987,800	NO	10	0.013	5.3	9.8	3,437,999
GL-1910	GL-1910	GL-1912	971.25	969.38	170.55	1.10%	8	0.013	1.3	3.6	818,384	987,800	YES	10	0.013	2.3	4.2	1,484,934
GL-1912	GL-1912	GL-2114	969.38	965.62	230.6	1.63%	8	0.013	1.5	4.4	998,341	987,900	NO	10	0.013	2.8	5.1	1,811,460
GL-2114	GL-2114	GL-2215	965.62	959.30	185	3.42%	8	0.013	2.2	6.4	1,444,811	987,900	NO	10	0.013	4.1	7.4	2,621,566
GL-2215	GL-2215	GL-2516	959.30	949.17	264.5	3.83%	8	0.013	2.4	6.8	1,529,859	987,900	NO	10	0.013	4.3	7.9	2,775,883
GL-2516	GL-2516	GL-2615	949.17	945.99	126	2.52%	8	0.013	1.9	5.5	1,241,929	987,900	NO	10	0.013	3.5	6.4	2,253,443
GL-2615	GL-2615	GL-2716A	945.99	937.98	139.7	5.73%	8	0.013	2.9	8.3	1,871,893	987,800	NO	10	0.013	5.3	9.6	3,396,493
UNNAMED TRIBUTARY TO COAL RUN INTERCEPTOR - BETWEEN BOWMAN RD AND ALPINE RD (TAZ 9)																		
FL-0511	FL-0511	FL-0801	1140.91	1139.42	238.06	0.63%	8	0.013	1.0	2.7	618,499	1,951,000	YES	15	0.013	5.1	4.2	3,313,238
FL-0801	FL-0801	FL-1112	1139.42	1100.73	331.13	11.68%	8	0.013	4.1	11.9	2,672,070	1,951,000	NO	15	0.013	22.1	18.1	14,314,008
FL-1112	FL-1112	FL-1512	1100.73	1091.71	399.45	2.26%	8	0.013	1.8	5.2	1,174,665	1,951,000	YES	15	0.013	9.7	7.9	6,292,561
FL-1512	FL-1512	FL-1612	1091.71	1088.69	144.35	2.09%	8	0.013	1.7	5.0	1,130,662	1,951,000	YES	15	0.013	9.4	7.6	6,056,843
FL-1612	FL-1612	FL-1914	1088.69	1078.12	327.92	3.22%	8	0.013	2.2	6.2	1,403,402	1,951,000	YES	15	0.013	11.6	9.5	7,517,884
FL-1914	FL-1914	FL-2316	1078.12	1069.95	151.75	5.38%	8	0.013	2.8	8.0	1,813,864	1,951,000	YES	15	0.013	15.0	12.3	9,716,682
FL-2316	FL-2316	FL-2617	1069.95	1059.02	347.18	3.15%	8	0.013	2.1	6.2	1,386,978	1,951,000	YES	15	0.013	11.5	9.4	7,429,898
FL-2617	FL-2617	FL-2717	1059.02	1057.4	89.48	1.81%	8	0.013	1.6	4.7	1,051,699	1,951,000	YES	15	0.013	8.7	7.1	5,633,843
FL-2717	FL-2717	FL-2920	1057.4	1051.61	336.6	1.72%	8	0.013	1.6	4.5	1,025,218	1,951,000	YES	15	0.013	8.5	6.9	5,491,990
FL-2920	FL-2920	FM-3102	1051.61	1034.2	399.44	4.36%	8	0.013	2.5	7.2	1,632,095	1,951,000	YES	15	0.013	13.5	11.0	8,742,969
FM-3102	FM-3102	FM-3203	1034.2	1033.34	138.45	0.62%	8	0.013	1.0	2.7	616,024	1,951,000	YES	15	0.013	5.1	4.2	3,299,980

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
FM-3203	FM-3203	FM-3307	1033.34	1024.21	380.11	2.40%	8	0.013	1.9	5.4	1,211,542	1,951,000	YES	15	0.013	10.0	8.2	6,490,109
FM-3307	FM-3307	GM-0109	1024.21	1011.32	294.45	4.38%	8	0.013	2.5	7.3	1,635,648	1,951,000	YES	15	0.013	13.6	11.1	8,762,002
GM-0109	GM-0109	GM-0312	1011.32	1000.75	400	2.64%	8	0.013	2.0	5.6	1,270,869	1,951,000	YES	15	0.013	10.5	8.6	6,807,914
GM-0312	GM-0312	GM-0513	1000.75	993.07	263.984	2.91%	8	0.013	2.1	5.9	1,333,288	1,951,000	YES	15	0.013	11.1	9.0	7,142,288
GM-0513	GM-0513	GM-0816	993.07	982.52	394.92	2.67%	8	0.013	2.0	5.7	1,277,583	1,951,000	YES	15	0.013	10.6	8.6	6,843,881
MILLERS RUN INTERCEPTOR																		
IG-1621	IG-1621	IG-1517	799.08	797.48	322.716	0.005	27	0.013	22.0	5.5	14,224,207	26,570,000	YES	42	0.013	71.6	7.4	46,276,705
IH-1602	IH-1602	IG-1621	800.65	799.08	300.008	0.0052	27	0.013	22.4	5.6	14,505,902	26,580,000	YES	42	0.013	73.0	7.6	47,193,165
IH-1605	IH-1605	IH-1602	802.18	800.65	229.161	0.0067	27	0.013	25.5	6.4	16,465,710	26,580,000	YES	42	0.013	82.9	8.6	53,569,159
IH-1608B	IH-1608B	IH-1605	803.94	802.18	276.178	0.0064	27	0.013	24.9	6.3	16,092,854	26,580,000	YES	42	0.013	81.0	8.4	52,356,115
IH-1512B	IH-1512B	IH-1608B	805.09	803.94	501.291	0.0023	27	0.013	14.9	3.8	9,647,327	26,590,000	YES	42	0.013	48.6	5.1	31,386,389
IH-1417	IH-1417	IH-1512B	805.95	805.09	501.731	0.0017	27	0.013	12.8	3.2	8,294,067	26,590,000	YES	42	0.013	41.8	4.3	26,983,724
IH-1320	IH-1320	IH-1417	806.62	805.95	252.711	0.0027	27	0.013	16.2	4.1	10,452,615	26,590,000	YES	42	0.013	52.6	5.5	34,006,294
II-1302	II-1302	IH-1320	807.28	806.62	342.246	0.0019	27	0.013	13.6	3.4	8,768,390	26,590,000	YES	42	0.013	44.1	4.6	28,526,877
II-1202A	II-1202A	II-1302	807.87	807.28	54.413	0.0108	18	0.013	11.0	6.2	7,080,946	20,210,000	YES	42	0.013	105.2	10.9	68,012,589
II-1202B	II-1202B	II-1202A	808.72	807.87	47.48	0.0179	18	0.013	14.1	8.0	9,116,034	20,210,000	YES	42	0.013	135.5	14.1	87,559,635
II-1001	II-1001	II-1202B	809.2	808.72	239.403	0.002	18	0.013	4.7	2.7	3,047,154	20,200,000	YES	42	0.013	45.3	4.7	29,267,958
II-0801	II-0801	II-1001	809.76	809.2	171.196	0.0033	18	0.013	6.1	3.4	3,914,140	20,200,000	YES	42	0.013	58.2	6.0	37,595,373
II-0401	II-0401	II-0801	810.53	809.76	364.48	0.0021	18	0.013	4.8	2.7	3,122,404	20,030,000	YES	42	0.013	46.4	4.8	29,990,733
HH-3321	HH-3321	II-0401	813.75	810.53	502.582	0.0064	18	0.013	8.4	4.8	5,450,915	20,030,000	YES	42	0.013	81.0	8.4	52,356,115
HH-3122A	HH-3122A	HH-3321	814.13	813.75	217.938	0.0017	18	0.013	4.3	2.5	2,809,337	20,030,000	YES	42	0.013	41.8	4.3	26,983,724
HI-3001	HI-3001	HH-3122A	814.36	814.13	131.859	0.0017	18	0.013	4.3	2.5	2,809,337	20,030,000	YES	42	0.013	41.8	4.3	26,983,724
HH-2822	HH-2822	HI-3001	814.66	814.36	173.059	0.0017	18	0.013	4.3	2.5	2,809,337	20,020,000	YES	42	0.013	41.8	4.3	26,983,724
HI-2702	HI-2702	HH-2822	815.55	814.66	172.518	0.0052	18	0.013	7.6	4.3	4,913,388	20,020,000	YES	42	0.013	73.0	7.6	47,193,165
HI-2504	HI-2504	HI-2702	817.63	815.55	334.303	0.0062	18	0.013	8.3	4.7	5,365,068	20,020,000	YES	42	0.013	79.7	8.3	51,531,558
HI-2108B	HI-2108B	HI-2504	819.94	817.63	502.133	0.0046	18	0.013	7.2	4.0	4,621,238	20,020,000	YES	42	0.013	68.7	7.1	44,387,056
HI-1812B	HI-1812B	HI-2108B	821.7	819.94	498.754	0.0035	18	0.013	6.2	3.5	4,031,006	20,020,000	YES	42	0.013	59.9	6.2	38,717,869
HI-1515	HI-1515	HI-1812B	823.7	821.7	430.668	0.0046	18	0.013	7.2	4.0	4,621,238	16,470,000	YES	42	0.013	68.7	7.1	44,387,056
HI-1416	HI-1416	HI-1515	824.96	823.7	149.066	0.0085	18	0.013	9.7	5.5	6,281,869	16,470,000	YES	42	0.013	93.4	9.7	60,337,442
HI-1217	HI-1217	HI-1416	825.83	824.96	185.171	0.0047	18	0.013	7.2	4.1	4,671,199	16,470,000	YES	42	0.013	69.4	7.2	44,866,930
HI-1018	HI-1018	HI-1217	826.5	825.83	222.444	0.003	18	0.013	5.8	3.3	3,731,986	16,470,000	YES	42	0.013	55.5	5.8	35,845,782
HI-0918B	HI-0918B	HI-1018	827.19	826.5	190.778	0.0036	18	0.013	6.3	3.6	4,088,186	16,470,000	YES	42	0.013	60.8	6.3	39,267,086
HI-0719	HI-0719	HI-0918B	828.1	827.19	191.822	0.0047	18	0.013	7.2	4.1	4,671,199	16,470,000	YES	42	0.013	69.4	7.2	44,866,930
HI-0519	HI-0519	HI-0719	829	828.1	151.418	0.0059	18	0.013	8.1	4.6	5,233,659	16,470,000	YES	42	0.013	77.8	8.1	50,269,369
HI-0419	HI-0419	HI-0519	829.45	829	133.294	0.0034	18	0.013	6.1	3.5	3,973,003	16,470,000	YES	42	0.013	59.0	6.1	38,160,749
GI-3418	GI-3418	HI-0419	830.92	829.45	407.597	0.0036	18	0.013	6.3	3.6	4,088,186	16,470,000	YES	42	0.013	60.8	6.3	39,267,086
GI-3315	GI-3315	GI-3418	831.96	830.92	214.937	0.0048	18	0.013	7.3	4.1	4,720,631	16,470,000	YES	42	0.013	70.2	7.3	45,341,726
GI-3113	GI-3113	GI-3315	832.47	831.96	398.574	0.0013	15	0.013	2.3	1.9	1,509,862	16,020,000	YES	42	0.013	36.5	3.8	23,596,582
GI-2711	GI-2711	GI-3113	834.29	832.47	399.252	0.0046	15	0.013	4.4	3.6	2,840,170	16,020,000	YES	36	0.013	45.5	6.4	29,410,907
GI-2310	GI-2310	GI-2711	835.89	834.29	403.444	0.004	15	0.013	4.1	3.3	2,648,473	16,020,000	YES	36	0.013	42.4	6.0	27,425,812
GI-2211	GI-2211	GI-2310	836.74	835.89	109.075	0.0078	15	0.013	5.7	4.7	3,698,391	16,020,000	YES	36	0.013	59.3	8.4	38,298,062
GI-1909	GI-1909	GI-2211	839.13	836.74	367.593	0.0065	15	0.013	5.2	4.3	3,376,153	16,020,000	YES	36	0.013	54.1	7.7	34,961,188
GI-1609	GI-1609	GI-1909	840.61	839.13	353.937	0.0042	15	0.013	4.2	3.4	2,713,877	16,020,000	YES	36	0.013	43.5	6.2	28,103,095
GI-1309	GI-1309	GI-1609	841.75	840.61	233.082	0.0049	15	0.013	4.5	3.7	2,931,322	16,010,000	YES	36	0.013	47.0	6.6	30,354,811
GI-1109A	GI-1109A	GI-1309	842.79	841.75	222.918	0.0047	15	0.013	4.4	3.6	2,870,876	16,010,000	YES	36	0.013	46.0	6.5	29,728,872
GI-0910A	GI-0910A	GI-1109A	843.66	842.79	198.137	0.0044	15	0.013	4.3	3.5	2,777,741	16,010,000	YES	36	0.013	44.5	6.3	28,764,434

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
GI-0714	GI-0714	GI-0910A	844.87	843.66	461.984	0.0026	15	0.013	3.3	2.7	2,135,267	16,010,000	YES	36	0.013	34.2	4.8	22,111,397
GI-0615	GI-0615	GI-0714	845.85	844.87	198.744	0.0049	15	0.013	4.5	3.7	2,931,322	14,060,000	YES	36	0.013	47.0	6.6	30,354,811
GI-0419	GI-0419	GI-0615	847.27	845.85	396.227	0.0036	15	0.013	3.9	3.2	2,512,562	14,060,000	YES	36	0.013	40.3	5.7	26,018,410
GI-0320	GI-0320	GI-0419	847.79	847.27	142.659	0.0036	15	0.013	3.9	3.2	2,512,562	14,060,000	YES	36	0.013	40.3	5.7	26,018,410
GI-0220	GI-0220	GI-0320	848.03	847.79	150.352	0.0016	15	0.013	2.6	2.1	1,675,041	14,060,000	YES	36	0.013	26.8	3.8	17,345,607
GI-0121B	GI-0121B	GI-0220	849.28	848.03	201.019	0.0062	15	0.013	5.1	4.2	3,297,322	14,060,000	YES	36	0.013	52.8	7.5	34,144,861
GI-0122	GI-0122	GI-0121B	849.49	849.28	56.552	0.0037	15	0.013	3.9	3.2	2,547,219	11,800,000	YES	36	0.013	40.8	5.8	26,377,301
FJ-3304	FJ-3304	GI-0122	850.85	849.49	378.093	0.0036	15	0.013	3.9	3.2	2,512,562	11,800,000	YES	36	0.013	40.3	5.7	26,018,410
FJ-3303	FJ-3303	FJ-3304	851.54	850.85	57.009	0.0121	15	0.013	7.1	5.8	4,606,363	11,800,000	YES	36	0.013	73.8	10.4	47,700,418
FJ-3206	FJ-3206	FJ-3303	851.9	851.54	259.138	0.0014	15	0.013	2.4	2.0	1,566,858	11,800,000	YES	36	0.013	25.1	3.6	16,225,329
FJ-3108	FJ-3108	FJ-3206	852.26	851.9	240.566	0.0015	15	0.013	2.5	2.0	1,621,852	11,800,000	YES	36	0.013	26.0	3.7	16,794,811
FJ-3110	FJ-3110	FJ-3108	852.68	852.26	131.761	0.0032	15	0.013	3.7	3.0	2,368,866	11,800,000	YES	36	0.013	38.0	5.4	24,530,392
FJ-3011B	FJ-3011B	FJ-3110	853.01	852.68	183.087	0.0018	15	0.013	2.7	2.2	1,776,649	11,800,000	YES	36	0.013	28.5	4.0	18,397,794
FJ-2813	FJ-2813	FJ-3011B	853.86	853.01	280.287	0.003	15	0.013	3.5	2.9	2,293,645	11,800,000	YES	36	0.013	36.8	5.2	23,751,450
FJ-2414C	FJ-2414C	FJ-2813	855.12	853.86	404.111	0.0031	15	0.013	3.6	2.9	2,331,559	11,800,000	YES	36	0.013	37.4	5.3	24,144,063
FJ-2114A	FJ-2114A	FJ-2414C	855.99	855.12	262.941	0.0033	15	0.013	3.7	3.0	2,405,595	11,800,000	YES	36	0.013	38.5	5.5	24,910,731
FJ-2215	FJ-2215	FJ-2114A	856.15	855.99	106.481	0.0015	15	0.013	2.5	2.0	1,621,852	11,800,000	YES	36	0.013	26.0	3.7	16,794,811
FJ-2216	FJ-2216	FJ-2215	856.48	856.15	84.746	0.0039	15	0.013	4.0	3.3	2,615,157	11,800,000	YES	36	0.013	41.9	5.9	27,080,820
FJ-1817	FJ-1817	FJ-2216	857.57	856.48	379.594	0.0029	15	0.013	3.5	2.8	2,255,093	11,800,000	YES	36	0.013	36.1	5.1	23,352,238
FJ-1716B	FJ-1716B	FJ-1817	857.87	857.57	97.757	0.0031	15	0.013	3.6	2.9	2,331,559	11,800,000	YES	36	0.013	37.4	5.3	24,144,063
FJ-1616B	FJ-1616B	FJ-1716B	858.18	857.87	123.35	0.0025	15	0.013	3.2	2.6	2,093,801	11,800,000	YES	36	0.013	33.5	4.7	21,682,008
FJ-1517D	FJ-1517D	FJ-1616B	858.47	858.18	128.384	0.0023	15	0.013	3.1	2.5	2,008,304	11,800,000	YES	36	0.013	32.2	4.6	20,796,652
FJ-1217B	FJ-1217B	FJ-1517D	859.49	858.47	313.006	0.0033	15	0.013	3.7	3.0	2,405,595	10,740,000	YES	36	0.013	38.5	5.5	24,910,731
FJ-1018	FJ-1018	FJ-1217B	859.86	859.49	187.601	0.002	15	0.013	2.9	2.4	1,872,753	10,740,000	YES	36	0.013	30.0	4.2	19,392,978
FJ-1017B	FJ-1017B	FJ-1018	860.15	859.86	109.736	0.0026	15	0.013	3.3	2.7	2,135,267	10,740,000	YES	36	0.013	34.2	4.8	22,111,397
FJ-0618	FJ-0618	FJ-1017B	862.27	860.15	356.911	0.0059	15	0.013	5.0	4.1	3,216,559	10,740,000	YES	36	0.013	51.5	7.3	33,308,533
FJ-0218	FJ-0218	FJ-0618	864.42	862.27	381.672	0.0056	15	0.013	4.8	4.0	3,133,715	10,740,000	YES	36	0.013	50.2	7.1	32,450,658
EJ-3419	EJ-3419	FJ-0218	865.61	864.42	199.663	0.006	15	0.013	5.0	4.1	3,243,703	10,740,000	YES	36	0.013	52.0	7.4	33,589,623
EJ-3319	EJ-3319	EJ-3419	865.84	865.61	161.165	0.0014	15	0.013	2.4	2.0	1,566,858	10,740,000	YES	36	0.013	25.1	3.6	16,225,329
EJ-2919B	EJ-2919B	EJ-3319	867.24	865.84	408.5	0.0034	15	0.013	3.8	3.1	2,441,771	10,740,000	YES	30	0.013	24.0	4.9	15,540,144
EJ-2718	EJ-2718	EJ-2919B	868.02	867.24	218.258	0.0036	15	0.013	3.9	3.2	2,512,562	10,330,000	YES	30	0.013	24.7	5.0	15,990,676
EJ-2419	EJ-2419	EJ-2718	869.53	868.02	244.016	0.0062	15	0.013	5.1	4.2	3,297,322	10,330,000	YES	30	0.013	32.5	6.6	20,985,118
EJ-2220	EJ-2220	EJ-2419	870.78	869.53	212.592	0.0059	15	0.013	5.0	4.1	3,216,559	10,330,000	YES	30	0.013	31.7	6.5	20,471,119
EJ-2120	EJ-2120	EJ-2220	871.17	870.78	179.51	0.0022	15	0.013	3.0	2.5	1,964,160	10,330,000	YES	30	0.013	19.3	3.9	12,500,486
EK-1603	EK-1603	EJ-2120	875.19	871.17	300	0.0134	12	0.013	4.1	5.3	2,671,580	5,315,000	YES	24	0.013	26.3	8.4	17,002,714
EK-1204	EK-1204	EK-1603	876.71	875.19	340.6	0.0045	12	0.013	2.4	3.1	1,548,182	5,315,000	YES	24	0.013	15.2	4.9	9,853,082
EK-1206	EK-1206	EK-1204	877.6	876.71	239.7	0.0037	12	0.013	2.2	2.8	1,403,837	5,314,000	YES	24	0.013	13.8	4.4	8,934,427
EK-1110	EK-1110	EK-1206	882.04	877.6	353	0.0126	12	0.013	4.0	5.1	2,590,604	4,121,000	YES	24	0.013	25.5	8.1	16,487,360
EK-1116	EK-1116	EK-1110	885.52	882.04	592	0.0059	12	0.013	2.7	3.5	1,772,727	4,120,000	YES	24	0.013	17.5	5.6	11,282,149
EK-1219	EK-1219	EK-1116	887.21	885.52	391.6	0.0043	12	0.013	2.3	3.0	1,513,387	4,120,000	YES	24	0.013	14.9	4.7	9,631,636
EL-1301	EL-1301	EK-1219	887.97	887.21	344.1	0.0022	12	0.013	1.7	2.1	1,082,498	3,779,000	YES	24	0.013	10.7	3.4	6,889,333
EL-1301A	EL-1301A	EL-1301	890.07	887.97	234	0.009	12	0.013	3.4	4.3	2,189,460	3,779,000	YES	24	0.013	21.6	6.9	13,934,362
EL-1205	EL-1205	EL-1301A	891.09	890.07	220.6	0.0046	12	0.013	2.4	3.1	1,565,289	3,780,000	YES	24	0.013	15.4	4.9	9,961,959
EL-1106	EL-1106	EL-1205	892.18	891.09	148.8	0.0073	12	0.013	3.1	3.9	1,971,865	3,780,000	YES	24	0.013	19.4	6.2	12,549,524
EL-0808	EL-0808	EL-1106	893.69	892.18	352.4	0.0043	12	0.013	2.3	3.0	1,513,387	3,574,000	YES	24	0.013	14.9	4.7	9,631,636
EL-0409	EL-0409	EL-0808	894.88	893.69	354.4	0.0034	12	0.013	2.1	2.7	1,345,722	3,575,000	YES	24	0.013	13.3	4.2	8,564,565

