Traffic Study

CHESTER HILL

TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

Prepared for:

Chester Hill Holdings

Prepared by:

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April 27, 2012

Traffic Study
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1.1 Introduction

This traffic report has been prepared to assess the traffic generated by the future mining operation of Chester Hill, LLC. The proposed mining operation will be located off Black Meadow Road just east of the Norfolk Southern Railroad - Warwick Branch train tracks, located in the Town of Chester, Orange County, New York. The site is proximate to the Interstate Waste Facility and 4000 feet south of the Village of Chester southern boundary line. The mining operation proposes to mine a portion of Durland Hill and return the area to a state suitable for future commercial development.

A Mining Permit Application has been filed with the New York State Department of Environmental Conservation, (NYS DEC), Mine ID number 30658. In this application the applicant requests to mine shale from approximately 37 acres of a 47 acre site. Five acres of the parcel were previously mined and the land has been successfully reclaimed.

This study describes how the proposed mining operation will affect the operational characteristics of two nearby intersections listed below as identified by the NYS DEC in their response to the request for a mining permit;

- CR 13 (Kings Highway) and NYS Route 17M
- CR 13 (Kings Highway) and Black Meadow Road / Laroe Road (CR 45).

This study provides a description of the traffic network's current operating conditions based on the existing traffic volumes traveling through these intersections, herein referred to as the Existing Conditions. Future transportation operations are examined for the No Build Conditions (without operation of the proposed mine) and Build Conditions (including operation of the proposed mine). The future conditions (No Build and Build) analyze traffic operations in 2015 which represents full use of the mine and the potential horizon for the development of some or all of the proposed residential developments pending in the Chester vicinity. The No Build Condition is the future baseline upon which project traffic is based. The Build Condition represents the combination of the No Build Condition plus the traffic that would result from development and operation of the Chester Hill mining operation.

2.0 TRANSPORTATION NETWORK

2.1 Regional Road Network

As described previously, the project consists of a proposed mining operation located off Black Meadow Road in the Town of Chester, Orange County, New York. The applicant proposes to mine a 37 acre portion of Durland Hill and return the area to a state suitable for future commercial development. The mining operation is expected to be functioning at full capacity by 2015. The project site location is shown in Appendix A, Figure 1.

A portion of NYS Route 17, known as the Quickway, passes to the northeast of the site. NYS Route 17 is generally an east-west road, however in this area it curves north-south. NYS Route 17 is a four-lane divided limited access highway which is in the process of being upgraded to federal interstate standards in preparation of being redesignated I-86.

NYS Route 17 originates at the I-87 New York State Thruway interchange in Harriman, New York, and continues in a northwest direction to Corning, New York, where it connects with the existing I-86 that provides access to western New York State. Access to NYS Route 17 is located approximately one mile from the project site, via NYS Route 94 at Exit 126. Additional access is available at Exit 127, access from westbound NYS Route 17 is via Lehigh Avenue, and eastbound access is provided via NYS Route 17M.

NYS Route 17M (Brookside Avenue) is classified by New York State Department of Transportation (NYS DOT) as a rural major collector with one 12-foot wide travel lane in each direction and with 8-foot shoulders. NYS Route 17M parallels NYS Route 17 in the vicinity of the site.

2.2 Local Setting

Figure 1 illustrates the transportation network in the project vicinity.

The streets nearest the site include the following:

1) Black Meadow Road
2) Kings Highway (County Road 13)
3) Laroe Road (County Road 45)
4) Lehigh Avenue
5) Leone Lane

Black Meadow Road

Black Meadow Road is a two way Town road. In the project vicinity, it intersects with Leone Lane and continues south providing access to industrial and warehouse uses, and further south, residential and rural areas. The speed limit on Black Meadow Road varies from 40 miles per hour near the project site to 55 miles per hour south of the project site. The project proposes an access connection to Black Meadow Road.

County Road 13 (Kings Highway)

County Road 13, also known as Kings Highway, is a main thoroughfare in the project vicinity and connects NYS Route 17M in the Village of Chester to the Village of Warwick. The speed limit on King's Highway is 40 miles per hour.

County Road 45 (Laroe Road)

Laroe Road is a two way Orange County road with a 40 mile per hour speed limit. Laroe Road connects Lakes Road (CR 5) to CR 13. Its intersection with Leone Lane and CR 13 is signalized.

Lehigh Avenue

Lehigh Avenue is a two way Town road with a 40 mile per hour speed limit. Lehigh Avenue parallels NYS Route 17 and ends at a signalized intersection with NYS Route 17M. The Lehigh Avenue and NYS Route 17M signal is coordinated with the NYS Route 17M and CR 13 signal to its west. Lehigh Avenue leads to the Exit 127 northbound ramps of NYS Route 17.

Leone Lane

Leone Lane is a two way Village road with a 30 mile per hour speed limit. Leone Lane intersects with CR 13 (Kings Highway) at CR 45 (Laroe Road). The western end of Leone Lane is a dead end.

This study investigates the following intersections:

1. CR 13 (Kings Highway), and NYS Route 17M {signalized}
2. CR 13 (Kings Highway), Leone Lane, and CR 45 (Laroe Road) {signalized}

3.0 EXISTING CONDITIONS

3.1 Existing Peak Hour Volumes

Appendix A, Figures 2 and 3 show existing peak hour turning movement volumes at the intersections studied. Hourly volume data were obtained on Wednesday, March 28, 2012.