SANITARY SEWER PIPE CAPACITY ANALYSIS
SOUTH FAYETTE TOWNSHIP COMPREHENSIVE PLAN

							EXISTING SEWERS							REQUIRED SEWER SIZES				
Pipe ID	SMH (Upstream)	SMH (Downstream)	Invert Elev. (Upstream)	Invert Elev. (Downstream)	Length (ft)	Slope Calculated (%)	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)	Projected Sewage Load From Model (GPD)	Sewer Replacement Required?	Diameter (in)	n Value	Full Flow Cap. (CFS)	Full Flow Velocity (FPS)	Full Flow Cap. (GPD)
EL-0209A	EL-0209A	EL-0409	897.09	894.88	75	0.0295	8	0.013	2.1	6.0	1,342,651	3,575,000	YES	24	0.013	39.0	12.4	25,227,653
DL-3308	DL-3308	EL-0209A	897.35	897.09	320	0.0008	12	0.013	1.0	1.3	652,771	3,015,000	YES	24	0.013	6.4	2.0	4,154,424
DL-3106	DL-3106	DL-3308	898.82	897.35	251	0.0059	12	0.013	2.7	3.5	1,772,727	3,015,000	YES	18	0.013	8.1	4.6	5,233,659
DL-2604	DL-2604	DL-3106	902.89	898.82	620	0.0066	12	0.013	2.9	3.7	1,874,941	3,015,000	YES	18	0.013	8.6	4.8	5,535,430
DL-2206	DL-2206	DL-2604	904.35	902.89	396	0.0037	15	0.013	3.9	3.2	2,547,219	3,015,000	YES	18	0.013	6.4	3.6	4,144,578
DL-2007	DL-2007	DL-2206	904.94	904.35	214	0.0028	15	0.013	3.4	2.8	2,215,871	3,016,000	YES	18	0.013	5.6	3.2	3,605,441
DL-1908	DL-1908	DL-2007	905.34	904.94	215	0.0019	15	0.013	2.8	2.3	1,825,334	2,052,000	YES	18	0.013	4.6	2.6	2,969,998
DL-1712	DL-1712	DL-1908	907.01	905.34	408	0.0041	15	0.013	4.1	3.4	2,681,374	2,044,000	NO	18	0.013	6.8	3.8	4,362,861
DL-1515	DL-1515	DL-1712	907.92	907.01	395	0.0023	12	0.013	1.7	2.2	1,106,827	2,044,000	YES	18	0.013	5.1	2.9	3,267,709
DL-1319A	DL-1319A	DL-1515	909.74	907.92	400	0.0046	12	0.013	2.4	3.1	1,565,289	2,044,000	YES	15	0.013	4.4	3.6	2,840,170
DM-1101A	DL-1221	DL-1319A	910.71	909.74	188	0.0052	12	0.013	2.6	3.3	1,664,246	111,600	NO	12	0.013	2.6	3.3	1,664,246
DL-1221	DM-1101A	DL-1221	911.53	910.71	274	0.003	12	0.013	2.0	2.5	1,264,085	111,500	NO	12	0.013	2.0	2.5	1,264,085
DM-0905	DM-0905	DM-1101A	912.71	911.53	385	0.0031	12	0.013	2.0	2.5	1,284,981	111,700	NO	12	0.013	2.0	2.5	1,284,981
DM-0806B	DM-0806B	DM-0905	913.34	912.71	167	0.0038	12	0.013	2.2	2.8	1,422,681	111,700	NO	12	0.013	2.2	2.8	1,422,681
9G	9G	DM-0806B	917.34	913.34	252.63	0.0158	8	0.013	1.5	4.4	982,609	111,700	NO	8	0.013	1.5	4.4	982,609

Appendix B

Transportation–Roadway Sufficiency Analysis

Pennsylvania Act 209
Transportation Impact Fee Study

South Fayette Township
Roadway Sufficiency Analysis Report

Prepared for:
South Fayette Township,
Allegheny County, Pennsylvania

July 25, 2011

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Introduction

This *Roadway Sufficiency Analysis Report* has been prepared in accordance with the requirements set forth in Pennsylvania Act 209 on behalf of South Fayette Township, Allegheny County, Pennsylvania. Pennsylvania Act 209 was signed into law effective December 19, 1990. It amends the Pennsylvania Municipalities Code (Act 247 of 1968, as amended in February 2005) to permit municipalities to assess transportation impact fees on new development within their boundaries provided that they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act.

Impact fees under Act 209, with only one exception contained in Act 68 amendments to the Municipalities Planning Code (2000), may only be used for those costs incurred for improvements designated in the adopted transportation capital improvements plan of the municipality that are attributable to new development. The impact fees cannot be used for municipal, non-transportation-related capital improvements; for the repair, maintenance, or operation of existing or new municipal transportation capital improvements; or for the upgrade or replacement of existing municipal transportation capital improvements due to operational or safety deficiencies not related to new development. The Act specifically and only applies to off-site transportation capital improvements attributable to new development; it neither applies to, nor restricts, the procedures or powers of the municipality to require on-site transportation improvements to remedy impacts of new development, nor is it intended to replace the municipality's ordinance requirements for submission of traffic impact studies.

Without the adoption of this ordinance permitted by the Act 209 Law, a municipality does not have the power to require, as a condition for approval of a land development or subdivision application, the construction, dedication, or payment of any off-site improvements or capital expenditures.

All appendices supporting the *Roadway Sufficiency Analysis Report* referred to in this report are contained in a separate bound document entitled *Pennsylvania Act 209 Roadway Sufficiency Analysis Report Technical Appendices*, South Fayette Township, Allegheny County.

Process

The process that South Fayette Township has undertaken includes the completion of the necessary milestones pursuant to the Act 209 legislation, as follows:

1. Appointment of a transportation impact fee advisory committee (TIFAC) and designation of the geographic areas of the municipality that will be subject to the transportation impact fee ordinance by resolution of the Board of Commissioners

2. Meeting minutes prepared by the TIFAC are provided in **Appendix A**.

3. Development and adoption of a land use assumptions report (LUAR) for the Township and its designated geographic areas, called transportation service areas (TSA's), which together with existing development are the subject of the roadway sufficiency analysis and development of a transportation capital improvements plan (CIP).

4. Completion and approval of a roadway sufficiency analysis for the TSA's, identifying traffic deficiencies and needed improvements attributable to existing traffic, future traffic not originating from the service areas (i.e., pass-through traffic), and future traffic originating from new development within the service areas for preferred levels of service in terms of desired traffic operations during the designated peak-hour of study.

Act 209 requires a minimum future planning horizon of five years. In order to be consistent with the future horizon year of the *Land Use Assumptions Report*, the future year 2030 was selected as the design year of this study. However, this document should not be considered a static, "one-time" effort, as the Act 209 legislation (Section 504-A(e)(4)) has provisions for periodic updates of the roadway sufficiency analysis, CIP, and impact fees, as changes in the LUAR, transportation improvement needs, or funding conditions occur.

As the law allows for the periodic update of the impact fees, it is recommended that the TIFAC continue to meet periodically and make recommendations to the Board of Commissioners, as necessary, to update the CIP or impact fees based on the following:

1. New subsequent development that has occurred in the Township.

2. Capital improvements, listed in the CIP, which have been constructed.

3. Unavoidable delays in construction of the improvements listed in the CIP that are outside the control or responsibility of the Township.

4. Significant changes in the land use assumptions.

5. Significant changes in the estimated costs of the improvements listed in the CIP, which may be recalculated by applying the construction cost index as published in the American City/County Magazine or the Engineering News Record.

6. Significant changes in the projected revenue from all sources listed, needed for the construction of the improvements listed in the CIP.

Transportation Service Areas

Act 209 requires the establishment of specific study boundaries, or TSA's, for evaluation and application of transportation impact fees. By law, each TSA is required to be completely contiguous, and is limited to a maximum size of seven square miles. Moreover, traffic impact fees for each TSA are applicable only to development located within that respective service area, and therefore, development traffic from one service area is considered pass-through traffic within the other service areas. Further explanation of pass-through and development traffic will be provided in subsequent sections.

As illustrated in **Figure 1**, the TIFAC has established two TSA's within South Fayette Township in accordance with the requirements of Act 209, which cover a portion of the Township, exclusive of dedicated open space/park areas. Each of the TSA's measures equal to or less than the maximum seven square miles required by the Act 209 legislation.

South Transportation Service Area

As illustrated in Figure 1, the South TSA generally includes the area of the Township south of Millers Run Road from the east side of the Township through Route 50,then south of Route 50 to the western Township line. The area includes the following nine study intersections, which are listed in **Table 1.**

Table 1 - South TSA Study Intersections

Reference Number	Intersection	Existing Traffic Control
1	Washington Pike and Boyce Road	Stop Sign
2	Washington Pike and Alpine Road	Stop Sign
3	Washington Pike and Shop-n-save/Twin Ponds Lane	Signal
4	Washington Pike and Bursca Drive	Stop Sign
5	Washington Pike and Get-go Gas/Daniell Drive	Signal (2011)
6	Washington Pike and Route 50	Signal
7	Route 50 and I-79 Northbound Ramps	Signal
8	Route 50 and I-79 Southbound Ramps	Signal
9	Route 50 and Alpine Road	Stop Sign

North Transportation Service Area

As illustrated in Figure 1, the north TSA generally includes the area of the Township along and north of Millers Run Road from the east side of the Township through Route 50, along Route 50 to the western Township line. The eight study intersections included in this service area are listed in **Table 2.**

Table 2 - North TSA Study Intersections

Reference Number	Intersection	Existing Traffic Control
10	Route 50 and Parks Road	Signal
11	Millers Run Road and Battle Ridge Road	Stop Sign
12	Millers Run Road and Old Oakdale Road	Stop Sign
13	Millers Run Road and Presto-Sygan Road	Stop Sign
14	Robinson Run Road and Cecil Sturgeon Road/Cemetery Hill Road	Stop Sign
15	Robinson Run Road and Battle Ridge Road	Stop Sign
16	Battle Ridge Road and Union Avenue Extension	Stop Sign
17	Battle Ridge Road and Old Oakdale Road	Stop Sign

Land Use Assumptions Report

As required by Act 209, the South Fayette Township TIFAC approved the South Fayette Township *Land Use Assumptions Report* (dated December 21, 2010), on January 25, 2011, which was prepared and completed by Environmental Planning and Design. It was presented at a public hearing on February 21, 2011 and to the Board of Commissioners on February 21, 2011, when it was then adopted by resolution, as required by Act 209. A copy of the *Land Use Assumptions Report,* and the resolution drafted by the Township to accept it, are provided in **Appendix B**.

The *Land Use Assumptions Report* identifies the anticipated development ultimate build-out potential within South Fayette Township, as well as the projected 2030 build-out on an area-by-area basis, and provides graphics illustrating the potential locations of these parcels. The projected 2030 build-out within each TSA, which is the basis of this analysis, is summarized below in **Table 3.**

Table 3 - Land Use Assumptions Report 2030 Build-Out Summary

Land Use Classification	South Service Area	North Service Area
Residential	1,210 dwelling units	2,029 dwelling units
Non-Residential	521,526 square feet	2,090,148 square feet

Existing Transportation Network

This section includes a designation of the roadways and intersections selected to be evaluated as part of this *Roadway Sufficiency Analysis*, as well as an inventory of physical and operational characteristics of the existing Township transportation system required for the completion of the *Roadway Sufficiency Analysis*.

Roadway Characteristics

The South Fayette Township roadway system, as illustrated in **Figure 2**, consists primarily of two-lane, undivided roadways with the exception of Route 50 and Washington Pike. Additionally illustrated in Figure 2 are the existing average daily traffic (ADT) volumes collected on several of the main roadways within the Township. Major regional access to/from the Township is provided via I-78, Route 50, and Washington Pike (S.R. 3003).

The roadway network shown in Figure 2, including both roadway segments and intersections, constitutes the transportation roadway network analyzed pursuant to Act 209. The operating characteristics of each of the major study roadways are summarized in **Table 4.**

Table 4 - Existing Transportation Network Summary

Roadway	Classification	Ownership	Posted Speed Limit (mph)
Washington Pike (S.R. 3003)	Urban Minor Arterial	State	35
Route 50 (S.R. 0050)	Urban Principal Arterial	State	40-55
Millers Run Road (S.R. 3026)	Urban Collector Street	State	35
Union Avenue Extension (S.R. 0978)	Urban Collector Street	State	35
Battle Ridge Road (S.R. 0978)	Urban Collector Street	State	40-45
Robinson Run Road (S.R. 3024)	Urban Collector Street	State	40
Boyce Road (S.R. 3006)	Urban Collector Street	State	35
Presto-Sygan Road (S.R. 3028)	Urban Collector Street	State	25
I-78 NB Ramp (S.R. 8003)	Urban Principal Arterial	State	45
I-78 SB Ramp (S.R. 8003)	Urban Principal Arterial	State	45

Existing Transportation Conditions

The evaluation of the existing transportation network is based on the physical (i.e., intersection geometry, lane usage, etc.) and operational (i.e., traffic control, traffic volumes, signal timing/phasing) characteristics of the study intersections and roadways during the weekday afternoon peak hour. The TIFAC selected the weekday afternoon peak hour as the basis of this *Roadway Sufficiency Analysis* due to the mix of anticipated residential and commercial development, which typically have a shared peak during the weekday afternoon peak hour.

Existing Traffic Volumes

Traffic operating conditions are influenced by the relationships between traffic volumes and the service capacities of the roadways and intersections. In order to evaluate existing conditions at area intersections, manual turning movement (MTM) counts were conducted at the study area intersections listed in Tables 1 and 2 during the weekday afternoon peak period (4:00 PM to 6:00 PM) on a typical Tuesday, Wednesday, or Thursday in April and September 2010. This traffic count/volume data should be considered the baseline by the Township for determining new development or redevelopment's effect on the study roadway network, based upon the vacancy/occupancy levels of each property at the time of the study.

The traffic counts were then tabulated by 15-minute periods to establish the four highest consecutive 15-minute periods which constitute the weekday afternoon peak hour, and serve as the basis for this analysis. **Figure 3** illustrates the 2010 existing weekday afternoon peak-hour traffic volumes at the study area intersections. The actual MTM counts are provided in **Appendix C.**

Additionally, as previously illustrated in Figure 2, 24-hour automatic traffic recorder (ATR) counts were conducted at seven locations during September 2010 to supplement other counts completed in the area by PennDOT or others. These counts were utilized to determine the traffic patterns typically entering and exiting the Township, and occurring within the Township, along the major study roadways, as well as to establish current traffic patterns along these area roadways. Copies of the detailed ATR count data, as well as those from PennDOT's Internet Traffic Monitoring System (iTMS) are provided in **Appendix D.**

Analysis Methodology

The traffic volumes depicted in Figure 3 were subjected to detailed capacity/level-of-service analysis in accordance with the standard techniques contained in the *Highway Capacity Manual*[1]. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix E** for both signalized and unsignalized intersections, as well the

[1] *Transportation Research Board, Special Report 209, Highway Capacity Manual, published by the Transportation Research Board, Washington, DC, 2000.*

correlation between average total control delay and the respective level of service (LOS) criteria for each intersection type. Level of service (LOS) is the criteria utilized to evaluate the study intersections and roadways in accordance with standard traffic engineering practice and the Act 209 legislation. In the surrounding area, PennDOT District 11-0, as well as many local municipalities, considers LOS A through D acceptable operating conditions while LOS E represents conditions approaching capacity and LOS F indicates that traffic volumes have exceeded available capacity.

Preferred Levels of Service

Consistent with the Act 209 legislation, the TIFAC has adopted preferred level-of-service criteria for the intersections studied. The preferred level of service is considered the operational design standard by which each study intersection and roadway segment must operate under existing conditions, future pass-through conditions, and future development conditions in this *Roadway Sufficiency Analysis*. Deficient (worsened) operations that do not satisfy the preferred levels of service at the study intersections must be improved for each condition.

According to Act 209, the preferred level of service may be waived by the municipality at individual intersections based upon difficulty in implementing various improvements (i.e., geometric design limitations, topographic limitations, or unavailable/unobtainable necessary right-of-way). For unsignalized intersections where the preferred level-of-service criterion is not satisfied, most often only signalization can mitigate the traffic deficiency. Where traffic volumes do not meet traffic signal warrant criteria, these intersections cannot be improved and the improvement must be waived or deferred until the traffic volumes warrant signalization. For intersections that have sufficient right-of-way and available geometry, the traffic volumes were analyzed to determine if a roundabout is warranted.

As shown in **Table 5**, the TIFAC has adopted specific preferred level-of-service criteria for the purposes of this *Roadway Sufficiency Analysis* for each of the TSA's. For signalized intersections, the preferred levels of service apply to the individual movements, as well as the overall intersection operation. For unsignalized intersections, the preferred levels of service apply only to the main street left-turn movements and the minor street, stop-controlled movements. The preferred levels of service were established based on a review of typical acceptable thresholds utilized by PennDOT and other adjacent municipalities, and also reflect the urban/suburban/rural character of each TSA.

Table 5 - Preferred Level-of-Service Criteria

Intersection	North TSA	South TSA
Signalized	LOS E all movements LOS D overall	LOS E all movements LOS D overall
Unsignalized	LOS E all movements LOS D overall	LOS E all movements LOS D overall

Existing Levels of Service

The 2010 existing weekday afternoon peak-hour traffic volumes presented in Figure 3 were subjected to the detailed capacity/level-of-service analysis methodology previously described. The results of the analysis are illustrated in **Figure 4**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix F**.

As shown in Figure 4, of the seventeen study intersections, thirteen presently operate at acceptable levels of service during the weekday afternoon peak hour, in accordance with the preferred level-of-service criteria contained in Table 5. The following four intersections currently do not satisfy the preferred level-of-service criteria:

- **South TSA**
  - Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)
  - Washington Pike (S.R. 3003) and Alpine Road
  - Washington Pike (S.R. 3003) and Route 50 (S.R. 0050)
  - Alpine Road and Route 50 (S.R. 0050)

Existing Improvement Program

The improvements necessary to mitigate existing traffic deficiencies and satisfy the preferred level-of-service criteria are illustrated in **Figure 5** and summarized in **Table 6** for each study intersection and roadway segment where an improvement is recommended or required. Improvements are required at four study intersections in order to achieve the preferred levels of service under existing traffic conditions. It should be noted that all improvements necessary to mitigate existing traffic deficiencies have been recommended and planned by developers for projects formally submitted and approved by the Township prior to the Act 209 implementation, only traffic signal timing modifications are recommended at one intersection – Washington Pike and Route 50. Therefore, it is assumed that the Township will not need to take responsibility for these improvements by others.

Table 6 - Existing Conditions Improvement Program for Study Intersections

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
1	Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)	South	Stop Sign	*Install traffic signal - Improvements recommended by approved development.*
2	Washington Pike (S.R. 3003) and Alpine Road	South	Stop Sign	*Install traffic signal - Improvements recommended by approved development.*
3	Washington Pike (S.R. 3003) and Shop-n-save/Twin Ponds Lane	South	Signal	No improvements required.
4	Washington Pike (S.R. 3003) and Bursca Drive	South	Stop Sign	No improvements required.
5	Washington Pike (S.R. 3003) and Get-Go Gas/Daniell Drive	South	Signal (2011)	No improvements required.
6	Washington Pike (S.R. 3003) and Route 50	South	Signal	Modify traffic signal timings - *Add second northbound left-turn lane on Washington Pike - Improvements recommended by approved development.*
7	Route 50 and I-79 Northbound Ramps	South	Signal	No improvements required.
8	Route 50 and I-79 Southbound Ramps	South	Signal	No improvements required.
9	Route 50 and Alpine Road	South	Stop Sign	*Install traffic signal - Improvements recommended by approved development.*
10	Route 50 and Parks Road/Millers Run Road	North	Signal	No improvements required.
11	Millers Run Road (S.R. 3026) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	No improvements required.
12	Millers Run Road (S.R. 3026) and Old Oakdale Road	North	Stop Sign	No improvements required.
13	Millers Run Road (S.R. 3026) and Presto-Sygan Road (S.R. 3028)	North	Stop Sign	No improvements required.
14	Robinson Run Road (S.R. 3024) and Cecil Sturgeon/Cemetery Hill Road	North	Stop Sign	No improvements required.
15	Robinson Run Road (S.R. 3024) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	No improvements required.

Table 6 - Existing Conditions Improvement Program for Study Intersections (continued)

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
16	Battle Ridge Road and Union Avenue Extension (S.R. 0978)	North	Stop Sign	No improvements required.
17	Battle Ridge Road and Old Oakdale Road/Rutherglen Drive	North	Stop Sign	No improvements required.

Future Transportation Conditions

Act 209 requires a minimum five-year future time horizon for the development of the *Transportation Capital Improvements Plan* and *Transportation Impact Fee Ordinance*. A 20-year time frame was selected by consensus of the TIFAC for the South Fayette Township Act 209 traffic analysis for consistency with the preparation of the Township Comprehensive Plan, which is consistent with the development projections contained in the *Land Use Assumptions Report*. Therefore, a future forecast year of 2030 was utilized in the study.

Future Traffic Components

Traffic volume forecasts for 2030 include three components: existing traffic, pass-through traffic, and development traffic. The first component, **existing traffic,** was described in the previous section. The second component of future traffic projections is **pass-through traffic**, which reflects future increases in regional traffic, and is subdivided into the following three elements:

- This first element reflects future increases in regional traffic which is both generated by, and destined to, locations external to the designated TSA's, but passes through the designated service areas along the study area roadways. This element of pass-through traffic also includes traffic generated by specific known future developments located within adjacent municipalities.

- The second element of pass-through traffic includes future traffic from developments that are already approved or whose preliminary land development plans were submitted prior to the formation of the TIFAC committee, which would not be subject to the interim fee or resultant transportation impact fee from this study.

- The third element of pass-through traffic includes future development traffic generated from one designated TSA within the Township that passes through the other designated TSA within the Township. For example, while traffic generated from within the south TSA is considered "development" traffic in the south TSA, this same traffic is considered "pass-through" traffic when it traverses through the north TSA.

Development traffic, is generated by new development within the respective or designated TSA, and constitutes the third and final component of future 2030 traffic volumes.

This section first addresses development trip generation for each service area, based upon the development projections contained in the *Land Use Assumptions Report* and the trip distribution assumptions utilized in the analysis. Future pass-through traffic conditions are then described for each service area, incorporating existing traffic volumes in the service area; regional traffic growth (external to the TSA); and development traffic from the adjacent service area. Finally, future 2030

development traffic conditions are defined, incorporating existing traffic volumes, future pass-through traffic volumes, and future development traffic volumes.

Regional Traffic

In order to determine the 2030 future weekday afternoon peak-hour pass-through traffic volumes, an annual traffic growth rate of 0.25 percent per year was applied to existing weekday afternoon peak-hour traffic volumes to reflect regional traffic growth. This growth was obtained per PennDOT's growth rate table for urban non-interstate roadways in Allegheny County.