The weekday peak hours of traffic were determined based on the manual counts are as follows;

- Kings Highway and NYS Route 17M, 7:30 a.m. to 8:30 a.m. and 4:45 p.m. to 5:45 p.m.
- Kings Highway and Leone Lane/Laroe Road, 7:30 a.m. to 8:30 a.m. and 4:30 to 5:30 p.m.

Traffic analyses for these intersections are based on traffic flow rates that are represented by the highest fifteen minute volumes in the peak hours.

3.2 Level of Service Criteria

The Highway Capacity Manual (Transportation Research Board, 2000) and the Highway Capacity Software procedures document the methodology used for modeling levels of service, delay, and volume to capacity ratios at both signalized and unsignalized intersections. Level of service is a measure of the operational quality of an intersection; level of service A is the highest, most efficient level, and level of service F is the lowest level. The operational quality of an intersection is based on the average amount of time a vehicle is delayed. The New York State Department of Transportation generally seeks a minimum level of service D (delay of 55 seconds or less) for all lane groups.

3.3 Existing Levels of Service

The intersections studied were evaluated for existing levels of service. The results of the level of service analyses for these intersections are summarized in Table 1. Capacity analysis calculations for Existing, No-Build, and Build conditions are provided as Appendix C of this report.

Table 1 indicates that under existing conditions, all of the lane groups at the intersections studied operate at levels of service A to D during both the a.m. peak hour and p.m. peak hour periods, with the majority of the movements operating at the most efficient levels of service A and B.

Table 1
Existing Condition Level of Service Summary

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour Volume to Capacity Ratio	A.M. Weekday Peak Hour Delay (seconds/ vehicle)	A.M. Weekday Peak Hour Level of Service	P.M. Weekday Peak Hour Volume to Capacity Ratio	P.M. Weekday Peak Hour Delay (seconds /vehicle)	P.M. Weekday Peak Hour Level of Service
Kings Highway (CR 13) and Laroe Road (CR 45) / Leone Lane							
Leone Lane	EB - L	0.36	17.5	B	0.42	14.7	B
Laroe Road (CR 45)	WB - L	0.01	22.4	C	0.01	18.4	B
	WB - T, R	0.61	15.7	B	0.26	12.4	B
Kings Highway (CR 13)	NB - L	0.03	10.8	B	0.04	13.7	B
	NB - T, R	0.55	11.1	B	0.32	9.7	A
Kings Highway (CR 13)	SB - L	0.26	16.4	B	0.34	13.5	B
	SB - T	0.27	9.4	A	0.48	10.7	B
	SB - R	0.12	8.7	A	0.07	8.5	A
	Overall		12.8	B		11.6	B
Kings Highway (CR 13) and NYS Route 17M							
NYS Route 17M	EB - T	0.76	36.5	D	0.74	36.4	D
	EB - R	0.21	31.1	C	0.65	35.4	D
NYS Route 17M	WB - L	0.24	12.6	B	0.93	28.3	C
	WB - T	0.26	5.7	A	0.52	6.2	A
Kings Highway (CR 13)	NB - L	0.76	27.9	C	0.67	24.4	C
	NB - R	0.28	7.9	A	0.12	6.9	A
	Overall		21.5	C		22.9	C

Level of Service (see Appendix B for level of service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

4.0 FUTURE NO-BUILD TRAFFIC CONDITIONS

4.1 No-Build Traffic: Network and Volumes

Typically, a project's traffic impact is assessed by comparing future traffic conditions without the project's traffic (the 2015 No-Build condition) to traffic conditions with project-generated traffic (the 2015 Build condition).

No-Build traffic conditions are ascertained based on a number of factors: (1) improvements in the local road network that are planned or underway; (2) traffic from general population growth in the local area and, (3) traffic from identified development projects in the project vicinity.

The New York State Department of Transportation (NYS DOT) is improving the Quickway to interstate standards. Exit 126 of the Quickway was recently reconstructed and improved by realigning NYS Route 94 to reconfigure this road and the NYS Route 17 ramps into a standard diamond interchange configuration. Exit 127 is also expected to be improved as noted in the State Transportation Improvement Program and Town of Chester Comprehensive Plan. The Town Comprehensive Plan recommends that the CR 13 and NYS Route 17M intersection alignment also be improved as part of the Exit 127 improvements. Based upon funding constraints of the NYSDOT, the timing of the recommended improvements to the Route 17 interchanges is not certain. Thus, these improvements were not factored into the No-Build or Build traffic analysis.

The Town and Village of Chester were contacted to obtain a list of proposed development projects within the project vicinity. Table 2 lists the major pending projects in the study area. Traffic generated by these projects was included in the No-Build traffic analysis.