In addition to regional traffic growth, traffic associated with developments located within the surrounding eight municipalities, which includes the North Fayette Township, Upper St. Clair Township, Oakdale Borough, McDonald Borough, Peters Township, Collier Township, Cecil Township and Bridgeville Borough, was also distributed through the two service area roadway networks, and is included in the future traffic projections. These developments represent specific known/proposed developments identified by staff of the surrounding municipalities, and were determined to potentially have a significant influence on the study roadways and intersections. The trip generation for these specific developments has been calculated, and is included in **Appendix G.** The estimated portion of those development trips that will traverse the two service areas was then distributed to the study roadway and intersection network based upon the overall distribution outlined in **Figure 6.**

Approved/Under Construction Development Traffic

In addition to regional traffic, traffic associated with a number of developments located within South Fayette Township that have been submitted as preliminary land development plans, were approved, or are under construction prior to the formation of the TIFAC was also distributed through the two service area roadway networks, and is included in the future traffic projections. **Table 7** provides a summary of these developments, including there status, as well as the weekday afternoon peak-hour trip generation characteristics, which was based upon data compiled by the Institute of Transportation Engineers in their publication entitled, *Trip Generation, Eighth Edition.*

Table 7 - South Fayette Township Development Projects
Planned/Approved/Under Construction
"New" Vehicular Trip Generation

Development	Use	Status [1]	ITE Land Use Code	Size	Weekday Afternoon "New" Trips		
					In	Out	Total
Bursca Drive Commercial	Retail	Approved, Partially Vacant (6,100 s.f. remaining)	814	6,100 s.f.	8	9	17
GETGO [2,3]	Service Station with Convenience Market and Car Wash	Under Construction 2011	946	5,400 s.f.	47	47	94
Berkshires Residential Subdivision[3]	Residential	Approved, 183 units remaining	210	183 d.u.	106	57	163
Alpine Pointe Business Park[3]	General Office/Warehouse	Approved	710/150	253,000 s.f.	76	361	437
Newbury Mixed Use[2,3]	Mixed Use Development	Under Construction	various	various	946	962	1,908
Granite Ridge	Residential	Approved, 110 units remaining	230/210	12/98 d.u.	72	41	113
Willowbrook 3B	Residential	Approved	210	27 d.u.	20	12	32
Kevington	Residential	Approved	210	16 s.f.	13	7	20
TOTAL TRIP WEEKDAY AFTERNOON "NEW" TRIPS					**1,288**	**1,496**	**2,784**

(1) Status as of September 2010.

(2) Excludes pass-by trips, which are already on the roadway network.

(3) Based on Traffic Impact Analysis for development submitted to Township.

Service Area Trip Generation

From the *Land Use Assumptions Report*, the TSA development vehicular trip generation was estimated for the 2030 weekday afternoon peak-hour utilizing the Institute of Transportation Engineers publication, *Trip Generation, Eighth Edition,* for both the north and south TSA. The resulting 2030 weekday afternoon peak-hour trip generation is summarized in **Table 8** for each service area.

Table 8 - Service Area Development Vehicular "New" Trip Generation [1]

Description	ITE Land Use Code	Size	Weekday Afternoon Peak-hour [2]		
			In	Out	Total
South TSA					
Residential					
Single-Family	210	1,210 d.u.	624	367	991
Non-Residential					
Office	710	521,526 s.f.	113	550	663
TOTAL SOUTH "NEW" TRIPS			**737**	**917**	**1,654**
North TSA					
Residential					
Single-Family	210	2,075 d.u.	1,014	596	1,610
Non-Residential					
Light Industrial	110	823,826 s.f.	123	898	1,021
Office	710	823,826 s.f.	170	831	1,001
Retail [2]	820	442,496 s.f.	557	580	1,137
TOTAL NORTH "NEW" TRIPS			**1,864**	**2,905**	**4,769**

(1) The locations of developments are identified and illustrated in the *Land Use Assumptions Report.*
(2) Trips shown exclude "pass-by" trips, which are applicable to retail developments.

Accordingly, the South TSA is estimated to experience an increase in total (inbound and outbound) weekday afternoon peak-hour trip generation of 1,654 "new" trips over the next twenty years, while the North TSA is estimated to experience an increase of 4,769 new trips over the same period, which have been included in the with-development traffic analysis.

Trip Distribution

Vehicular traffic volumes generated by new development over the next twenty years were generally distributed to the area roadway network based on existing travel patterns determined from the ADT

volumes, entering and exiting the Township, as shown in Figure 2, as well as the locations of specific future development parcels with respect to the study roadway network and other major traffic generators and destinations. The resultant overall directions of approach and departure are indicated in Figure 6.

2030 Future Pass-Through Traffic

The 2030 future weekday afternoon peak-hour pass-through traffic volumes were determined based on assignment of regional traffic, traffic generated from developments under construction/approved, and traffic generated from one designated TSA within the Township that passes through the other designated TSA within the Township. The 2030 future weekday afternoon peak-hour pass-through traffic volumes are illustrated in **Figure 7.**

Planned Roadway Improvements

Based on discussions with the Township, there are some planned roadway improvements that have been included in the 2030 future pass-through traffic conditions. These improvements are as follows:

- **Washington Pike and Boyce Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a southbound left-turn lane on Washington Pike as well as install a traffic signal.

- **Washington Pike and Alpine Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a northbound left-turn lane on Washington Pike and a eastbound right-turn lane on Alpine Road as well as install a traffic signal.

- **Washington Pike and Bursca Drive** – As part of the final plans of the Bursca Drive retail development occurring along Bursca Drive, the developer has agreed to install a southbound left-turn lane on Washington Pike and a westbound right-turn lane on Bursca Drive, as well as install a traffic signal.

- **Washington Pike and Daniell Drive** – As part of the final plans of the Get-Go commercial development occurring along Daniell Drive, the developer has agreed to install a westbound right-turn lane on Daniell Drive, as well as install a traffic signal.

- **Washington Pike and Route 50** – As part of the final plans of the Newbury Market development occurring along Presto-Sygan Road, the developer has agreed to install a second northbound left-turn lane on Washington Pike.

- **I-79 Southbound Off-ramp and Route 50** – As part of the final plans of the Newbury Market development occurring along Presto-Sygan Road, the developer has agreed to install a second northbound left-turn lane on the I-79 Southbound Off-ramp.

- **Route 50 and Alpine Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a traffic signal.

- **Millers Run Road and Presto-Sygan Road** – As part of the final plans of the Newbury Market development occurring Presto-Sygan Road, the developer has agreed to install a traffic signal.

2030 Future Pass-Through Traffic Levels of Service

The future 2030 weekday afternoon pass-through traffic volumes illustrated in Figure 7 were subjected to the previously described capacity/level-of-service analysis procedures to determine 2030 pass-through levels of service. The detailed analyses are provided in **Appendix H**. As required by Act 209, the future 2030 pass-through conditions analysis for each study intersection determine the **incremental** traffic impacts and required mitigation of future pass-through traffic in comparison to existing traffic conditions after required existing traffic mitigation.

Figure 8 summarizes the results of the 2030 future pass-through traffic capacity/level-of-service analyses for the study intersections with the recommended improvements proposed under existing conditions and improvements recommended by other approved developments. Traffic operating conditions at the following six study intersections will not satisfy the preferred level-of-service criteria under 2030 future pass-through conditions:

- **South TSA**
  - Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)
  - Washington Pike (S.R. 3003) and Alpine Road
  - Washington Pike (S.R. 3003) and Route 50
  - Route 50 and I-79 Southbound Ramps

- **North TSA**
  - Route 50 and Millers Run Road/Parks Road
  - Battle Ridge Road and Rutherglen Drive/Old Oakdale Road

2030 Future Pass-Through Improvement Program

The additional improvements required to accommodate pass-through traffic are illustrated in **Figure 9.** These improvements are also summarized in more detail in **Table 9** for each study intersection, respectively in the north and south TSA's. Improvements will be required at six study intersections in order to achieve the preferred levels of service under pass-through traffic conditions.

Table 9 - Future Pass-Through Conditions Improvement Program for Study Intersections

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
1	Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)	South	Signal	Modify traffic signal timings and install westbound right-turn lane – *Installation of traffic signal and southbound left-turn lane recommended by approved development.*
2	Washington Pike (S.R. 3003) and Alpine Road	South	Signal	Modify traffic signal timings – *Installation of traffic signal, eastbound right-turn lane and northbound left-turn lane recommended by approved development.*
3	Washington Pike (S.R. 3003) and Shop-n-save/Twin Ponds Lane	South	Signal	No improvements required.
4	Washington Pike (S.R. 3003) and Bursca Drive	South	Signal	*Installation of traffic signal, westbound right-turn lane, and southbound left-turn lane recommended by approved development.*
5	Washington Pike (S.R. 3003) and Get-Go Gas/Daniell Drive	South	Signal (2011)	*Installation of traffic signal and westbound right-turn lane recommended by approved development.*
6	Washington Pike (S.R. 3003) and Route 50	South	Signal	Modify traffic signal timings – *Installation of a second northbound left-turn lane on Washington Pike recommended by approved development.*
7	Route 50 and I-79 Northbound Ramps	South	Signal	No improvements required.
8	Route 50 and I-79 Southbound Ramps	South	Signal	Modify traffic signal timings – *Installation of a second northbound left-turn lane on I-79 Southbound off-ramp recommended by approved development.*
9	Route 50 and Alpine Road	South	Signal	*Installation of traffic signal recommended by approved development.*
10	Route 50 and Parks Road/Millers Run Road	North	Signal	Modify traffic signal timings.
11	Millers Run Road (S.R. 3026) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	No improvements required.
12	Millers Run Road (S.R. 3026) and Old Oakdale Road	North	Stop Sign	No improvements required.

Table 9 - Future Pass-Through Conditions Improvement Program for Study Intersections (continued)

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
13	Millers Run Road (S.R. 3026) and Presto-Sygan Road (S.R. 3028)	North	Signal	*Installation of traffic signal recommended by approved development.*
14	Robinson Run Road (S.R. 3024) and Cecil Sturgeon/Cemetery Hill Road	North	Stop Sign	No improvements required.
15	Robinson Run Road (S.R. 3024) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	No improvements required.
16	Battle Ridge Road and Union Avenue Extension (S.R. 0978)	North	Stop Sign	No improvements required.
17	Battle Ridge Road and Old Oakdale Road/Rutherglen Drive	North	Stop Sign	Install traffic signal.

2030 Future Development Traffic

As explained previously, traffic generated by new development internal to each designated TSA constitutes the third and final component of future 2030 traffic. The 2030 future development traffic volumes were determined based on assignment of service area development traffic within each respective TSA to the study roadway network, and the addition of these volumes to 2030 future pass-through traffic volumes. Total 2030 volumes, including both future pass-through traffic and future development traffic volumes, are summarized in **Figure 10.**

2030 Future Development Traffic Levels of Service

The future development traffic volumes presented in Figure 10 were subject to the previously described capacity/level-of-service analysis procedures to determine future 2030 development levels of service and the detailed analyses worksheets are provided in **Appendix I.** The 2030 future development conditions as illustrated in **Figure 11** indicate that the following twelve study intersections will not satisfy the preferred level-of-service criteria and will require further improvements beyond those previously identified:

- South TSA
  - Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)
  - Washington Pike (S.R. 3003) and Alpine Road
  - Washington Pike (S.R. 3003) and Route 50
  - Route 50 and I-79 Southbound Ramps

- North TSA
  - Route 50 and Millers Run Road/Parks Road
  - Battle Ridge Road (S.R. 0978) and Millers Run Road (S.R. 3026)
  - Old Oakdale Drive and Millers Run Road (S.R. 3026)
  - Presto-Sygan Road (S.R. 3028) and Millers Run Road (S.R. 3026)
  - Robinson Run Road (S.R. 3024) and Cecil Sturgeon Road/Cemetery Hill Road
  - Battle Ridge Road (S.R. 0978) and Robinson Run Road (S.R. 3024)
  - Battle Ridge Road (S.R. 0978/3024) and Union Avenue Extension (S.R. 0978)
  - Battle Ridge Road and Rutherglen Drive/Old Oakdale Road

2030 Future Development Improvement Program

In order to achieve the preferred level-of-service criteria under 2030 development conditions additional improvements are required and are illustrated in **Figure 12.** A list all of the improvements required to accommodate development traffic is summarized in **Table 10** for the north and south TSA's, respectively. The resultant levels of service with the proposed improvements are illustrated in Figure 12.

In summary, improvements will be required at eleven of the existing study intersections to accommodate development-generated traffic within the TSA's in order to maintain the established preferred levels of service. The intersection of Robinson Run Road (S.R. 3024) and Cecil Sturgeon Road/Cemetery Hill Road will not meet traffic signal warrants. Therefore, there are no feasible improvements to satisfy the preferred level-of-service criteria at this intersection.

It should also be noted that due to the current configuration of the intersections of Battle Ridge Road with both Robinson Run Road and Union Avenue Extension, a roundabout evaluation was completed as a potential mitigation measure. As high levels of service are anticipated with a roundabout installation at these locations and significant right-of-way is currently available for this option, a roundabout is recommended at both locations.

Table 10 - Future Development Conditions Improvement Program for Study Intersections

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
1	Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)	South	Signal	Modify traffic signal timings and install northbound right-turn lane – *Installation of traffic signal and southbound left-turn lane recommended by approved development.*
2	Washington Pike (S.R. 3003) and Alpine Road	South	Signal	Modify traffic signal timings and install second southbound through lane – *Installation of traffic signal, eastbound right-turn lane and northbound left-turn lane recommended by approved development.*
3	Washington Pike (S.R. 3003) and Shop-n-save/Twin Ponds Lane	South	Signal	No improvements required.
4	Washington Pike (S.R. 3003) and Bursca Drive	South	Signal	*Installation of traffic signal, westbound right-turn lane, and southbound left-turn lane recommended by approved development.*
5	Washington Pike (S.R. 3003) and Get-Go Gas/Daniell Drive	South	Signal	Modify traffic signal timings – *Installation of traffic signal and westbound right-turn lane recommended by approved development.*
6	Washington Pike (S.R. 3003) and Route 50	South	Signal	Modify traffic signal timings, install second southbound through lane, second southbound right-turn lane, and second eastbound right-turn lane – *Installation of a second northbound left-turn lane on Washington Pike recommended by approved development.*
7	Route 50 and I-79 Northbound Ramps	South	Signal	No improvements required.
8	Route 50 and I-79 Southbound Ramps	South	Signal	Modify traffic signal timings and install third eastbound through lane – *Installation of a second northbound left-turn lane on I-79 Southbound off-ramp recommended by approved development.*
9	Route 50 and Alpine Road	South	Signal	*Installation of traffic signal recommended by approved development.*
10	Route 50 and Parks Road/Millers Run Road	North	Signal	Modify traffic signal timings; install westbound right-turn lane, southbound right-turn lane and two (dual) southbound left-turn lanes.
11	Millers Run Road (S.R. 3026) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	Install a traffic signal and eastbound left-turn lane.
12	Millers Run Road (S.R. 3026) and Old Oakdale Road	North	Stop Sign	Install a traffic signal and eastbound left-turn lane.

Table 10 - Future Development Conditions Improvement Program for Study Intersections (continued)

Int No.	Intersection	Service Area	Control Type	Recommended Improvements
13	Millers Run Road (S.R. 3026) and Presto-Sygan Road (S.R. 3028)	North	Signal	Modify traffic signal timings; install eastbound left-turn lane, westbound right-turn lane and southbound right-turn lane - *Installation of traffic signal recommended by approved development.*
14	Robinson Run Road (S.R. 3024) and Cecil Sturgeon/Cemetery Hill Road	North	Stop Sign	Improvements deferred since traffic signal is not warranted.
15	Robinson Run Road (S.R. 3024) and Battle Ridge Road (S.R. 0978)	North	Stop Sign	Install a single-lane roundabout.
16	Battle Ridge Road and Union Avenue Extension (S.R. 0978)	North	Stop Sign	Install a single-lane roundabout.
17	Battle Ridge Road and Old Oakdale Road/Rutherglen Drive	North	Signal	Install westbound left-turn lane.

SOUTH FAYETTE TOWNSHIP

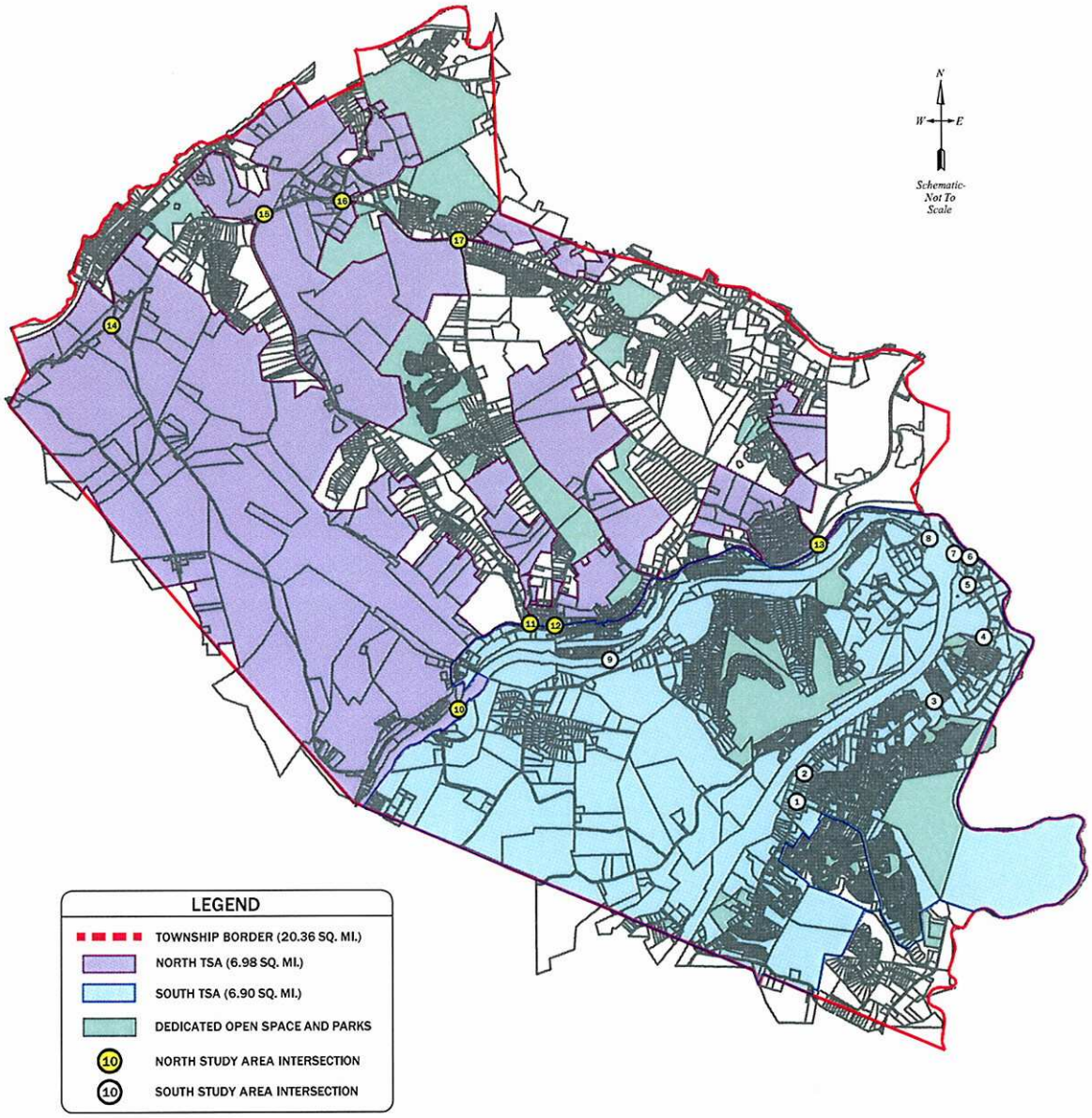

FIGURE 1
TRANSPORTATION SERVICE AREAS
SOUTH FAYETTE TOWNSHIP ACT 209
SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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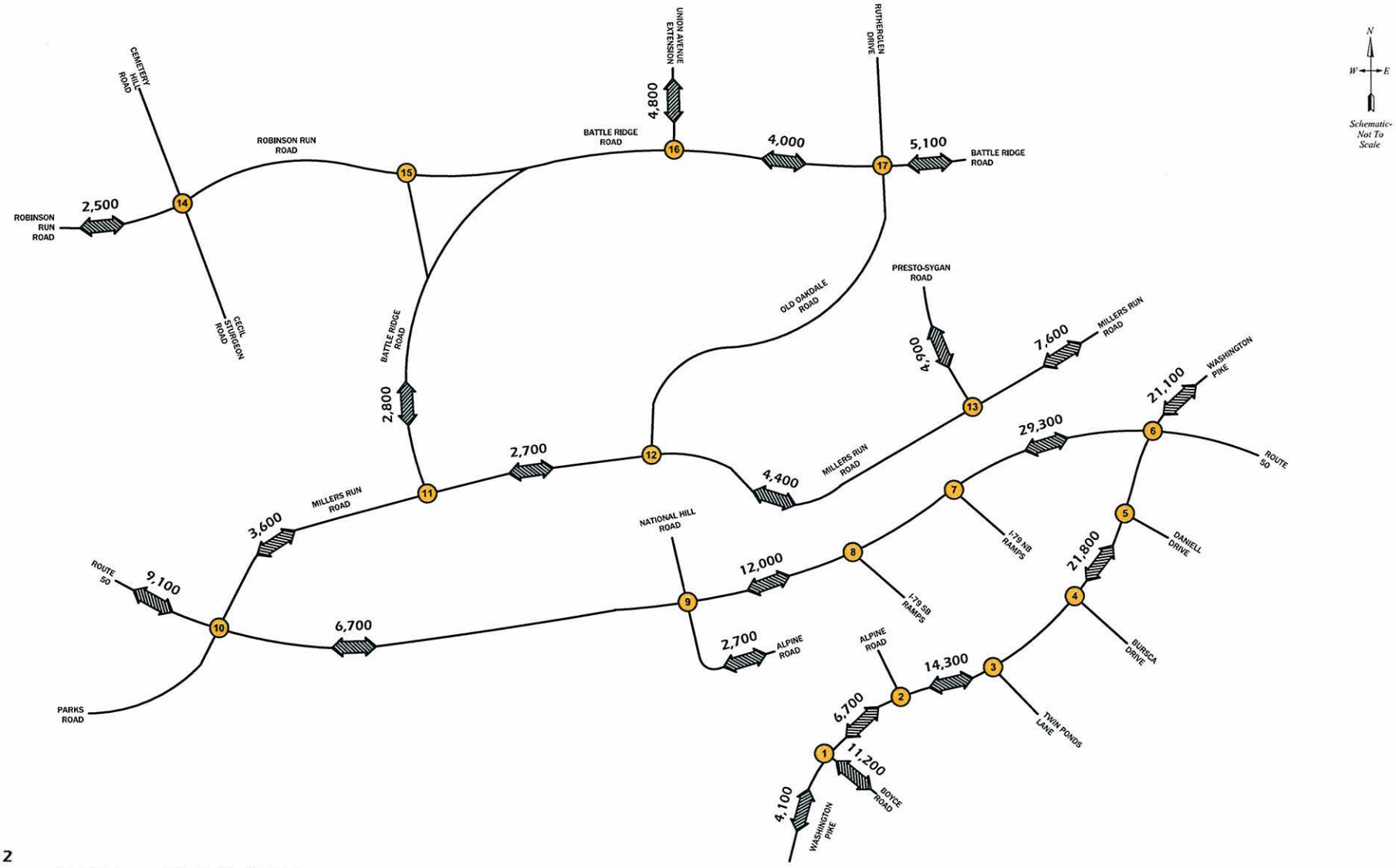

FIGURE 2

Study Area and 2010 Annual Daily Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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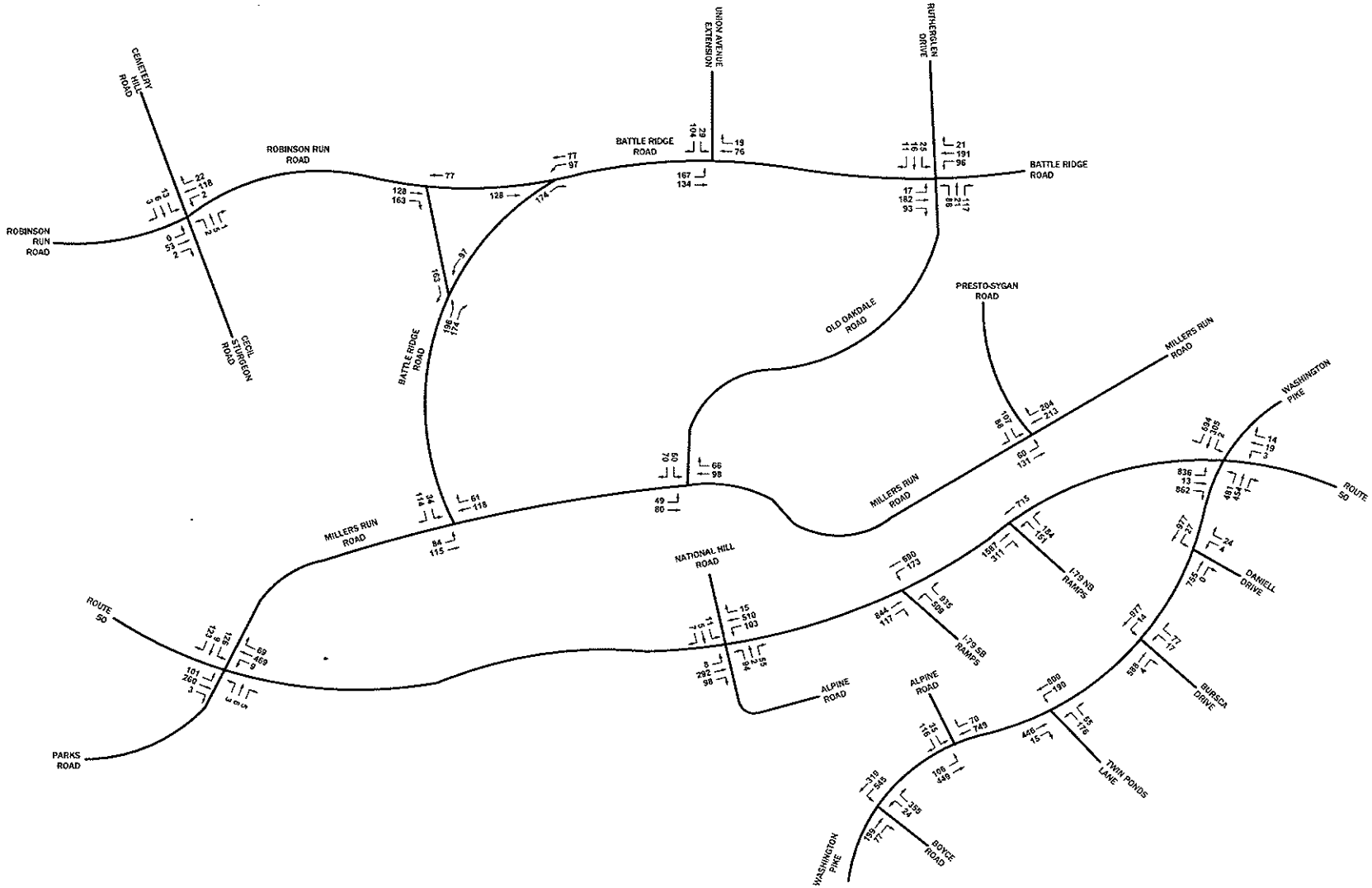

FIGURE 3

2010 Existing Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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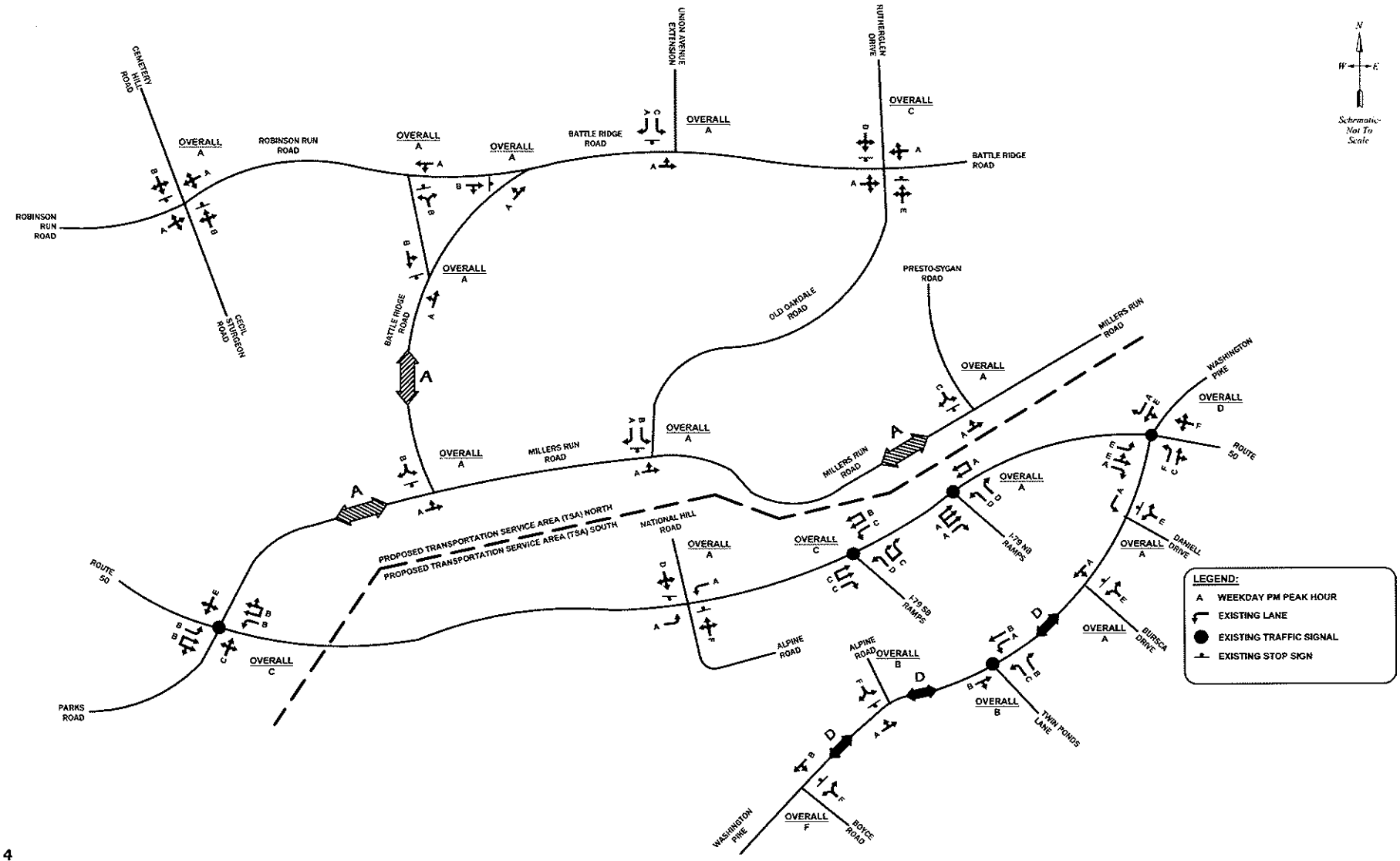

FIGURE 4

2010 Existing Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

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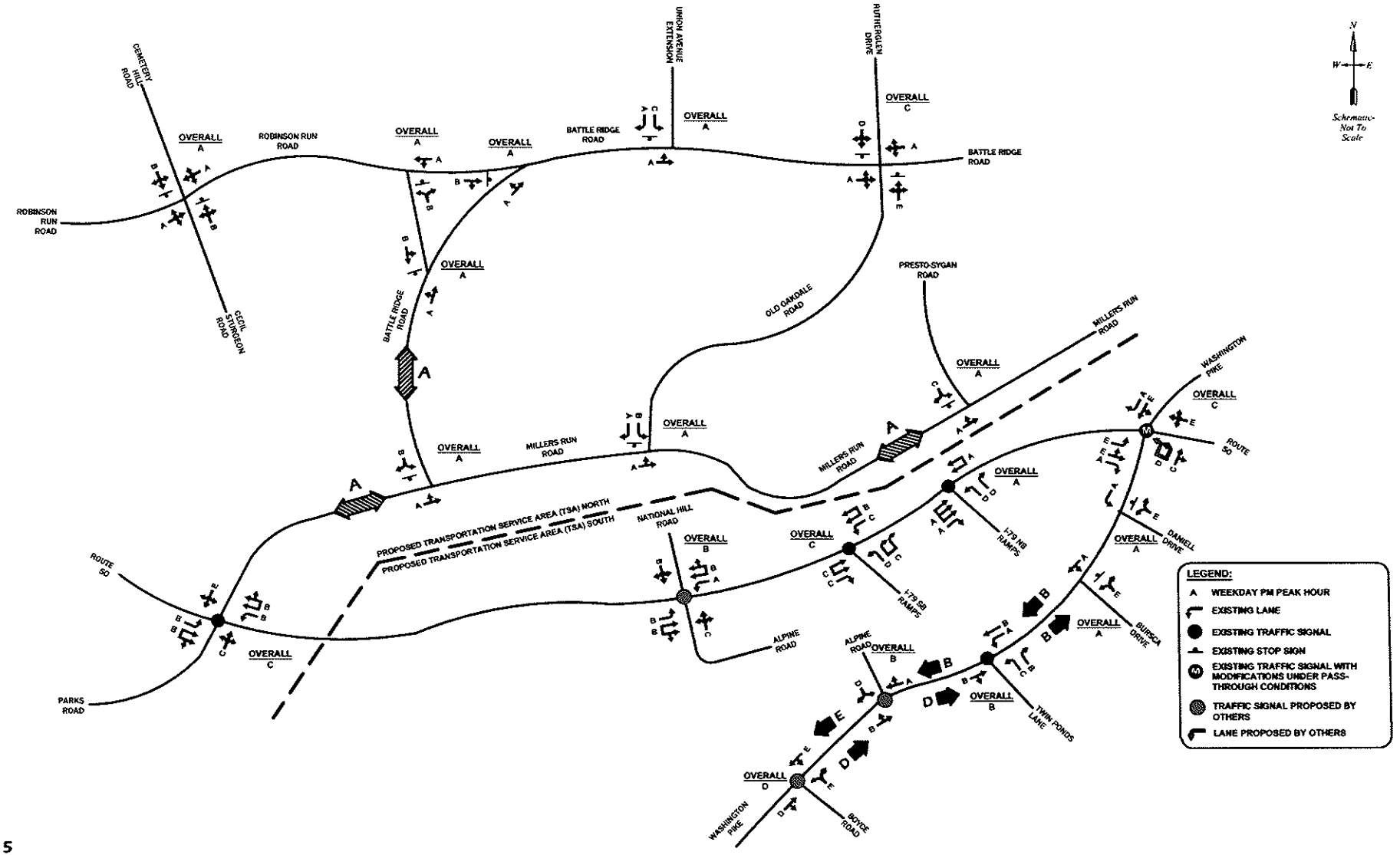

FIGURE 5

2010 Existing Weekday Afternoon Peak Hour Levels of Service With Improvements

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SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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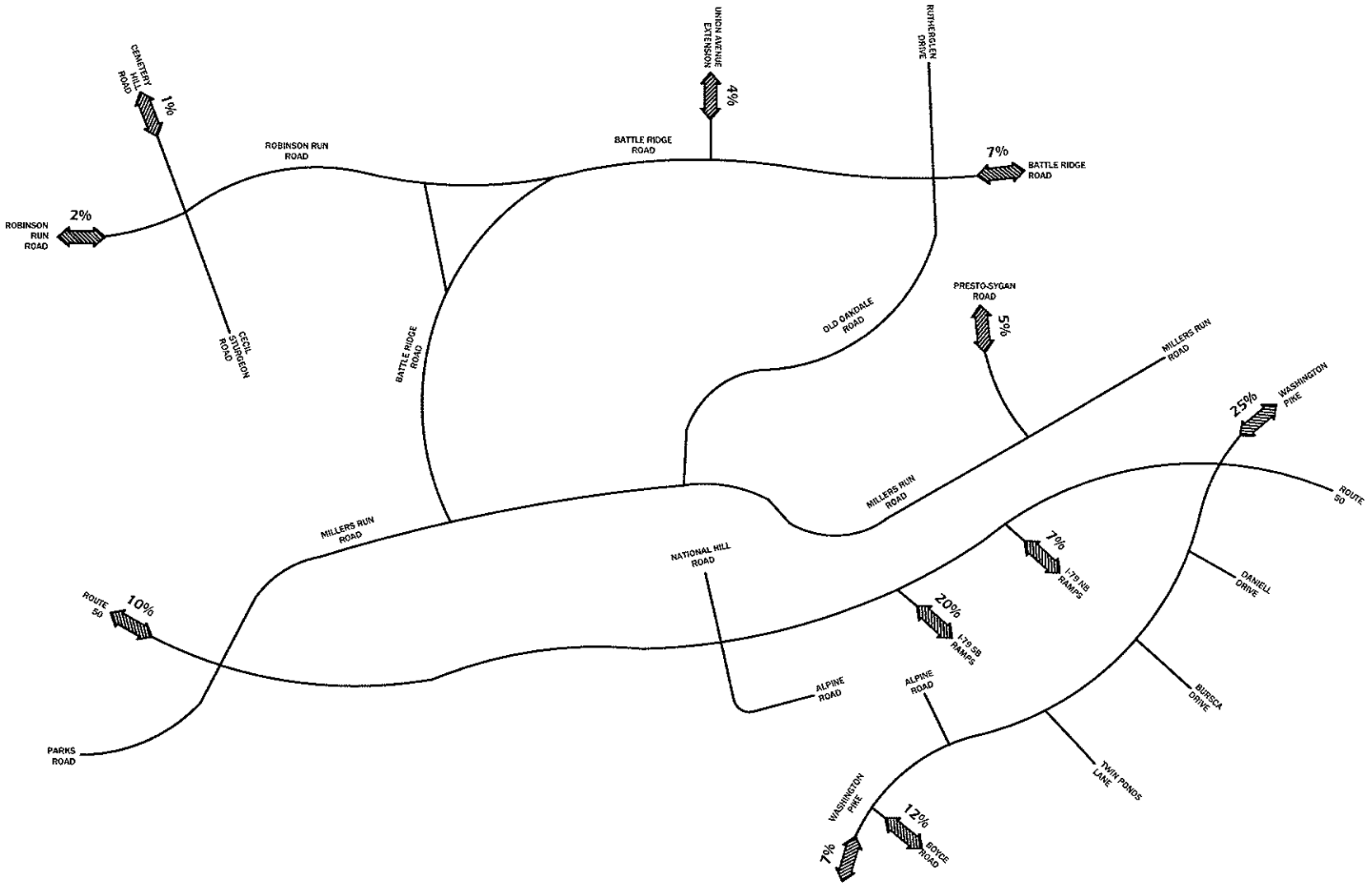

FIGURE 6

Directions of Approach and Departure

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SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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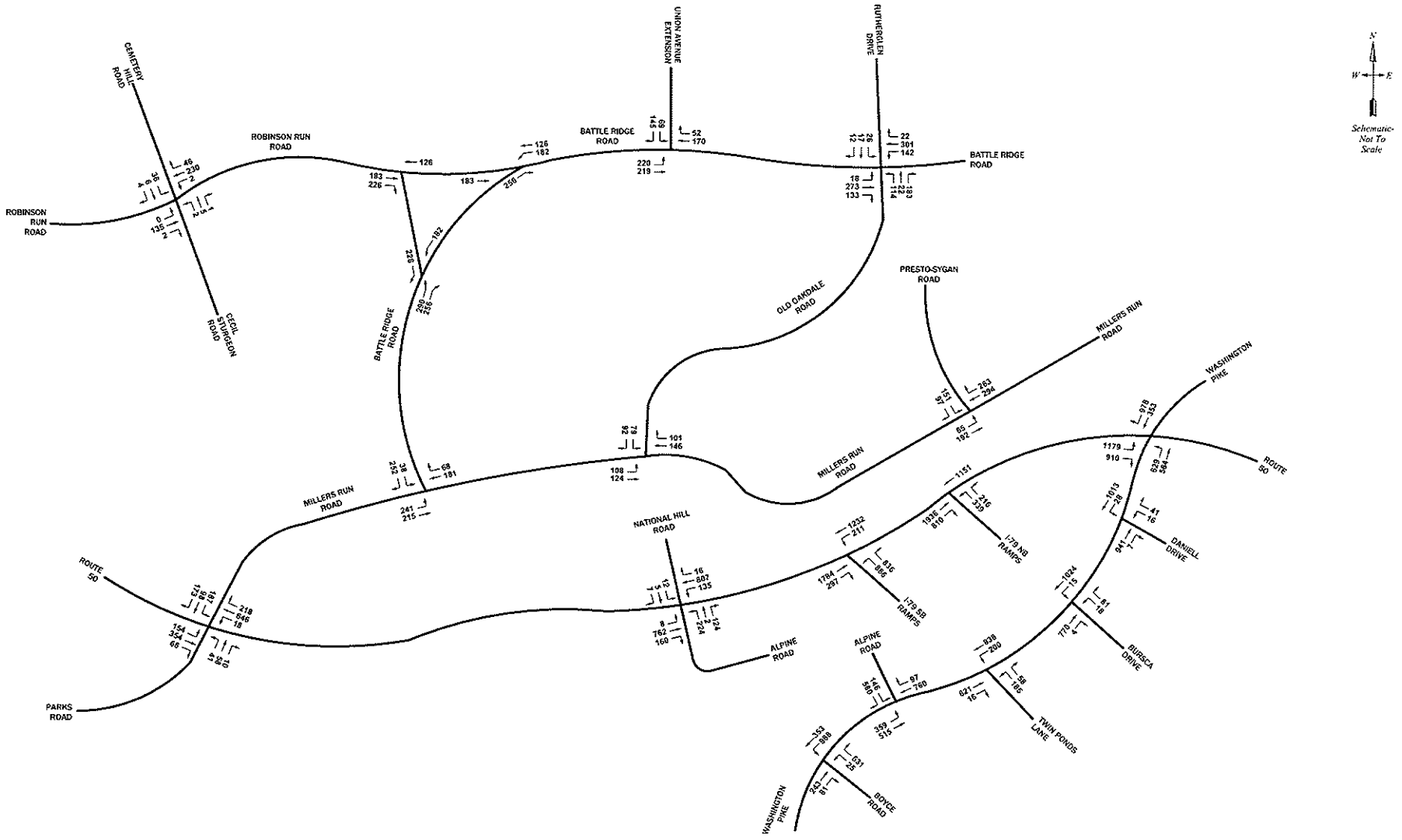

FIGURE 7

2030 Future Pass-Through Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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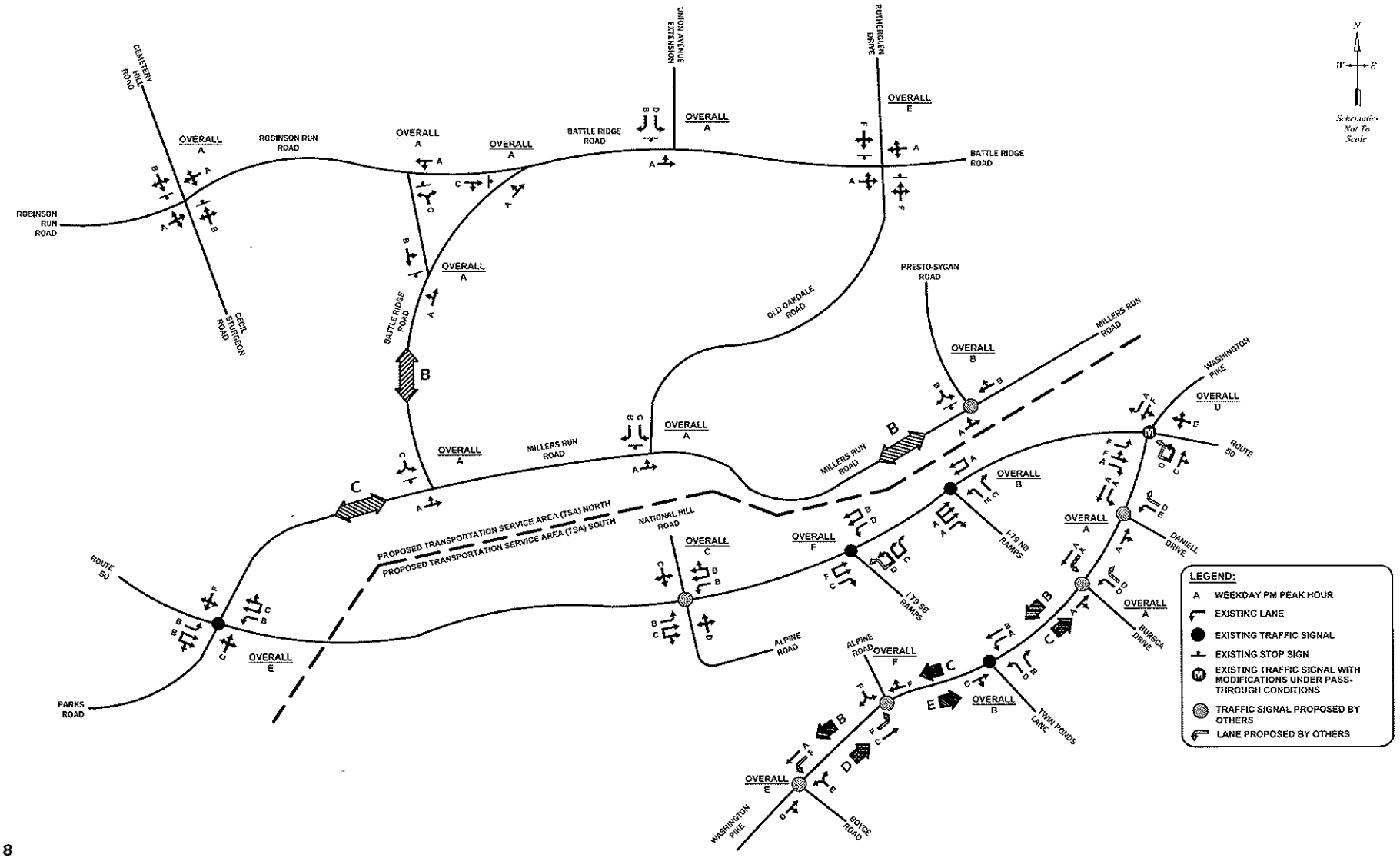