Table 2
Pending or Approved Projects in Site Vicinity

Project Name	Access Location	Project Description
BT Holdings	NYS Route 17M	336 Multifamily Units 100 Senior Citizen Rental Apts
Chester Golf Club	Gibson Hill, Bull Mill, Dug and Laroe Rd.	227 Single Family Homes
The Greens at Chester	NYS Route 94 and Conklingtown Road	Phase 1-237 Single Family Homes Total - 431 Single Family Homes
Camp Laguardia (MontCo)	NYS Route 17M	800 Multifamily Units 80,000 sf Light Industrial/Commercial
Bellevale	Lakes Road, Camp Monroe	164 Single Family Homes
Henry Farm	Lakes Road,	66 Single Family Homes 50 Senior Citizen Multifamily units
Ridgeview Estates	County Rd 45/Laroe Road and Pond Road	14 Single Family Homes
Hills at Chester	Whispering Hills Drive and NYS Route 94	24 Single Family Homes
Meadow Hill Senior Complex	NYS Route 94 Opposite Vista Drive	142 Senior Multifamily Units
Medical World Distribution	NYS Route 94 and Tetz Road	12,000 square feet Warehouse
Fresenius Distribution	NYS Route 94 and Tetz Road	194,400 square feet Warehouse

Source: Town and Village of Chester, 2012.

Peak hour traffic volumes for the a.m. and p.m. No-Build conditions are provided in Appendix A, Figures 3 and 4. These volumes are the sum of the traffic from the pending area projects and background traffic growth of two percent annually for three years added to existing traffic. The three year time period reflects time for the Mining Permit approval process and construction of the proposed Chester Hill mining operation. It is expected that the proposed mining operation will be fully functional by 2015.

4.2 No-Build Level of Service

Table 4 summarizes the levels of service for the 2015 No-Build condition. There are several changes to the anticipated levels of service due to general background growth and the potential for development in this region. However, all movements continue to operate at level of service "D" or better.

Any improvements in the state right of way including but not limited to signal timing changes, addition of a lane, or signalization, would require approval from the New York State Department of Transportation.

Table 3
No-Build Condition Level of Service Summary

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour			P.M. Weekday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Kings Highway (CR 13) and Laroe Road (CR 45) / Leone Lane							
Leone Lane	EB - L	0.57	20.0	C*	0.55	16.2	B
Laroe Road (CR 45)	WB - L	0.07	27.2	C	0.03	21.2	C*
	WB - T, R	0.78	21.7	C*	0.36	13.0	B
Kings Highway (CR 13)	NB - L	0.07	11.2	B	0.11	14.7	B
	NB - T, R	0.59	11.4	B	0.35	9.8	A
Kings Highway (CR 13)	SB - L	0.36	18.1	B	0.46	15.1	B
	SB - T	0.29	9.5	A	0.52	10.9	B
	SB - R	0.18	9.0	A	0.07	8.5	A
	Overall		15.2	B		12.5	B
Kings Highway (CR 13) and NYS Route 17M							
NYS Route 17M	EB - T	0.90	39.6	D	0.89	42.9	D
	EB - R	0.29	31.3	C	0.76	40.2	D
NYS Route 17M	WB - L	0.35	13.2	B	0.95	44.4	D*
	WB - T	0.29	5.3	A	0.53	3.9	A
Kings Highway (CR 13)	NB - L	0.83	33.5	C	0.80	35.7	D*
	NB - R	0.34	8.9	A	0.15	7.4	A
	Overall		24.3	C		30.2	C

Level of Service (see Appendix B for level of service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

* Denotes change in Level of Service compared to Existing Conditions

5.0 FUTURE BUILD TRAFFIC CONDITIONS

5.1 Build Traffic: Network and Volumes

Site Improvements

The proposed mining operation of Chester Hill, LLC will be located off Black Meadow Road, in the Town of Chester, Orange County, New York. The site is located just east of the Norfolk Southern Railroad - Warwick Branch train tracks; proximate to the Interstate Waste Facility and 4000 feet south of the Village of Chester southern boundary line. The mining operation proposes to mine a portion of Durland Hill and return the area to a state suitable for future commercial development. Appendix A, Figure 6 illustrates the proposed site plan layout for the Chester Hill Mining Operation.

A Mining Permit Application has been filed with the New York State Department of Environmental Conservation, (NYS DEC), Mine ID number 30658. In this application the applicant requests to mine shale from approximately 37 acres of a 47 acre site. Five acres of the parcel were previously mined and the land has been successfully reclaimed.

Project Trip Generation and Distribution

This study describes how the proposed mining operation will affect the operational characteristics of two nearby intersections listed below as identified by the NYS DEC in their response to the request for a mining permit;

- CR 13 (Kings Highway) and NYS Route 17M, and
- CR 13 (Kings Highway) and Black Meadow Road / Laroe Road (CR 45).

The mining Permit filed with the NYSDEC estimates the total quantity of rock to be mined will be 2.5 million tons at an annual production rate of approximately 150,000 to 200,000 tons annually for a duration of up to 15 years. The rock will be processed on site. The processing plant has the capacity to process 250 tons per hour. In order to estimate potential trip generation, the processing of 250 tons was converted to approximately 192 cubic yards. Transport of this material in 16 cubic yard tri-axel trucks could require up to 12 trucks entering and exiting the site during the peak hour. In addition the applicant estimates there will be 4 to 6 employees on site during the mining operation. Table 4 provides a summary of the anticipated trip generation during full mining operation.