FIGURE 8

2030 Future Pass Through Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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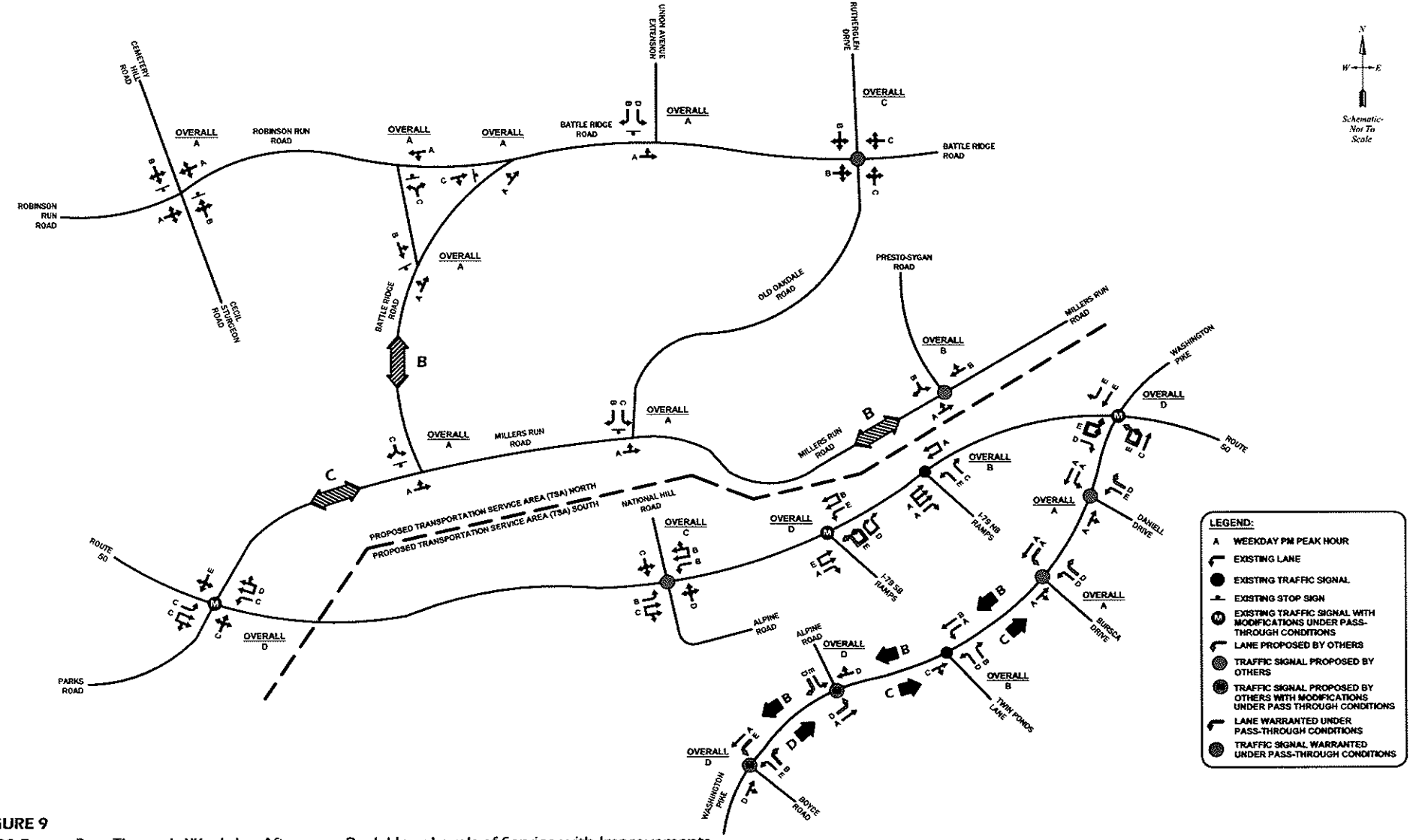

FIGURE 9

2030 Future Pass-Through Weekday Afternoon Peak Hour Levels of Service with Improvements

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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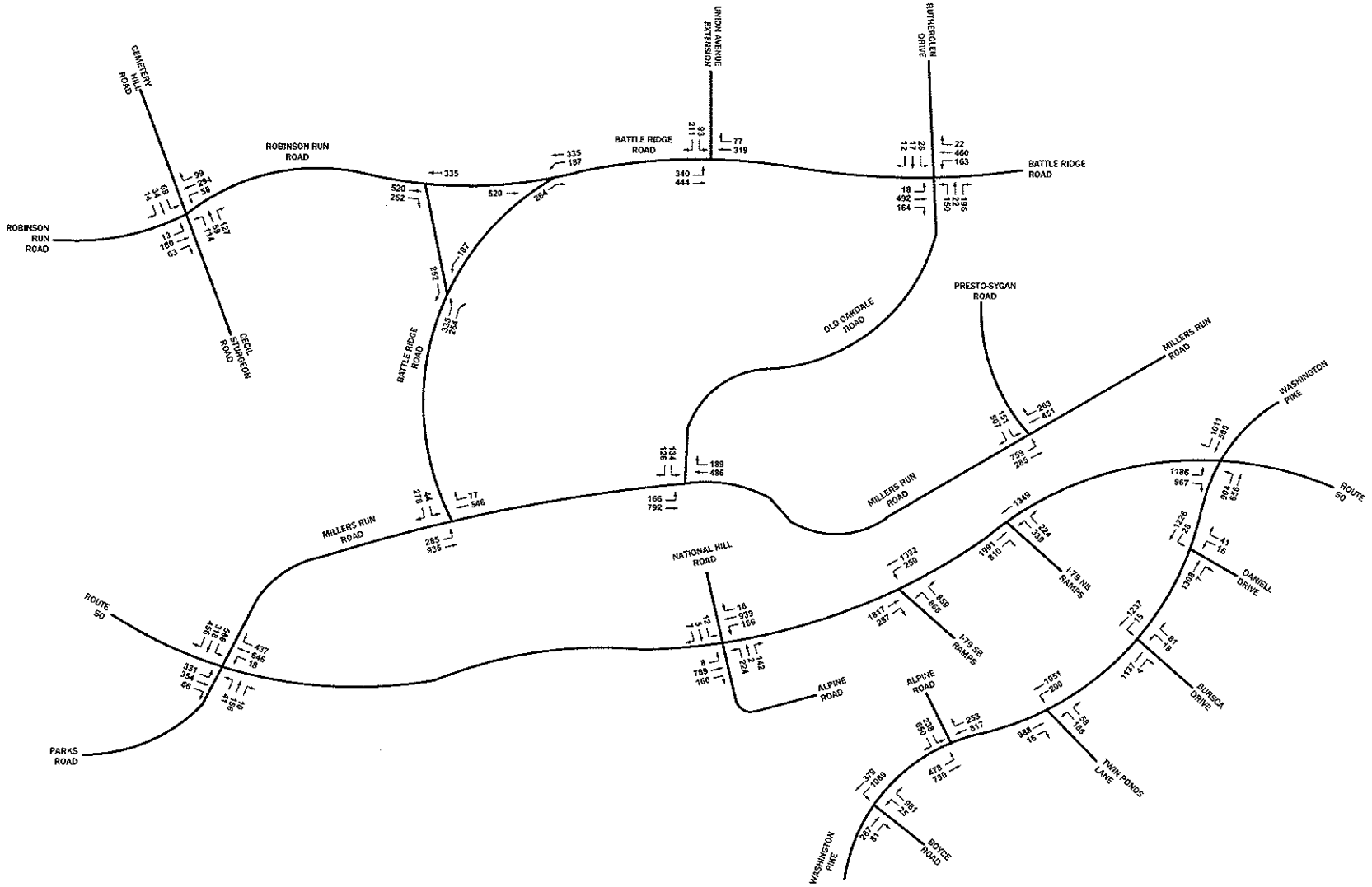

FIGURE 10

2030 Future Development Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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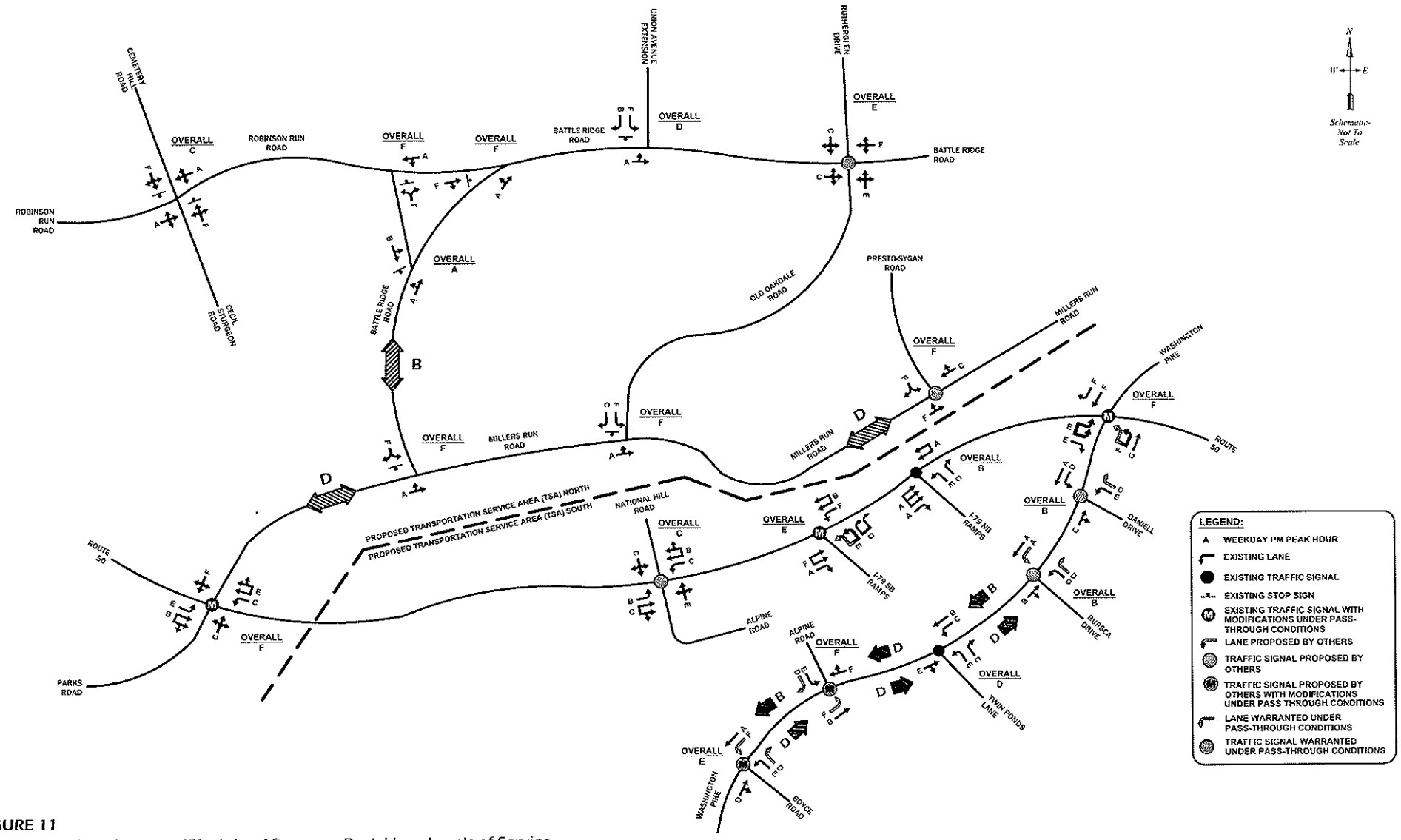

FIGURE 11

2030 Future Development Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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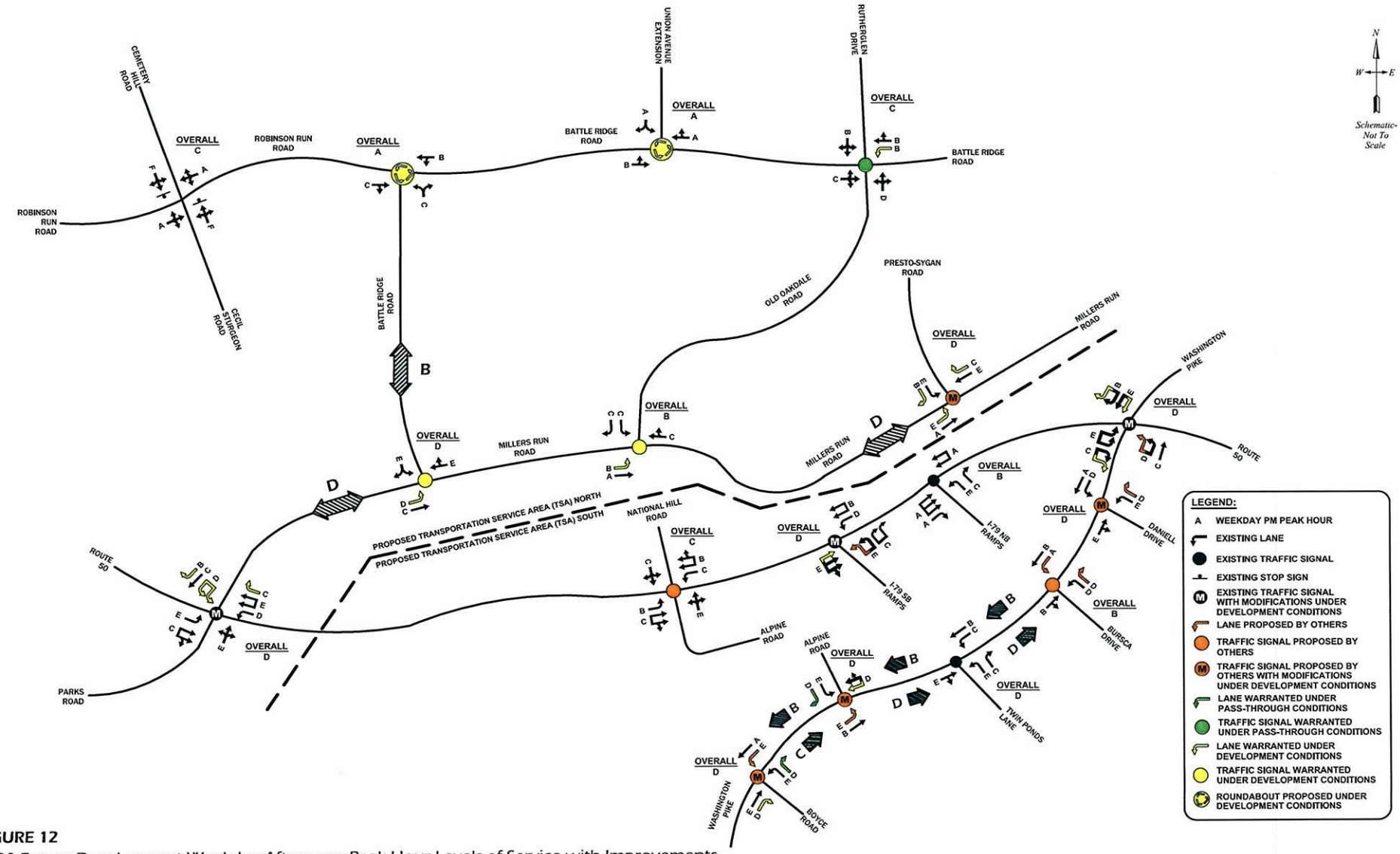

FIGURE 12

2030 Future Development Weekday Afternoon Peak Hour Levels of Service with Improvements

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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SOUTH FAYETTE TOWNSHIP

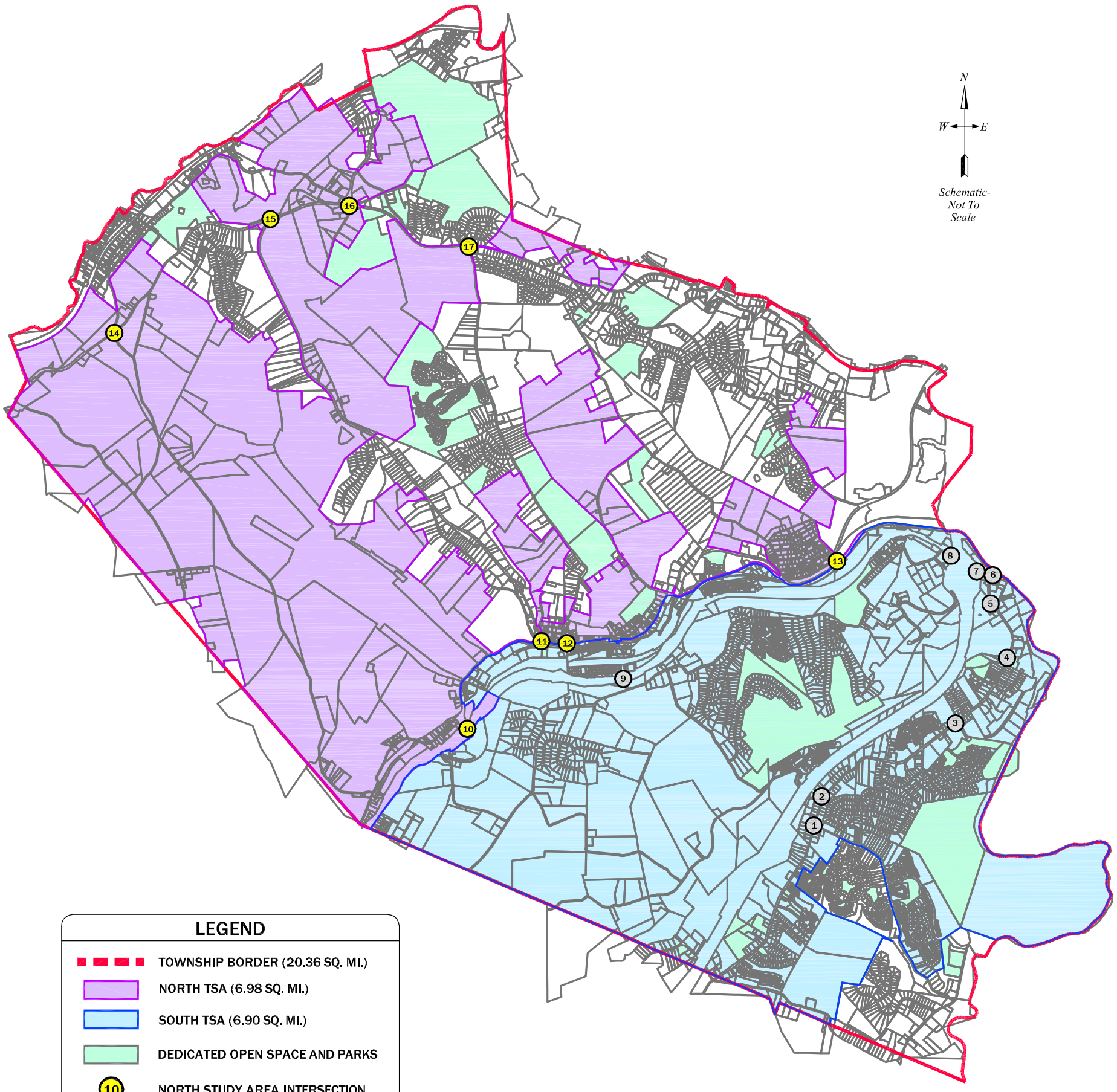

FIGURE 1

TRANSPORTATION SERVICE AREAS

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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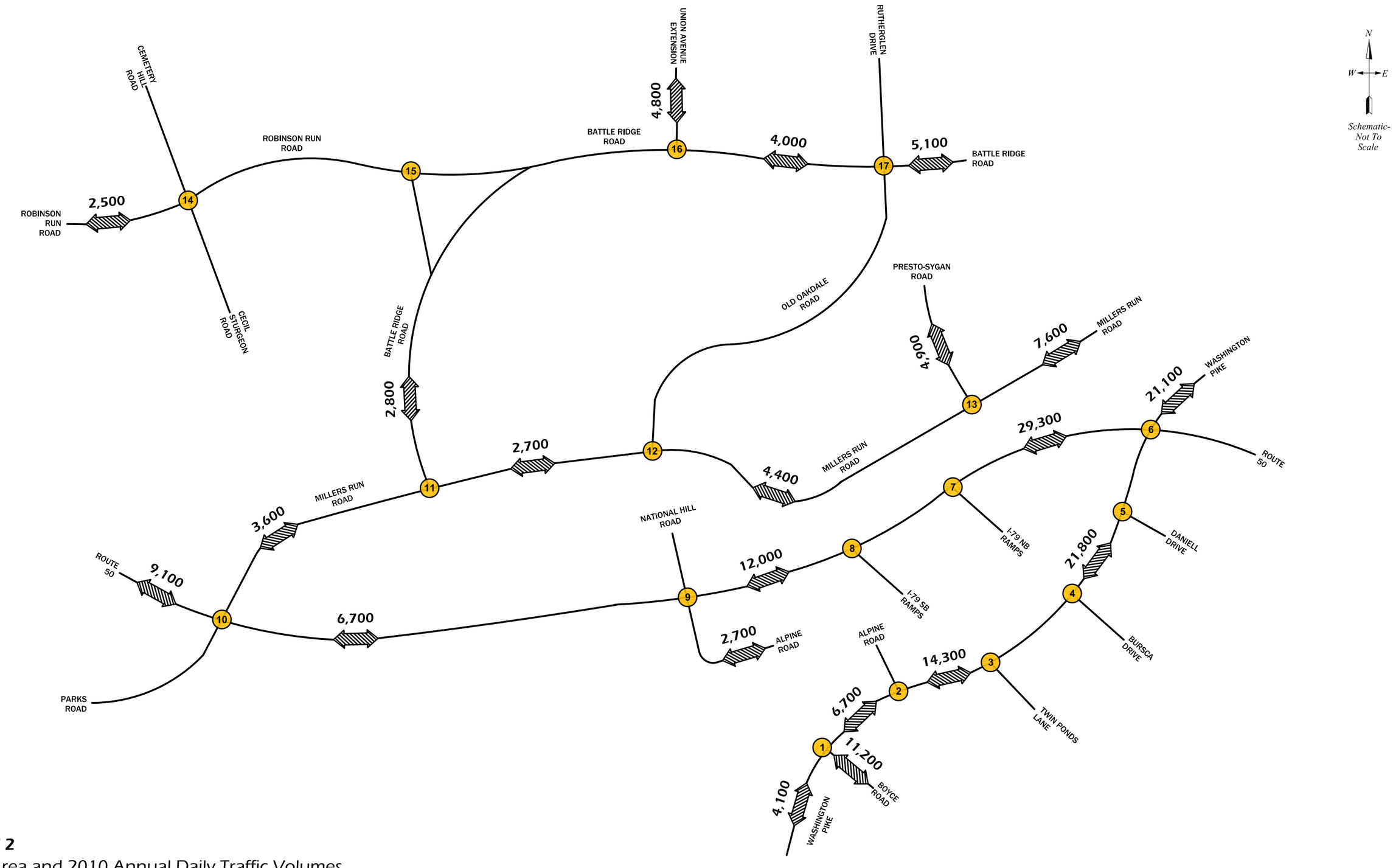