Table 4
Project Trip Generation Summary

	Land Use	Trips Generated					
		A.M. Peak Hour			P.M. Peak Hour		
		IN (Trips)	OUT (Trips)	Total Trips	IN (Trips)	OUT (Trips)	Total Trips
1	Mining Operation	12	12	24	12	12	24
2	Employees	6	0	6	0	6	6
	Total Trips	**18**	**12**	**30**	**12**	**18**	**30**

Traffic Distribution

Appendix A, Figure 5 shows the anticipated traffic distribution. The trip distribution is based on existing patterns, in combination with land uses and anticipated routings. Traffic patterns in the project area are influenced by the local destinations and also by the locations of access points to NYS Route 17. Due to the wide roads, flat grades, and generous turning radii within the Chester Industrial Park, in combination with direct access to NYS Route 17 via Nucifora Boulevard to NYS Route 94, it is anticipated that up to 40 percent of the truck traffic origination from the mine may travel through the Chester Industrial Park to access NYS Route 17, thus 60 percent of truck traffic was distributed to the study intersections. This distribution is reflected on Appendix A, Figure 5. It should be noted that a 20 percent shift in distribution would represent the shift of only 6 vehicles.

Appendix A, Figures 7 and 8 show the site generated traffic associated with the proposed mining operation. Build traffic Appendix A, Figures 9 and 10 show the site generated trips (Appendix A, Figures 7 and 8) added to the No-Build volumes (Appendix A, Figures 3 and 4).

5.2 Build Level of Service

The Chester Hill mining operation is projected to generate up to a maximum of 30 trips in the a.m. peak, and a maximum of 30 trips in the p.m. peak hour. The intersections studied were analyzed for the Build condition (future condition with the combined project sites). The levels of service are summarized in Table 5.

There are no changes to the operating level of service at any of the movements in the intersections studied as a result of the proposed Chester Hill mining operation. All movements will continue to operate at level of service "D" or better.

Table 5
Build Condition Level of Service Summary

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour Volume to Capacity Ratio	A.M. Weekday Peak Hour Delay (seconds/ vehicle)	A.M. Weekday Peak Hour Level of Service	P.M. Weekday Peak Hour Volume to Capacity Ratio	P.M. Weekday Peak Hour Delay (seconds /vehicle)	P.M. Weekday Peak Hour Level of Service
Kings Highway (CR 13) and Laroe Road (CR 45) / Leone Lane							
Leone Lane	EB - L	0.61	21.7	C	0.58	17.0	B
Laroe Road (CR 45)	WB - L	0.08	27.6	C	0.03	22.0	C
	WB - T, R	0.77	21.9	C	0.37	13.0	B
Kings Highway (CR 13)	NB - L	0.07	11.3	B	0.12	14.7	B
	NB - T, R	0.59	11.4	B	0.35	9.8	A
Kings Highway (CR 13)	SB - L	0.36	18.1	B	0.46	15.1	B
	SB - T	0.29	9.5	A	0.52	10.9	B
	SB - R	0.14	8.8	A	0.08	8.5	A
	Overall		15.5	B		12.7	B
Kings Highway (CR 13) and NYS Route 17M							
NYS Route 17M	EB - T	0.90	39.6	D	0.89	43.0	D
	EB - R	0.30	31.4	C	0.77	40.3	D
NYS Route 17M	WB - L	0.36	13.3	B	0.95	44.6	D
	WB - T	0.29	5.3	A	0.54	3.9	A
Kings Highway (CR 13)	NB - L	0.83	33.7	C	0.81	36.1	D
	NB - R	0.35	8.9	A	0.15	7.4	A
	Overall		24.3	C		30.3	C

Level of Service (see Appendix B for level of service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

* Denotes change in Level of Service compared to Existing Conditions

6.0 Summary

The Chester Hill mining operation is expected to generate up to 30 vehicular trips in the a.m. peak hour and up to 30 trips in the p.m. peak hour (combined truck traffic and employee vehicle trips). Trip generation is based on the estimated maximum volume of shale to be removed on a daily basis as stipulated in the Mining Permit Application, in combination with the anticipated employee trips.

Peak hour delays were calculated to establish the quality of operation (level of service) of the intersections studied under the existing condition, future condition without the combined project and the future condition with the combined project. Level of service is graded on a scale of A (best) to F (worst). Results are described below.

Under existing conditions, all of the studied lane groups at the intersections studied operate at levels of service A to D during both the a.m. peak hour and p.m. peak hour periods, with the majority of the movements operating at the most efficient levels of service A and B.