FIGURE 2

Study Area and 2010 Annual Daily Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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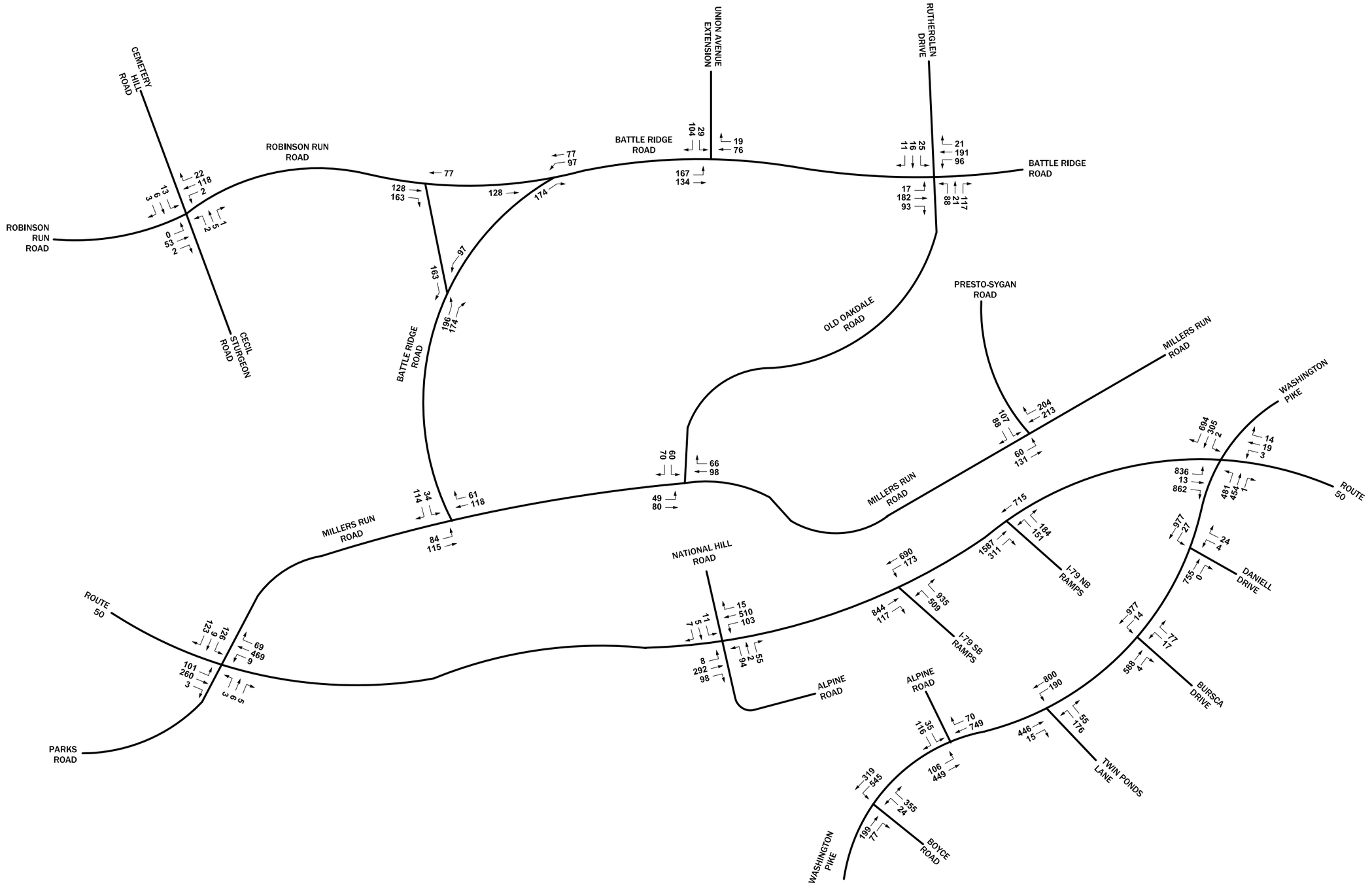

FIGURE 3

2010 Existing Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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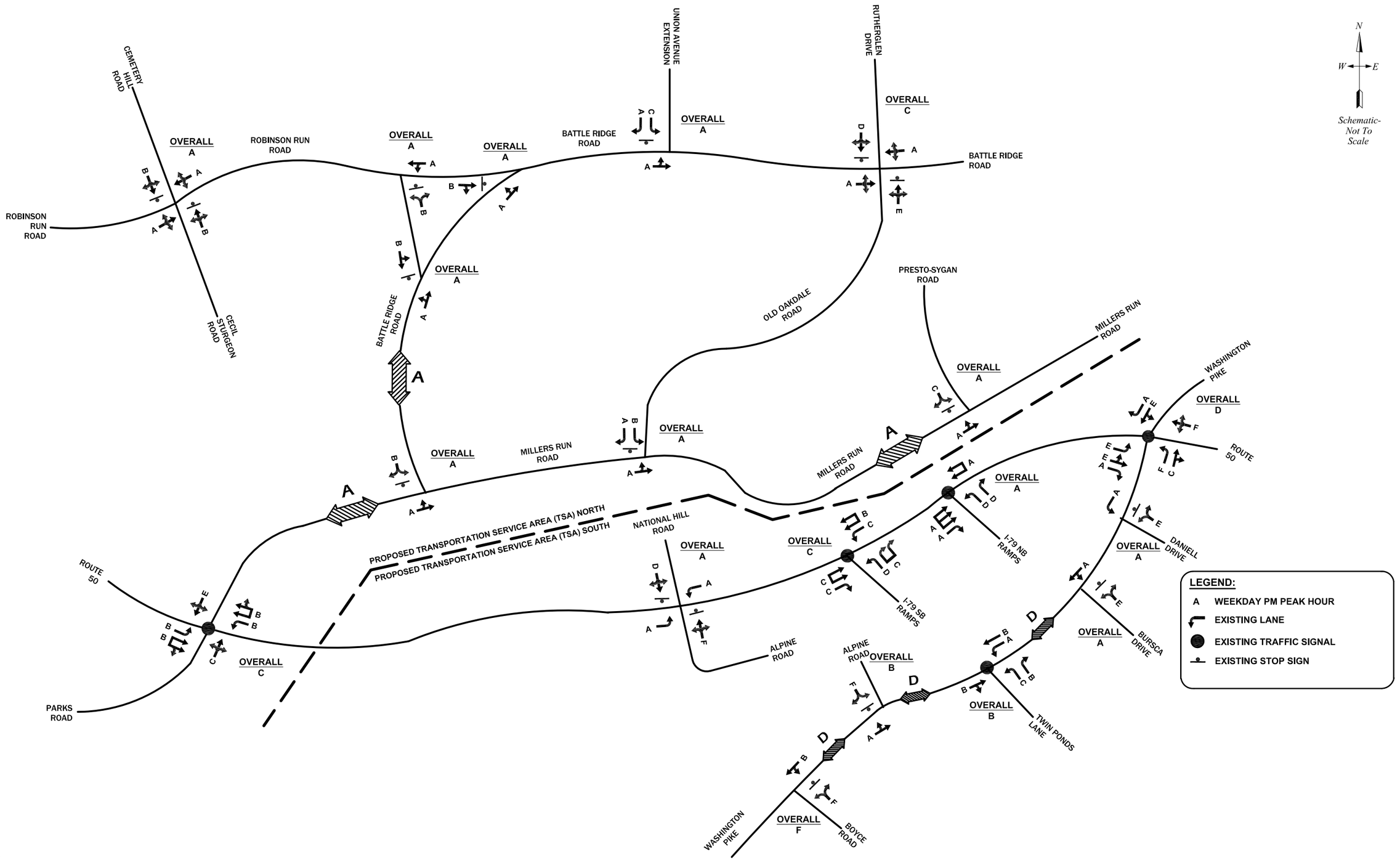

FIGURE 4

2010 Existing Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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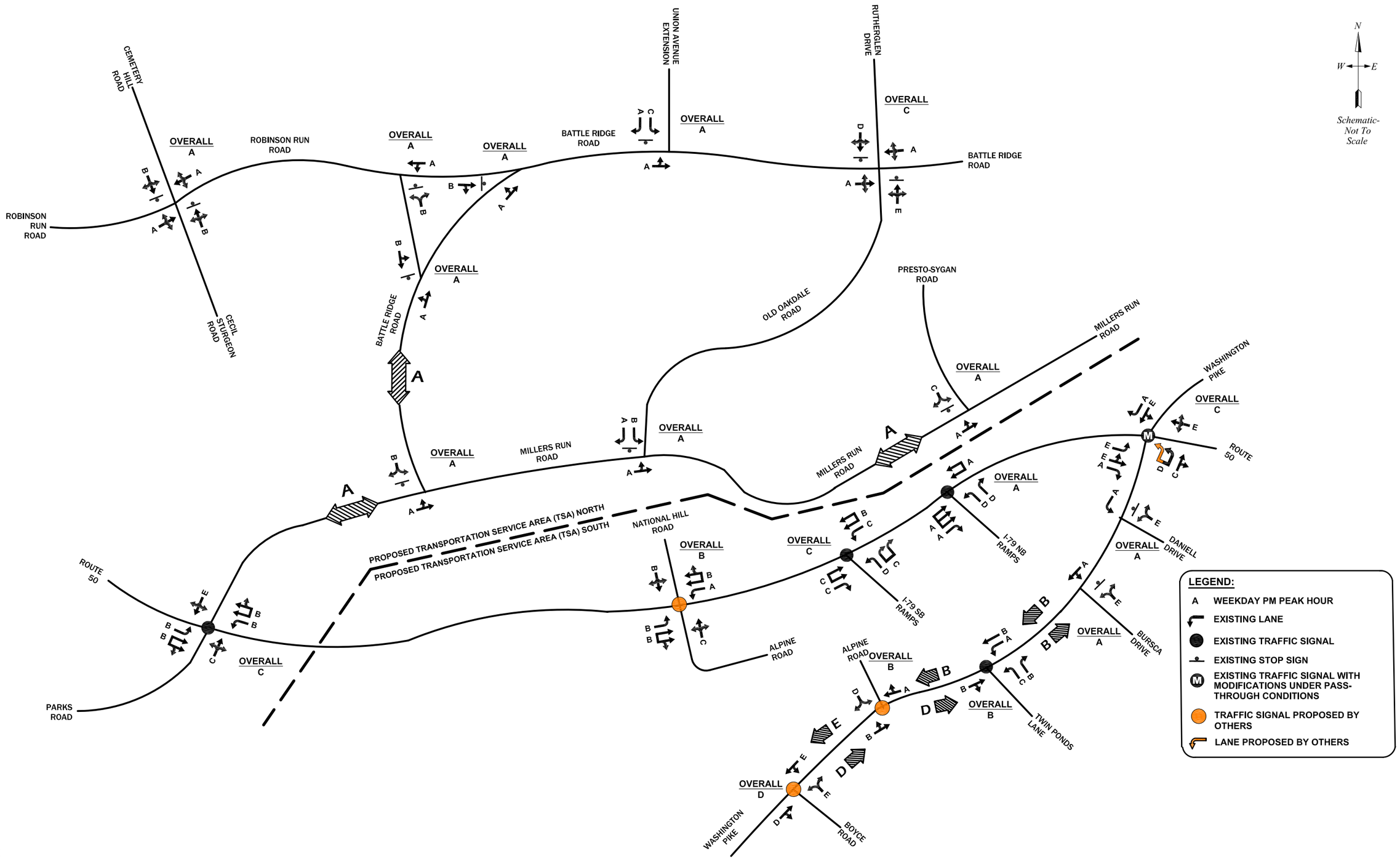

FIGURE 5

2010 Existing Weekday Afternoon Peak Hour Levels of Service With Improvements

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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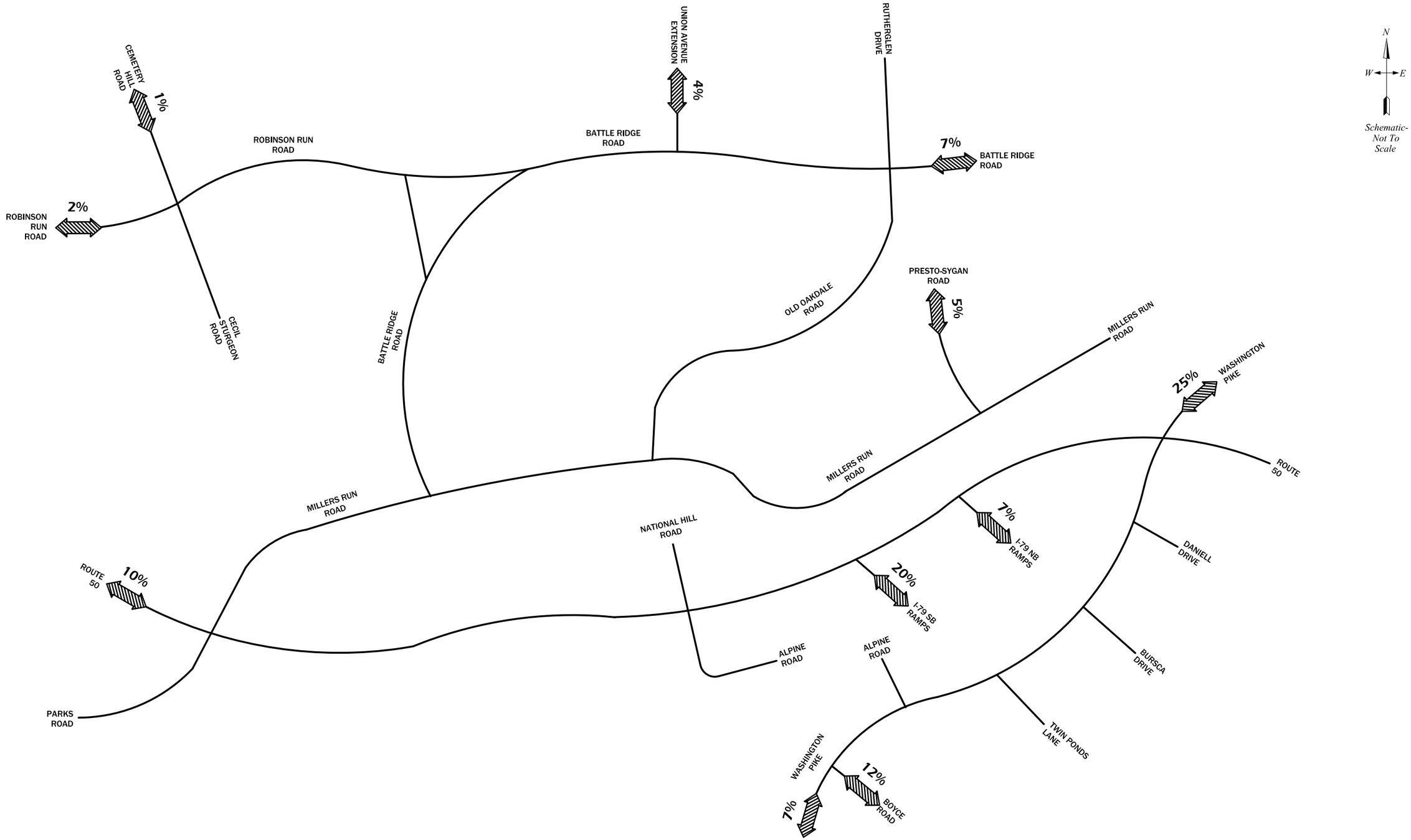

FIGURE 6

Directions of Approach and Departure

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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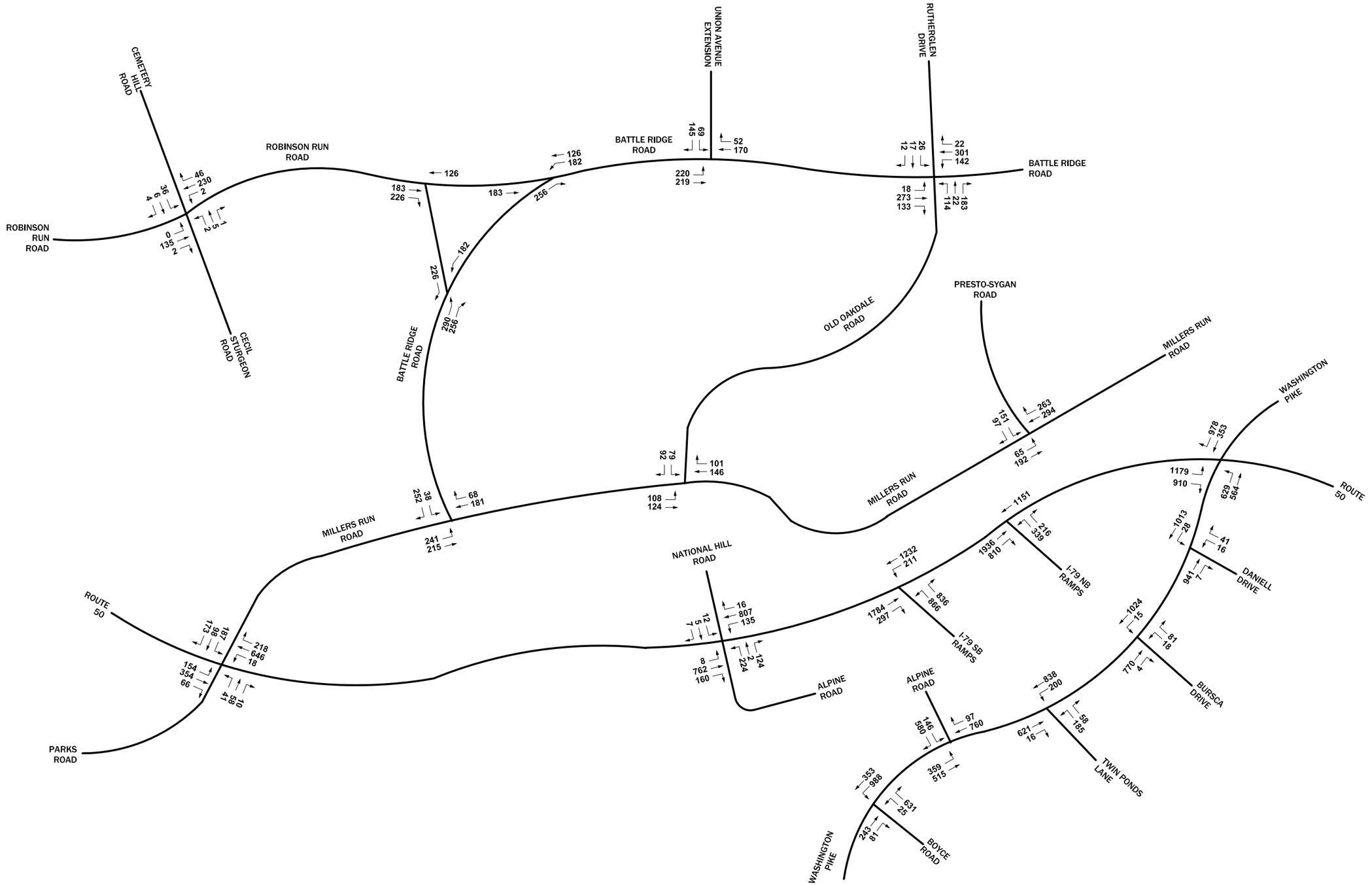

FIGURE 7

2030 Future Pass-Through Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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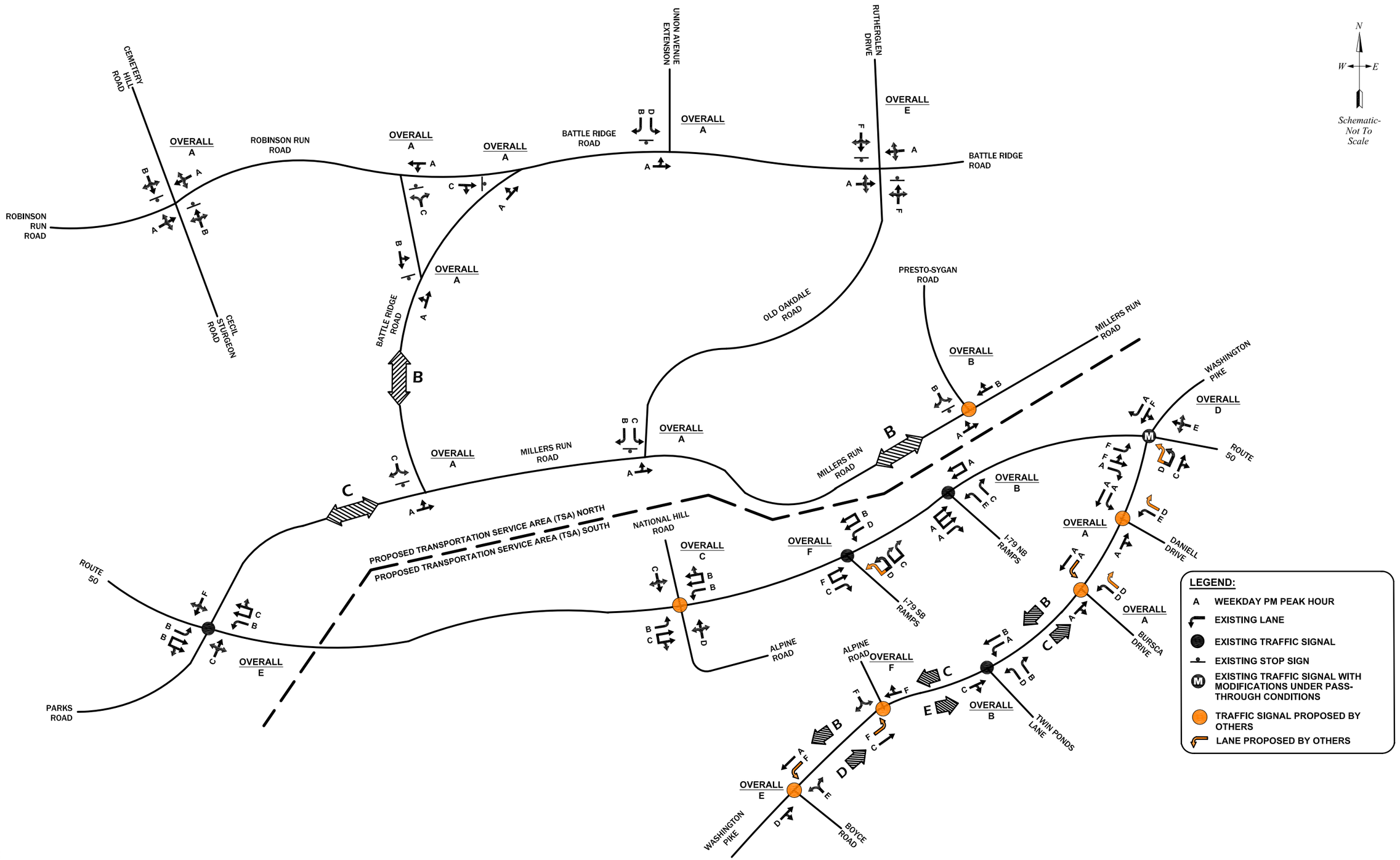