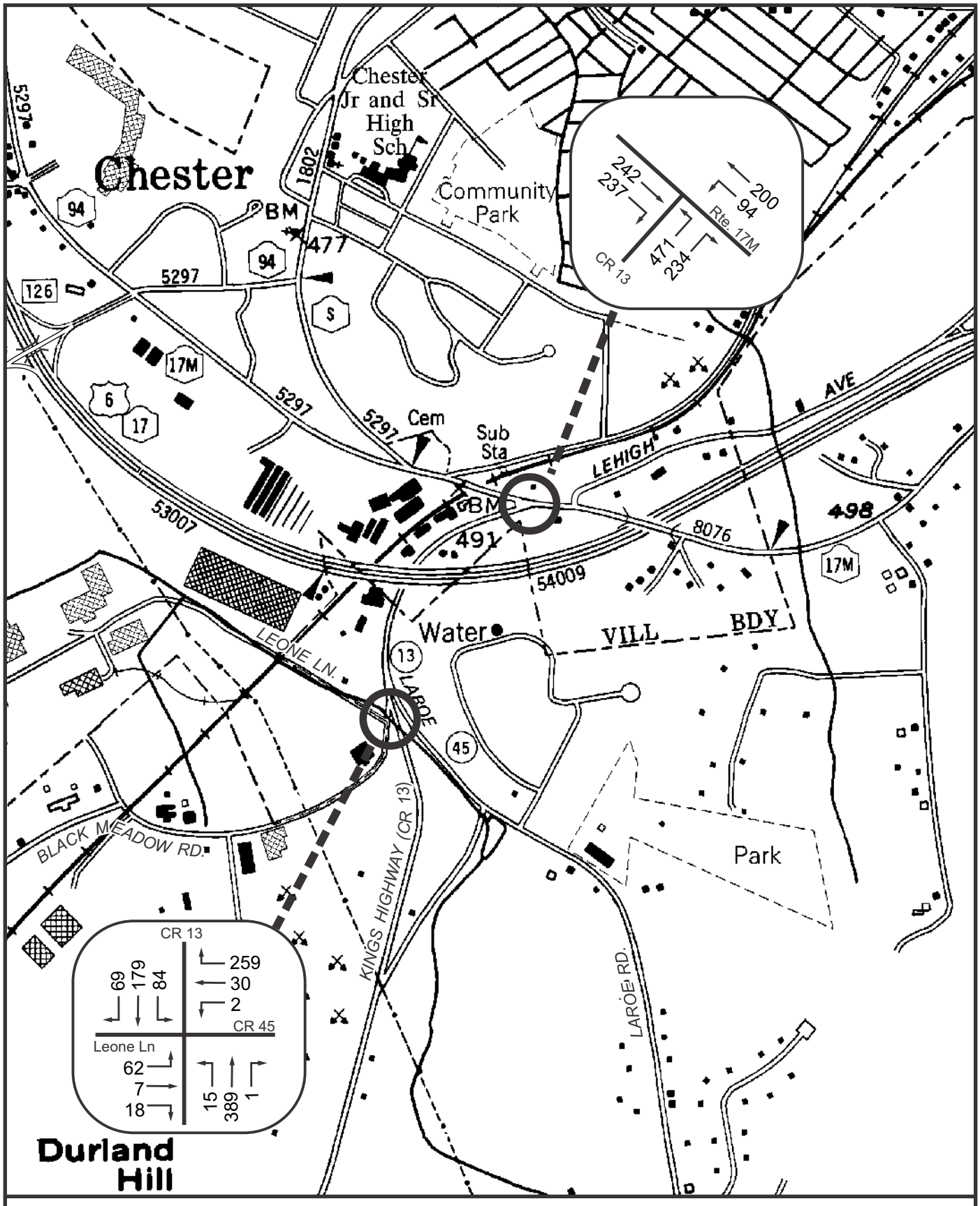
There are several changes to the anticipated levels of service due to general background growth and the potential for development in this region. However, all movements continue to operate at level of service "D" or better. Level of service "D" is considered acceptable by the NYS DOT.

There are no changes to the operating level of service at any of the movements in the intersections studied as a result of the proposed Chester Hill mining operation. All movements will continue to operate at level of service "D" or better. The overall level of service at the intersection of Kings Highway (CR13) and Leone Lane is level of service "B" with an average delay of less than 16 seconds. The overall level of service at the intersection of Kings Highway (CR13) and NYS Route 17M is level of service "C" with an average delay of less than 31 seconds.

The proposed Chester Hill mining will not result in a negative traffic impact on local roadway operations.