FIGURE 8

2030 Future Pass Through Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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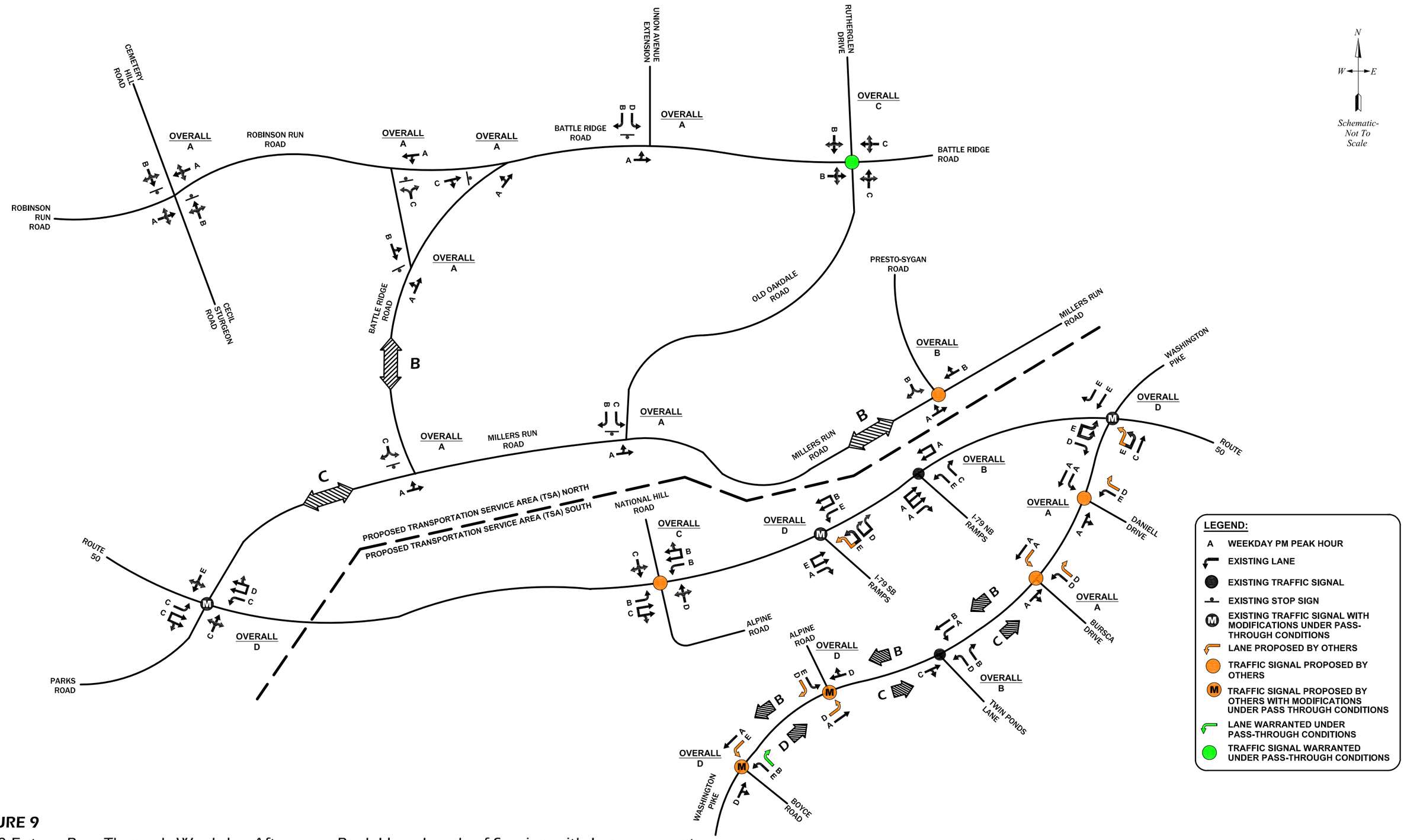

FIGURE 9

2030 Future Pass-Through Weekday Afternoon Peak Hour Levels of Service with Improvements

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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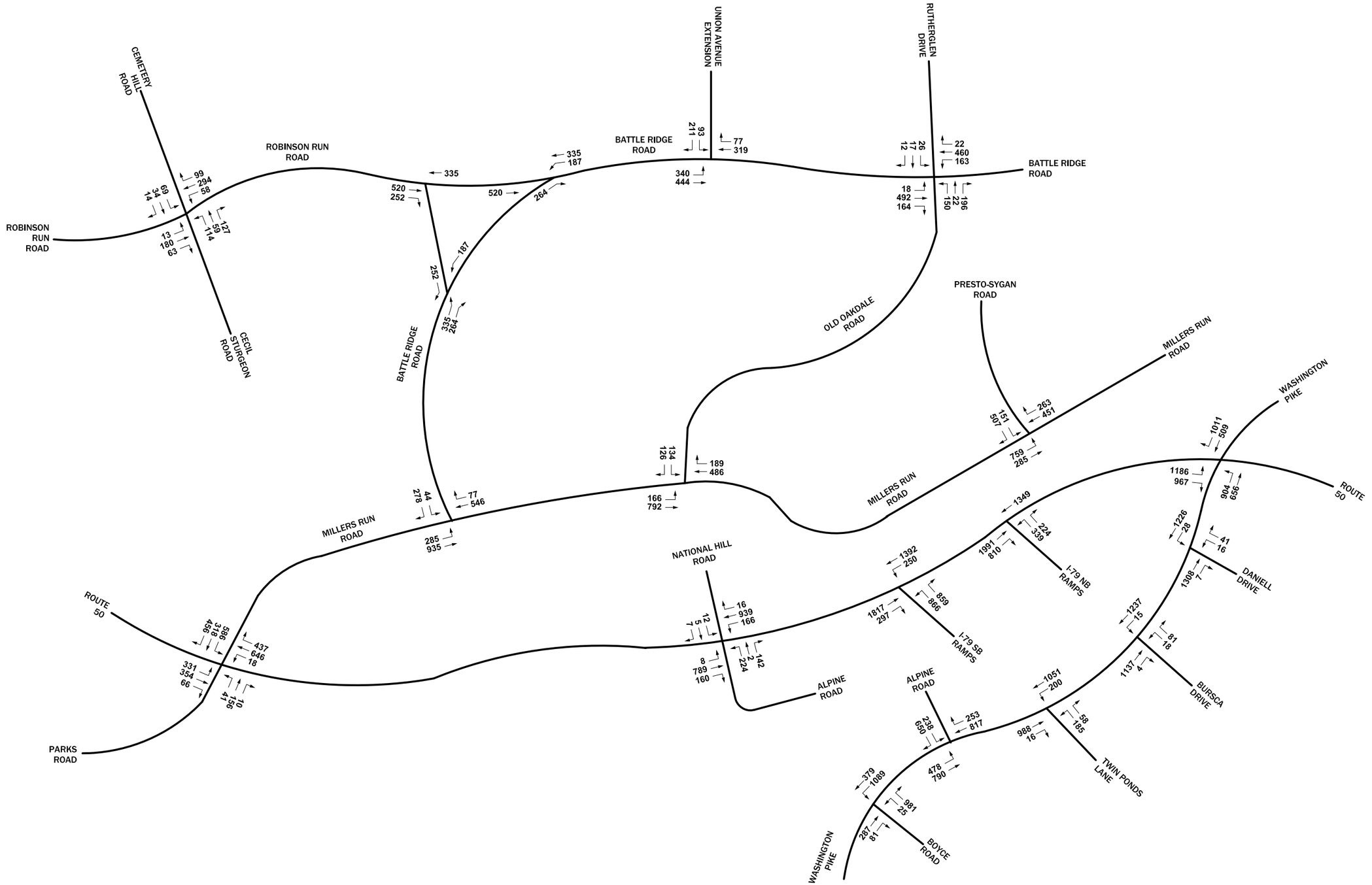

FIGURE 10

2030 Future Development Weekday Afternoon Peak Hour Traffic Volumes

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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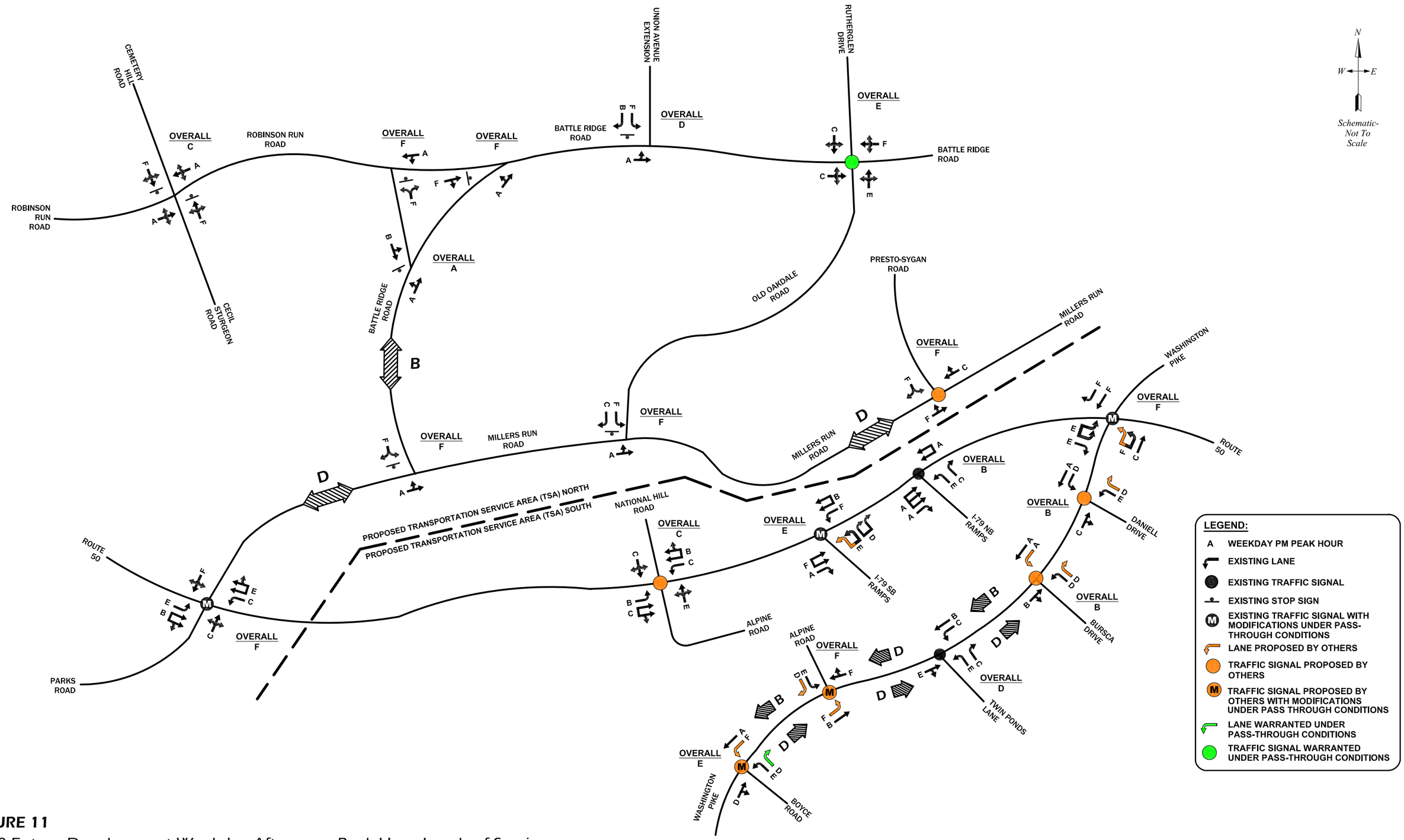

FIGURE 11

2030 Future Development Weekday Afternoon Peak Hour Levels of Service

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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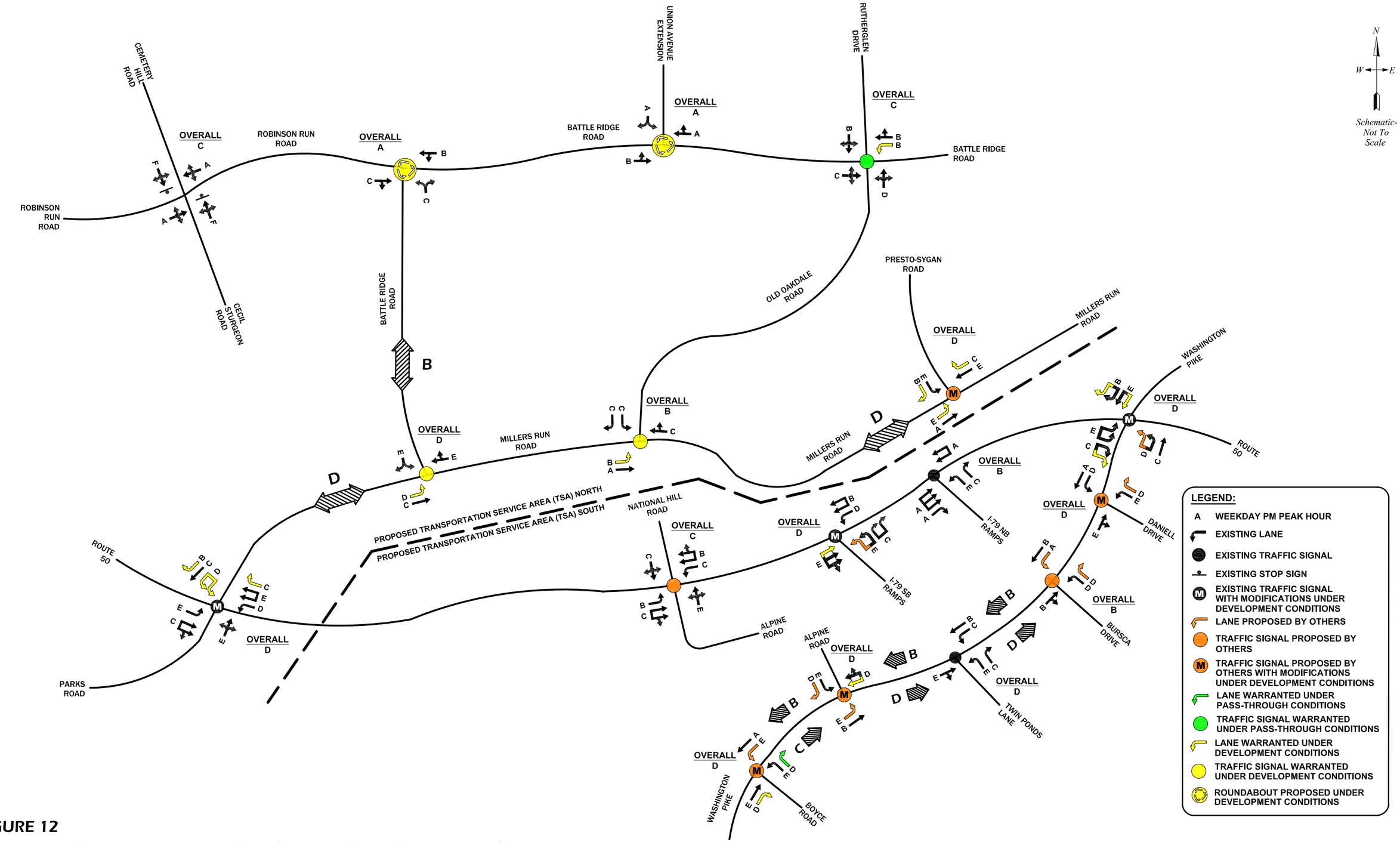

FIGURE 12

2030 Future Development Weekday Afternoon Peak Hour Levels of Service with Improvements

SOUTH FAYETTE TOWNSHIP ACT 209

SOUTH FAYETTE TOWNSHIP, ALLEGHENY COUNTY, PA

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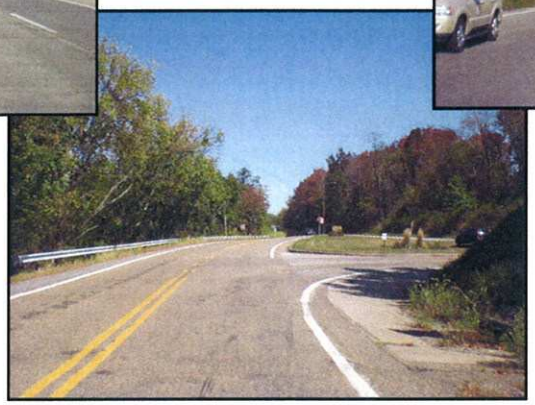
Appendix C

Transporation–Capital Improvements Plan

Pennsylvania Act 209
Transportation Impact Fee Study

South Fayette Township
Transportation Capital Improvements Plan



Prepared for:
South Fayette Township,
Allegheny County, Pennsylvania

July 25, 2011

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APPENDIX B - *Improvement Figures from the Roadway Sufficiency Analysis Report*

APPENDIX C - *Board of Commissioners' Resolution*

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Introduction

This *Transportation Capital Improvements Plan (TCIP)* has been prepared in accordance with the requirements set forth in Pennsylvania Act 209 on behalf of South Fayette Township, Allegheny County, Pennsylvania. Pennsylvania Act 209 was signed into law effective December 19, 1990. It amends the Pennsylvania Municipalities Code (Act 247 of 1968, as amended in February 2005) to permit municipalities to assess transportation impact fees on new development within their boundaries provided that they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act. A copy of the relevant meeting minutes from the Traffic Impact Fee Advisory Committee (TIFAC) are provided in **Appendix A.**

Impact fees under Act 209, with only one exception contained in Act 68 amendments to the Municipalities Planning Code (2000), may only be used for those costs incurred for improvements designated in the adopted transportation capital improvements plan of the municipality that are attributable to new development. The impact fees cannot be used for municipal, non-transportation-related capital improvements; for the repair, maintenance, or operation of existing or new municipal transportation capital improvements; or for the upgrade or replacement of existing municipal transportation capital improvements due to operational or safety deficiencies not related to new development. The Act specifically and only applies to off-site transportation capital improvements attributable to new development; it neither applies to, nor restricts, the procedures or powers of the municipality to require on-site transportation improvements to remedy impacts of new development, nor is it intended to replace the municipality's ordinance requirements for submission of traffic impact studies.

Without the adoption of this ordinance permitted by the Act 209 Law, a municipality does not have the power to require, as a condition for approval of a land development or subdivision application, the construction, dedication, or payment of any off-site improvements or capital expenditures.

This document should not be considered a static, "one-time" effort, as the Act 209 legislation (Section 504-A(e)(4)) has provisions for periodic updates of the roadway sufficiency analysis, TCIP, and impact fees, as changes in the LUAR, transportation improvement needs, or funding conditions occur. As the law allows for the periodic update of the impact fees, it is recommended that the TIFAC continue to meet periodically and make recommendations to the Board of Commissioners, as necessary, to update the TCIP or impact fees based on the following:

1. New subsequent development that has occurred in the Township.
2. Capital improvements, listed in the TCIP, which have been constructed.
3. Unavoidable delays in construction of the improvements listed in the TCIP that are outside the control or responsibility of the Township.
4. Significant changes in the land use assumptions.

5. Significant changes in the estimated costs of the improvements listed in the TCIP, which may be recalculated by applying the construction cost index as published in the American City/County Magazine or the Engineering News Record.

6. Significant changes in the projected revenue from all sources listed, needed for the construction of the improvements listed in the TCIP.

This report has been sub-divided. The first section provides an overview of the process that was utilized to create the study, while the second section describes the Transportation Service Areas (TSAs) along with the intersections and roadways included in each area and the third section provides an overview of planned projects within the Township. The next three sections present the existing, future pass-through, and future development transportation capital improvements plans, which provide details on the estimated cost of each improvement, the party responsible for providing the funding and the anticipated completion date. Figures illustrating the existing and proposed lane configurations to achieve the preferred level-of-service criteria for the existing, future pass-through, and future development conditions are provided in **Appendix B**. The final section of this study presents the impact fee for each of the service areas.

Process

The South Fayette Transportation Impact Fee Advisory Committee (TIFAC) has followed the requirements for the enactment of the *Transportation Capital Improvement Plan* (TCIP), which is based upon the recommendation from the *Roadway Sufficiency Analysis Report* that was approved concurrently by the Township's Board of Commissions on September ?, 2011. For the RSA and TCIP, the following public notification requirements were met:

1. Public notice of a public hearing to present the *Roadway Sufficiency Analyses and Transportation Capital Improvements Plan* was published two successive weeks, between seven and thirty days from the date of the public hearing.

2. The *Roadway Sufficiency Analyses and Transportation Capital Improvements Plan* was available for public inspection at the Township building at least ten working days prior to the hearing and a copy was posted on the Township's website.

3. The public hearing for the *Roadway Sufficiency Analyses and Transportation Capital Improvements Plan* is scheduled for September ?, 2011.

Following the public hearing, the *Roadway Sufficiency Analyses and Transportation Capital Improvements Plan* along with the public comments will be presented to the Board of Commissioners at their September ?, 2011 meeting. The committee will then request that the Board pass a resolution adopting the plan. A copy of the resolution is provided in **Appendix C.**

Funding Sources and Schedule

Act 209 requires that the funding necessary to improve the existing and pass-through deficiencies be exclusive of the funding generated through the assessment of the traffic impact fees for development. In addition, no more than 50% of the total project costs associated with an improvement to correct future deficiencies to the State highway system can be offset through the collection of the traffic impact fees. The remaining funds must be collected through a combination of Federal, State, local, or other private funding sources.

The timetable for the implementation of the various projects in the TCIP will be largely dependent on the prospects for securing funding from the Pennsylvania Department of Transportation, congressional earmarks, or other federal or local grants and contributions. As a result, a uniform timetable, spread out annually to the year 2030 has been utilized in this report for completion of the various improvement projects, as the South Fayette Board of Commissioners will need to determine which projects to implement as development occurs near each of the study area intersections. Therefore, it is recommended that the South Fayette Township Board of Commissioners direct an annual reevaluation of the implementation schedule to set the priority of the improvements from the plan and work with the TIFAC to determine when updates to the study will be required.

Transportation Service Areas

Act 209 requires the establishment of specific study boundaries, or TSA's, for evaluation and application of the transportation impact fees. By law, each TSA is required to be completely contiguous, and is limited to a maximum size of seven square miles. Moreover, traffic impact fees for each TSA are applicable only to development located within that respective service area. As illustrated in **Figure 1**, the TIFAC previously established two TSA's within South Fayette Township in accordance with the requirements of Act 209, which cover a portion of the Township, exclusive of dedicated open space/park areas, and other land that is fully developable and not anticipated to be redeveloped. Each of the TSA's measures equal to or less than the maximum seven square miles required by the Act 209 legislation.

South Transportation Service Area

As illustrated in Figure 1, the South TSA generally includes the area of the Township south of Millers Run Road from the east side of the Township through Route 50,then south of Route 50 to the western Township line. The area includes the following nine study intersections, which are listed in **Table 1.**

Table 1 - South TSA Study Intersections

Reference Number	Intersection	Existing Traffic Control
1	Washington Pike and Boyce Road	Stop Sign
2	Washington Pike and Alpine Road	Stop Sign
3	Washington Pike and Shop-n-save/Twin Ponds Lane	Signal
4	Washington Pike and Bursca Drive	Stop Sign
5	Washington Pike and Get-go Gas/Daniell Drive	Signal (2011)
6	Washington Pike and Route 50	Signal
7	Route 50 and I-79 Northbound Ramps	Signal
8	Route 50 and I-79 Southbound Ramps	Signal
9	Route 50 and Alpine Road	Stop Sign

North Transportation Service Area

As illustrated in Figure 1, the north TSA generally includes the area of the Township along and north of Millers Run Road from the east side of the Township through Route 50, along Route 50 to the western Township line. The eight study intersections included in this service area are listed in **Table 2.**

Table 2 - North TSA Study Intersections

Reference Number	Intersection	Existing Traffic Control
10	Route 50 and Parks Road	Signal
11	Millers Run Road and Battle Ridge Road	Stop Sign
12	Millers Run Road and Old Oakdale Road	Stop Sign
13	Millers Run Road and Presto-Sygan Road	Stop Sign
14	Robinson Run Road and Cecil Sturgeon Road/Cemetery Hill Road	Stop Sign
15	Robinson Run Road and Battle Ridge Road	Stop Sign
16	Battle Ridge Road and Union Avenue Extension	Stop Sign
17	Battle Ridge Road and Old Oakdale Road	Stop Sign

Planned Roadway Improvements

Based on discussions with the Township, there are some planned roadway improvements that have been included in the 2030 future pass-through traffic conditions. These improvements are as follows:

- **Washington Pike and Boyce Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a southbound left-turn lane on Washington Pike as well as install a traffic signal.