APPENDIX A

Traffic Volume Figures



N

W E

S

Figure 1: Existing AM Peak Hour Traffic

Chester Hill

Village of Chester, Orange County, New York

Base Map: NYS DOT Planimetric, Warwick Quad

Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

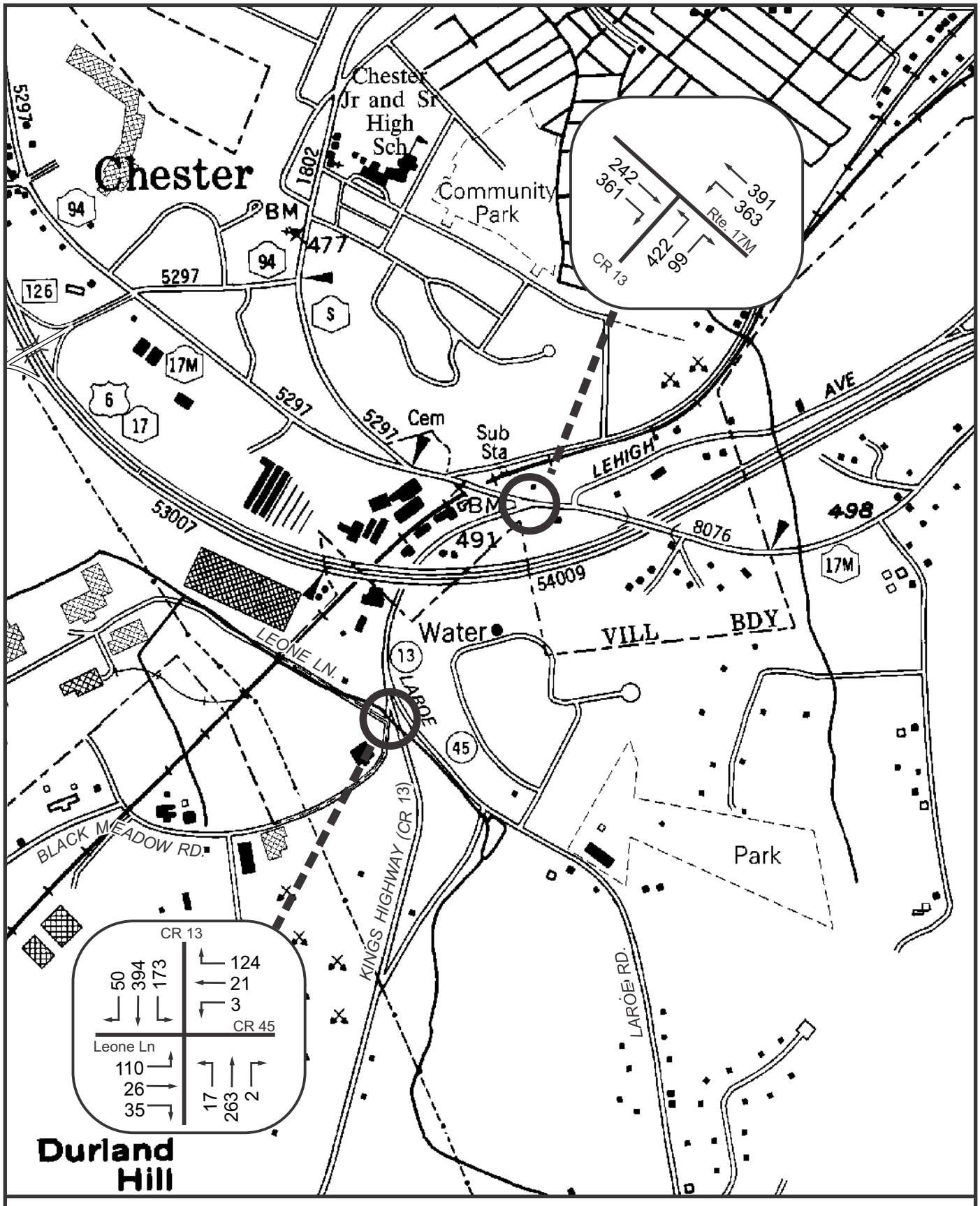


Figure 2: Existing PM Peak Hour Traffic
Chester Hill
Village of Chester, Orange County, New York
Base Map: NYS DOT Planimetric, Warwick Quad
Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

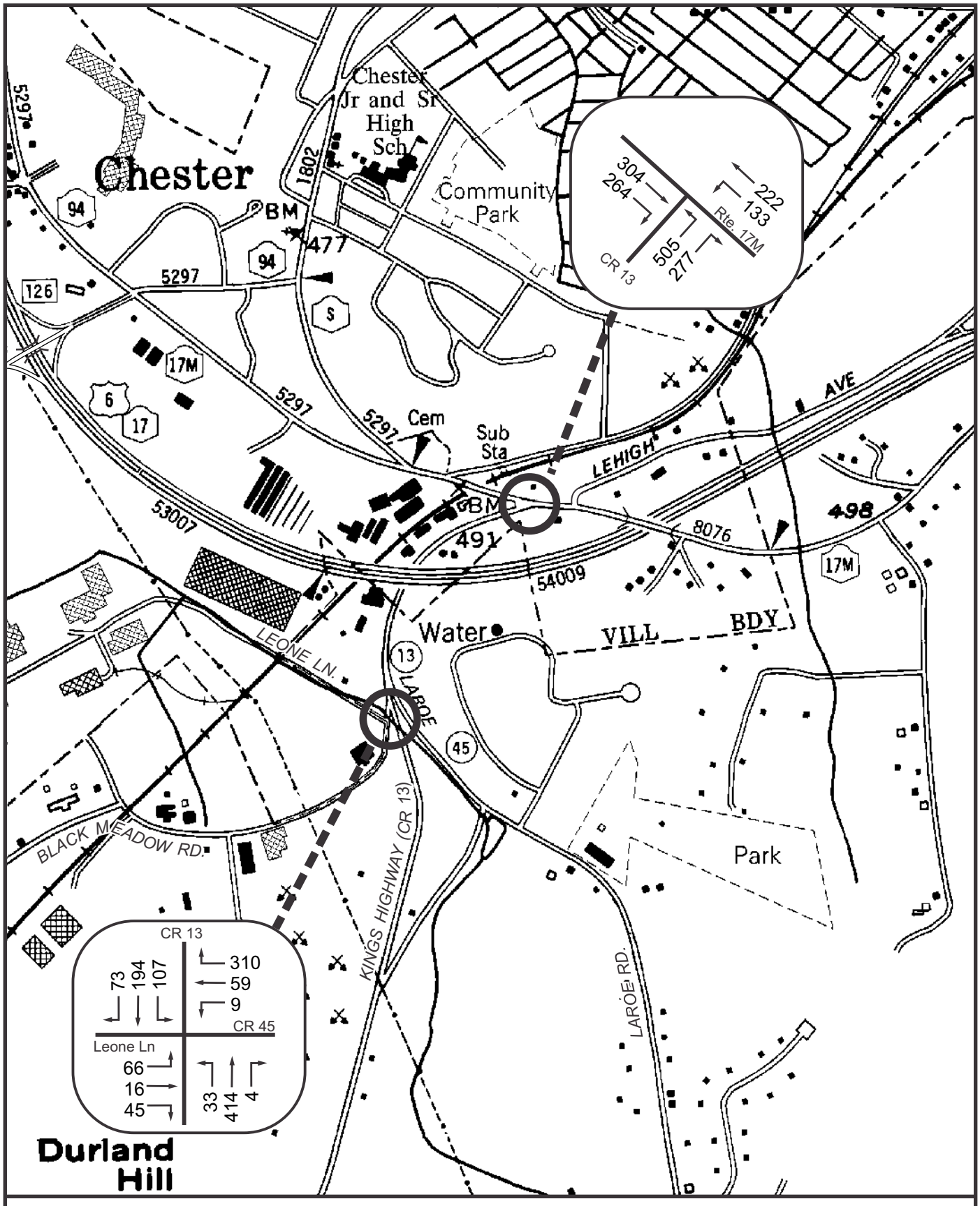


Figure 3: No Build AM Peak Hour Traffic

Chester Hill

Village of Chester, Orange County, New York

Base Map: NYS DOT Planimetric, Warwick Quad

Scale: 1 inch = 1000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

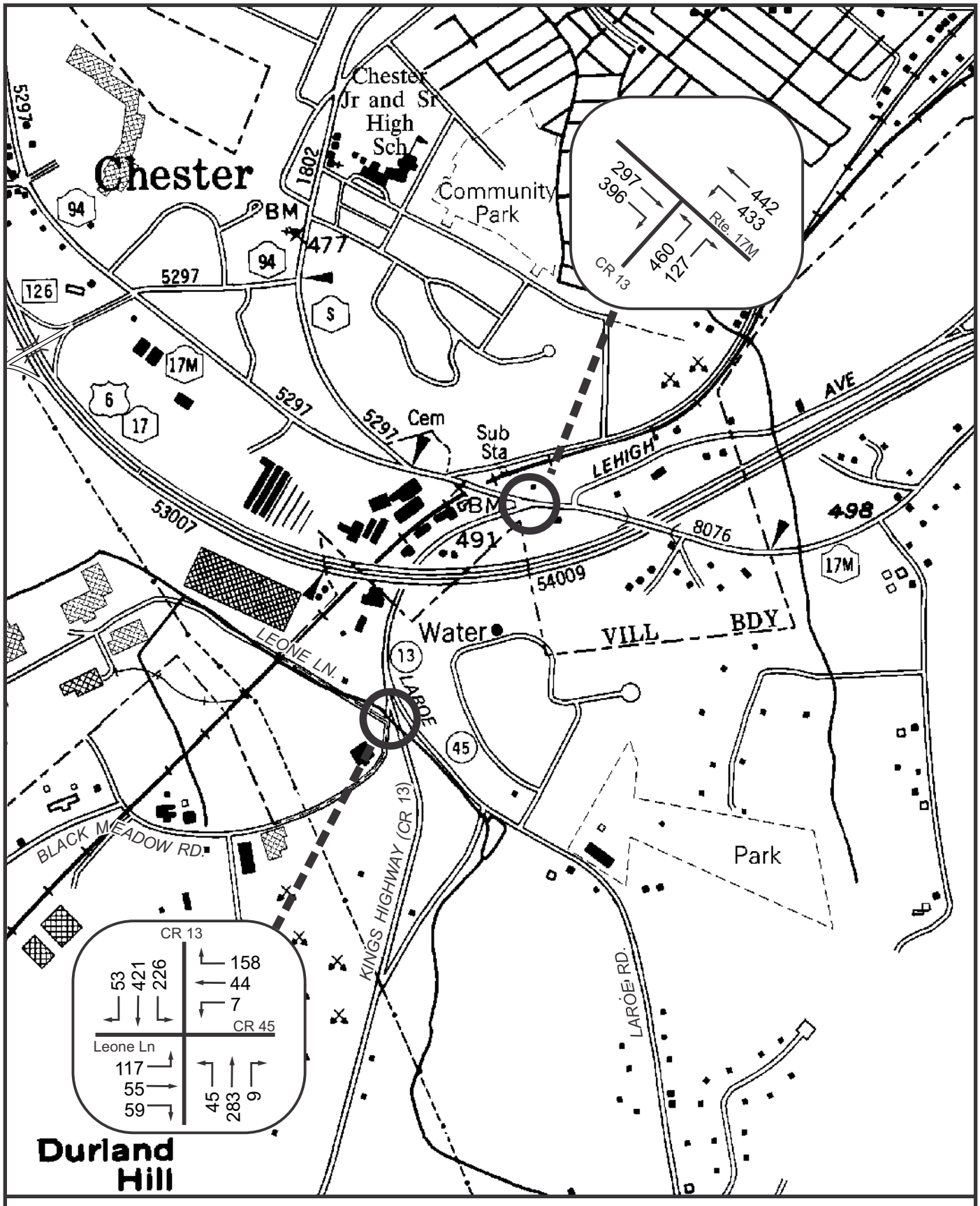

Figure 4: No Build PM Peak Hour Traffic
Chester Hill
Village of Chester, Orange County, New York
Base Map: NYS DOT Planimetric, Warwick Quad
Scale: 1 inch = 1000 feet