- **Washington Pike and Alpine Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a northbound left-turn lane on Washington Pike and an eastbound right-turn lane as well as install a traffic signal.

- **Washington Pike and Bursca Drive** – As part of the final plans of the Bursca Drive retail development occurring along Bursca Drive, the developer has agreed to install a southbound left-turn lane on Washington Pike and a westbound right-turn lane on Bursca Drive, as well as install a traffic signal.

- **Washington Pike and Daniell Drive** – As part of the final plans of the Get-Go commercial development occurring along Daniell Drive, the developer has agreed to install a westbound right-turn lane on Daniell Drive, as well as install a traffic signal.

- **Washington Pike and Route 50** – As part of the final plans of the Newbury Market development occurring along Presto-Sygan Road, the developer has agreed to install a second northbound left-turn lane on Washington Pike.

- **I-79 Southbound Off-ramp and Route 50** – As part of the final plans of the Newbury Market development occurring along Presto-Sygan Road, the developer has agreed to install a second northbound left-turn lane on the I-79 Southbound Off-ramp.

- **Route 50 and Alpine Road** – As part of the final plans of the Alpine Business Park development occurring along Alpine Road, the developer has agreed to install a traffic signal.

- **Millers Run Road and Presto-Sygan Road** – As part of the final plans of the Newbury Market development occurring Presto-Sygan Road, the developer has agreed to install a traffic signal.

Existing Transportation Capital Improvements Program

The South Fayette Township roadway system, as illustrated in **Figure 2**, consists primarily of two-lane, undivided roadways with the exception of Route 50 and Washington Pike. Additionally illustrated in Figure 2 are the existing average daily traffic (ADT) volumes collected on several of the main roadways within the Township. Major regional access to/from the Township is provided via I-78, Route 50, and Washington Pike (S.R. 3003). The roadway network shown in Figure 2, including both roadway segments and intersections, constitutes the transportation roadway network analyzed pursuant to Act 209.

The existing transportation capital improvement program is summarized in **Tables 3 and 4** for the South and North TSA's, respectively, and provides details on the necessary roadway improvements to achieve the preferred levels of service under existing 2010 conditions as documented in the *RSAR*. Tables 3 and 4 also provide cost allocations for the improvements, indicating the portions of the total cost for which the Township and PennDOT are responsible. The total cost of the existing transportation capital improvement program is $10,000.

Table 3. South Transportation Service Area
Existing Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Township	
6	Washington Pike and Route 50	Modify traffic signal timings	$10,000	$5,000	$5,000	2030
		Total	**$10,000**	**$5,000**	**$5,000**	

Table 4. North Transportation Service Area
Existing Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Township	
n/a	None	None required.	$0	$0	$0	2030
		Total	**$0**	**$0**	**$0**	

Future Pass-Through Transportation Capital Improvements Program

The future pass-through transportation capital improvement program is summarized in **Tables 5 and 6** for the South and North TSA's, respectively, and details the proposed intersection and roadway lane improvements necessary to achieve the preferred levels of service conditions for the future 2030 pass-through conditions. Tables 5 and 6 also provide cost allocations for the improvements, indicating the portions of the total cost for which the Township and PennDOT are responsible, as well as projects being completed by other area developments within the Township. The total cost of the future pass-through transportation capital improvement program is approximately **$242,678** for the South TSA, and approximately **$210,000** for the North TSA. As previously noted, a completion year of 2030 has been utilized, since the Township will need to prioritize the improvements depending upon available funding.

Table 5. South Transportation Service Area
Pass-Through Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Township	
1	Washington Pike and Boyce Road	Traffic signal timing/phasing modifications and install westbound right-turn lane.	$212,678	$106,339	$106,339	2030
2	Washington Pike and Alpine Road	Traffic signal timing/phasing modifications.	$10,000	$5,000	$5,000	2030
6	Washington Pike and Route 50	Traffic signal timing/phasing modifications.	$10,000	$5,000	$5,000	2030
8	Route 50 and I-79 SB Ramps	Traffic signal timing/phasing modifications.	$10,000	$5,000	$5,000	2030
		Total	**$242,678**	**$121,339**	**$121,339**	

Table 6. North Transportation Service Area
Pass-Through Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Township	
10	Route 50 and Parks Road/Millers Run Road	Install traffic signal.	$200,000	$50,000	$150,000	2030
17	Battle Ridge Road and Rutherglen Drive/Old Oakdale Road	Traffic signal timing/phasing modifications.	$10,000	$5,000	$5,000	2030
		Total	**$210,000**	**$55,000**	**$155,000**	

Future Development Transportation Capital Improvements Program

The future development transportation capital improvement program is summarized in **Tables 7 and 8** for the South and North TSA's, respectively, and details the improvements necessary to achieve the preferred levels of service under future 2030 development traffic conditions. Tables 7 and 8 also provide cost allocations for the improvements, indicating the portions of the total cost for which the Township, PennDOT, and future development are responsible. The total cost of the future development transportation capital improvement program is approximately **$4,492,223** for the south TSA and approximately **$10,066,693** for the north TSA. The anticipated completion year for each of the improvements is listed as 2030. As previously noted, the Township will be evaluating the status and priority of these projects depending on where area developments occur within the Township and when funds become available as the fee is not collected until the building occupancy permits are issued.

Table 7. South Transportation Service Area
Development Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Development	
1	Washington Pike (S.R. 3003) and Boyce Road (S.R. 3006)	Traffic signal timing/phasing modifications and install northbound right-turn lane.	$153,228	$76,614	$76,614	2030
2	Washington Pike (S.R. 3003) and Alpine Road	Traffic signal timing/phasing modifications and install second southbound through lane.	$707,006	$353,503	$353,503	2030
5	Washington Pike (S.R. 3003) and Get-Go Gas/Daniell Drive	Traffic signal timing/phasing modifications.	$10,000	$3,333	$6,667	2030
6	Washington Pike (S.R. 3003) and Route 50	Traffic signal timing/phasing modifications, install second southbound through lane, second southbound right-turn lane, and second eastbound right-turn lane.	$2,887,335	$1,443,668	$1,443,668	2030
8	Route 50 and I-79 SB Ramps	Traffic signal timing/phasing modifications and install third eastbound through lane.	$734,653	$367,327	$367,327	2030
		Total	**$4,492,223**	**$2,244,445**	**$2,247,778**	

Table 8. North Transportation Service Area
Development Transportation Capital Improvement Program

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Development	
10	Route 50 and Parks Road/Millers Run Road	Traffic signal timing/phasing modifications, install westbound and southbound right-turn lanes, install two (dual) southbound left-turn lanes.	$936,619	$468,309	$468,309	2030
11	Millers Run Road (S.R. 3026) and Battle Ridge Road (S.R. 0978)	Install a traffic signal and eastbound left-turn lane.	$1,877,546	$938,773	$938,773	2030

Table 8. North Transportation Service Area
Development Transportation Capital Improvement Program (continued)

Int. No.	Intersection or Corridor	Improvements	Total Project Cost	Allocated Funding Source		Construction Completion
				PennDOT	Development	
12	Millers Run Road (S.R. 3026) and Old Oakdale Road	Install a traffic signal and eastbound left-turn lane.	$855,137	$285,046	$570,092	2030
13	Millers Run Road (S.R. 3026) and Presto-Sygan Road (S.R. 3028)	Install a traffic signal and eastbound left-turn lane, install eastbound left-turn lane, westbound and southbound right-turn lanes.	$3,599,044	$1,799,522	$1,799,522	2030
15	Robinson Run Road (S.R. 3024) and Battle Ridge Road (S.R. 0978)	Install a roundabout.	$1,462,501	$731,250	$731,250	2030
16	Battle Ridge Road and Union Avenue Extension (S.R. 0978)	Install a roundabout.	$706,152	$353,076	$353,076	2030
17	Battle Ridge Road and Old Oakdale Road/Rutherglen Drive	Install a westbound left-turn lane.	$629,695	$157,424	$472,271	2030
		Total	**$10,066,693**	**$4,733,400**	**$5,333,293**	

Improvement Summary

The total costs of the South Fayette Township *Transportation Capital Improvements Plan*, which includes existing, pass-through, and development improvements for both the south and north service areas are summarized in **Table 9**. As indicated, the total cost of the *Transportation Capital Improvements Plan* for the entire Township, both services areas, is approximately **$15,021,595.** Of the total costs approximately 2% or $281,339 is allocated to the Township, while approximately 48% or $7,159,184 is allocated to PennDOT with the remaining approximately 50% or $7,581,072 allocated to future development projects within the Township.

Table 9. Transportation Capital Improvement Summary

Description	Cost Allocation			
	PennDOT	**Township**	**Development**	**Total**
South Service Area				
Existing	$5,000	$5,000	$0	$10,000
Pass-Through	$121,339	$121,339	$0	$242,678
Development	$2,244,445	$0	$2,247,778	$4,492,223
Total	**$2,370,784**	**$126,339**	**$2,247,778**	**$4,744,901**
North Service Area				
Existing	$0	$0	$0	$0
Pass-Through	$55,000	$155,000	$0	$210,000
Development	$4,733,400	$0	$5,333,293	$10,066,693
Total	**$4,788,400**	**$155,000**	**$5,333,293**	**$10,276,693**
Combined				
Existing	$5,000	$5,000	$0	$10,000
Pass-Through	$176,339	$276,339	$0	$452,678
Development	$6,977,845	$0	$7,581,072	$14,558,917
Total	**$7,159,184**	**$281,339**	**$7,581,072**	**$15,021,595**

Impact Fee

The impact fee calculations for development improvements are summarized in **Table 10** for the TSA's, which also includes the fair-share costs associated with preparing the *Roadway Sufficiency Analysis Report*.

Table 10. Transportation Impact Fee

Transportation Service Area	Development Capital Improvement Costs [1]	Development Trips	Impact Fee [2], [3]
South	$2,253,921	1,654 trips	$1,121
North	$5,347,868	4,769 trips	$1,362

(1) Inclusive of the pro-rated share of costs incurred for the completion of the *Roadway Sufficiency Analysis Report* that is attributable to development ($6,143 as allocated by the cost of development-warranted improvements for South Transportation Service Area and $14,574 as allocated by the cost of development-warranted improvements for the North Transportation Service Area).

(2) To be assessed on a per "new" weekday afternoon peak-hour-trip basis.

(3) Development capital improvement costs divided by "new" development trips.

Appendix D

Action for Implementation

Policies and Actions

To implement the Comprehensive Plan and realize positive outcomes of continued community growth, the Township needs to adopt a set of planning policies and actions. Actions for Implementation, details a specific series of steps or projects expanding on the Plan's Core Strategies for Action that South Fayette's leadership, administrative staff and citizens should complete in order to realize the Comprehensive Plan's goals.

The policies and actions are listed below with their associated findings in Part One. Effective implementation of the Plan is directly related to the strategic integration of the policies. In order to ensure timely and rational implementation, the Planning Commission, Staff and Board of Commissioners should evaluate and reprioritize the implementation schedule on an annual basis.

Comprehensive Plan Actions for Implementation

Local Government

Objectives	Policies	Description	Implementing Entity	Priority
1. Plan for change in South Fayette in a manner that will protect, preserve, enhance and balance the environmental, economic, social, cultural and aesthetic values of the community.	1.A. The Municipal Comprehensive Plan should be used to guide policy recommendations and an implementation schedule for South Fayette Township to follow. The Planning Commission, Staff and Board of Commissioners should annually review the progress in implementing the policies as part of a Township Progress Report Card and reprioritize actions as needed.	Capital Budgeting for Implementing Comprehensive Plan	Administration/ Commissioners	Short Term
	1.B. Expand Planning Commission involvement by requiring conceptual plan review prior to subdivision and/or land development application.	Roles and Responsibilities	Administration/ Commissioners	Immediate
	1.D. Prepare and update budget estimates for capital improvement projects suggested by the Comprehensive Plan. Provide annual updates accounting for upcoming priority projects.	Capital Budgeting for Implementing Comprehensive Plan	Administration/Commissioners	On-going
2. Ensure that public services and facilities necessary to enhance public health, safety and welfare meet the needs of a growing community.	2.A. The Municipal Act 537 Sewage Facilities Plan should designate the limits of extending public water and sewer facilities consistent with the Comprehensive Plan.	Act 537 Plan Update	Municipal Authority/ Engineering Department	Immediate
	2.B. South Fayette Township should continue to promote and enforce storm water management and erosion and sedimentation control regulations that protect and enhance water quality.	Land Use Regulations	Planning Commission/ Engineering Department	On-going

	2.C. South Fayette Township should assess public safety services, facilities and resources to plan for future improvements to these services, facilities and resources consistent with the Comprehensive Plan.	Public Safety Services Assessment	Police Department, Emergency Management Service and Fire Companies	Short Term
3. Promote meaningful citizen participation in all aspects of local government.	3.A. South Fayette Township should evolve the frequency and venue its public outreach efforts to increase the level and quality of public participation in government activities.	Promote Greater Citizen Involvement	Community Leadership Team	Immediate
	3.B. Promote semi-annual events that join older residents and school-aged children/families together in exploring the relevance of community history in modern Township life.	Promote Greater Citizen Involvement	Community Leadership Team	Short Term (On-going)
4. Promote greater inter-municipal cooperation in planning for the future of the region.	4.A. Create a Communications Diagram and Responsibilities Matrix to facilitate communication and cooperation between the Township's Board of Commissioners, the Planning Commission, the Municipal Staff, the general public as well as the Municipal Authority, School District and Allegheny County.	Develop Partnerships on Specific Issues	Administration	Ongoing
	4.B Encourage more frequent, formalized discussions between the Township and South Fayette School District to track physical and fiscal impacts of population growth on both entities.	Develop Partnerships on Specific Issues	Administration	Ongoing

	4.C. Define a proactive agenda with neighboring communities and public agencies to coordinate developments/redevelopment of regional impact that may adversely affect the Township's traffic network.	Develop Partnerships on Specific Issues	Administration	Ongoing
5. South Fayette Township should seek outside funding for programs.	5.A. South Fayette Township should evaluate programs that are eligible for state funding.	Capital Budgeting for Implementing Comprehensive Plan	Administration/ Commissioners	Short Term
	5.B. South Fayette Township should identify and evaluate programs that can receive private funding.	Capital Budgeting for Implementing Comprehensive Plan	Administration/ Commissioners	Short Term

Housing

Objectives	Policies	Description	Implementing Entity	Priority
6. Provide suitable areas for a variety of housing choices in type, affordability, scale and size (detached and attached single-family dwellings, multi-family, and senior citizen housing, both assisted and independent living).	6.A. Continue promoting a diverse residential housing stock that complements established neighborhood development and responds to various price/age interests.	Community Development Character	Planning Commission	Long-term
	6.B. Housing density and design should reflect the character of the neighborhood in which it will be located.	Revise Land Use Regulations	Planning Commission	Immediate
7. Preserve historical properties by either private or public means.	7.A. South Fayette Township should undertake a comprehensive historical preservation plan.	Historic Resource Survey	Planning Commission	Short Term
8. Promote cooperation with other municipalities, school districts and agencies in the region whenever possible to address major issues related to housing.	8.A. South Fayette Township should directly participate in regional housing plans and programs whenever participation supports the goals of the Comprehensive Plan.	Multi-Municipal Planning	Planning Commission	Short Term

Economic Development

Objectives	Policies	Description	Implementing Entity	Priority
9. Promote and support commercial development in areas that contain sufficient infrastructure to support these uses.	9.A. Target strategic underutilized areas along Washington Pike for redevelopment concurrent to roadway improvements.	Commercial Development	EDE/Planning Commission	Short Term
10. Promote the economic viability of the existing and newly identified designated commercial and industrial districts.	10.A. Create an Economic Development entity (e.g. local development corporation) to strategize and serve as an independent liaison between the private and public sectors to foster continued business growth in the Township.	Economic Development Plan Implementation	EDE	Short Term
	10.B. Promote the development of a conceptual plan and update related provisions/ guidelines for the western PED land in the Township. Meeting with landowners to cooperatively evaluate the trade-offs of different land use scenarios and transportation network impacts.	Revise Land Use Regulations	EDE/Planning Commission	Short Term
11. Promote municipal support of "sustainable" economic development proposals.	11.A. South Fayette Township should adopt proactive economic development philosophies based upon principles of "sustainability". The principles of sustainable economic development promote development that meets the needs of the present without compromising future generations.	Non-Residential Land Use Studies	Planning Commission/ Commissioners	Immediate
12. Establish fiscally-responsible means and methods to enhance public services or facilities, which might be caused by new development.	12.A. Continue to evaluate and enforce transportation impact fees as set forth in and adopted as part of the Township's Act 209 Study.	Transportation Impact Fee Ordinance	Planning Commission	On-going

Transportation

Objectives	Policies	Description	Implementing Entity	Priority
13. Encourage and promote cooperation with surrounding municipalities and the Commonwealth in the development of transportation planning for the South Fayette Area.	13.A. South Fayette Township should take the initiative to form a regional transportation planning process with neighboring municipalities.	Regional Transportation Planning	Administration	Short Term
14. Convey a clear hierarchy of connectivity and orientation within the Township's overall network.	14.A. Create and adopt design guidelines to shape safety and improvement of the Township's various roadway corridors.	Ordinance Regulations/ Guidelines	Planning Commission/ Administration	Long-Term
	14.B. Construct a unified Township-wide wayfinding/gateway system using a combination of signage and landscape hierarchies.	Connectivity	Planning Commission	Short Term
15. Establish means and methods to mitigate through traffic in residential areas.	15.A. Municipal land use regulations should include provisions for traffic calming.	Revise Land Use Regulations	Planning Commission	Immediate
16. Encourage the Commonwealth to undertake a regional traffic systems study to identify any necessary improvements to hazardous intersections and the congestion.	16.A. South Fayette Township should actively encourage the Commonwealth to do a regional traffic systems study.	Regional Transportation Planning	Administration	Short Term
17. Encourage a circulation system designed to permit ease and safety of pedestrian and bicycle movement.	17.A. Develop a community-wide walking and bicycle trail system which can be financed through a combination of municipal capital improvements and private-sector development.	Connectivity	Park and Recreation Board/ Planning Commission	Long Term
18. Ensure that all transportation projects are not detrimental to the environment.	18.A. South Fayette Township should adopt policies that require environmental impact mitigation for municipal road improvement projects.	Comprehensive Traffic Study	Engineering	Short Term

Objectives	Policies	Description	Implementing Entity	Priority
19. Preserve the present character of South Fayette by continuing to concentrate commercial, industrial and the residential development in the areas where they already exist and those areas where the land meets these specific use requirements.	19.A. Incentives should be developed to promote new development in designated areas in order to preserve "important" rural areas of the community	Designate Growth Management Areas	Planning Commission	Immediate
20. Discourage development on environmentally sensitive lands including, but not limited to, areas of steep slope, aquifer recharge areas, former mining areas, woodlands, agricultural lands, wetlands and floodplains.	20.A. Require applicants to map and calculate associated resources applicable to designated Natural Infrastructure Corridor criteria.	Environmental Management System	Planning Commission	Immediate
	20.B Update the equation for developable area, open space and pedestrian circulation systems and document on a plan.	Revise Land Use Regulations	Planning Commission	Immediate
21. Provide for compatible uses in floodplain areas (open space, parks and recreation, etc.).	21.A. Incompatible land uses in flood plain areas should be prohibited.	Environmental Management System	Planning Commission	On-going
22. Review storm water management control and erosion and sedimentation control practices for adequacies.	22.A. Municipal storm water management control and erosion and sedimentation control regulations should be evaluated in order to promote best management practices.	Environmental Management System	Engineering Department/ EAC	Immediate
23. Continue to support and improve recycling in the community with a minimum of 25 percent of gross refuse tonnage.	23.A. South Fayette Township should establish means and methods to evaluate the effectiveness of the existing municipal recycling program.	Expand Recycling Program	Administration	Long Term
24. Establish means and methods to mitigate the potential negative environmental impacts on new development.	24.A. Municipal land use regulations should require mitigation of impacts on important environmental, historic, cultural and scenic resources to the maximum extent practical.	Revise Land Use Regulations	Planning Commission	Immediate

Recreation and Open Space

Objectives	Policies	Description	Implementing Entity	Priority
25. Promote opportunities for improved/expanded non-motorized access to recreational and natural areas for the residents of South Fayette Township.	25.A. Municipal land use regulations should mandate that new developments provide open space in conformance with the community recreation and open space initiatives.	Open Space and Parks Plan Implementation	Parks and Recreation Planning Commission	Ongoing
	25.B. Promote a community-wide pedestrian connection to the South Fayette Township Civic Center.	Connectivity	Parks and Recreation Planning Commission	Ongoing
26. Recognize the needs of both active and passive recreation in the design and maintenance of recreational and open space areas.	26.A. South Fayette Township should adopt policies to assure that environmental sensitive designs are incorporated into their municipal recreation facilities.	Municipal Facilities Study	Administration	Short Term

Land Use

Objectives	Policies	Description	Implementing Entity	Priority
27. Establish "Growth Management" Areas within the Township that designate areas where development is encouraged to occur and areas where development is discouraged.	27.A. South Fayette Township should establish Village, Suburban and Rural Growth areas using principles of density and intensity-based zoning.	Designate Growth Priority Management Areas	Planning Commission	Short Term

28. Ensure development is consistent with the preservation of sensitive uses and areas within the Township through land-use controls.	28.A. South Fayette Township should establish Resource Protection Areas to protect valuable environmental, historic and cultural resources through land use regulations.	Designate Resource Protection Areas	EAC	Short Term
	28.B. South Fayette Township should adopt an up-to-date "Official Map" that incorporates future road, utility and public facilities.	Public Realm Improvements	Planning Commission/ Commissioners	On-going
	28.C. South Fayette Township should require a community-wide network analysis and traffic mitigation plans on all rezoning applications and as part of the development approval process for development located on critical roadways.	Revise Land Use Regulations	Planning Commission	Immediate
	28.D. South Fayette Township should require geo-technical analysis on projects located on steep slopes or in previously mined areas as part of the development approval process for projects meeting established ordinance thresholds.	Revise Land Use Regulations	Planning Commission	Immediate
29. Revise land use regulations in a manner that makes these regulations more easily understood by users.	29.A. Photographs and drawings should be added to the revised land use regulations to more clearly illustrate certain provisions of the ordinances.	Revise Land Use Regulations	Planning Commission	Immediate
	29.B. South Fayette Township should incorporate the Comprehensive Plan, the Comprehensive Park/Recreation Planning efforts and all land use ordinances into a "Visual Interactive Code" or equivalent product.	Revise Land Use Regulations	Planning Commission	Immediate