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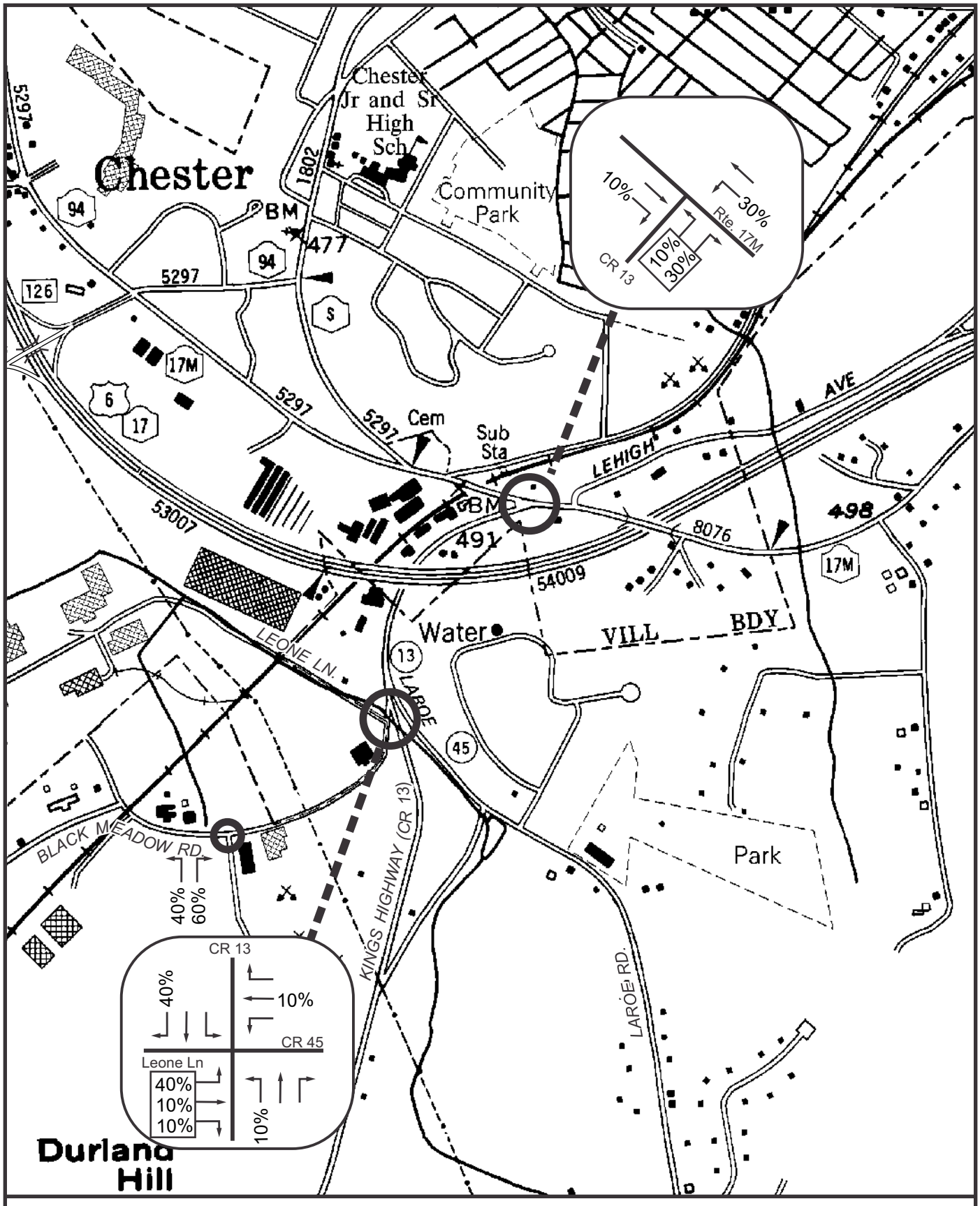
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



N
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LEGEND

- Intersections Studied
- XX% Outbound
- XX% Inbound

Figure 5: Percent Distribution

Chester Hill
Village of Chester, Orange County, New York
Base Map: NYS DOT Planimetric, Warwick Quad
Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

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MAP REFERENCE:

MAP ENTITLED 'SUBDIVISION AND SURVEY OF PROPERTY FOR LEON KAKARGO. TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED MARCH 26, 1986. LAST REVISED SEPTEMBER 29, 1986 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON DECEMBER 10, 1986 AS MAP NO. 7998.

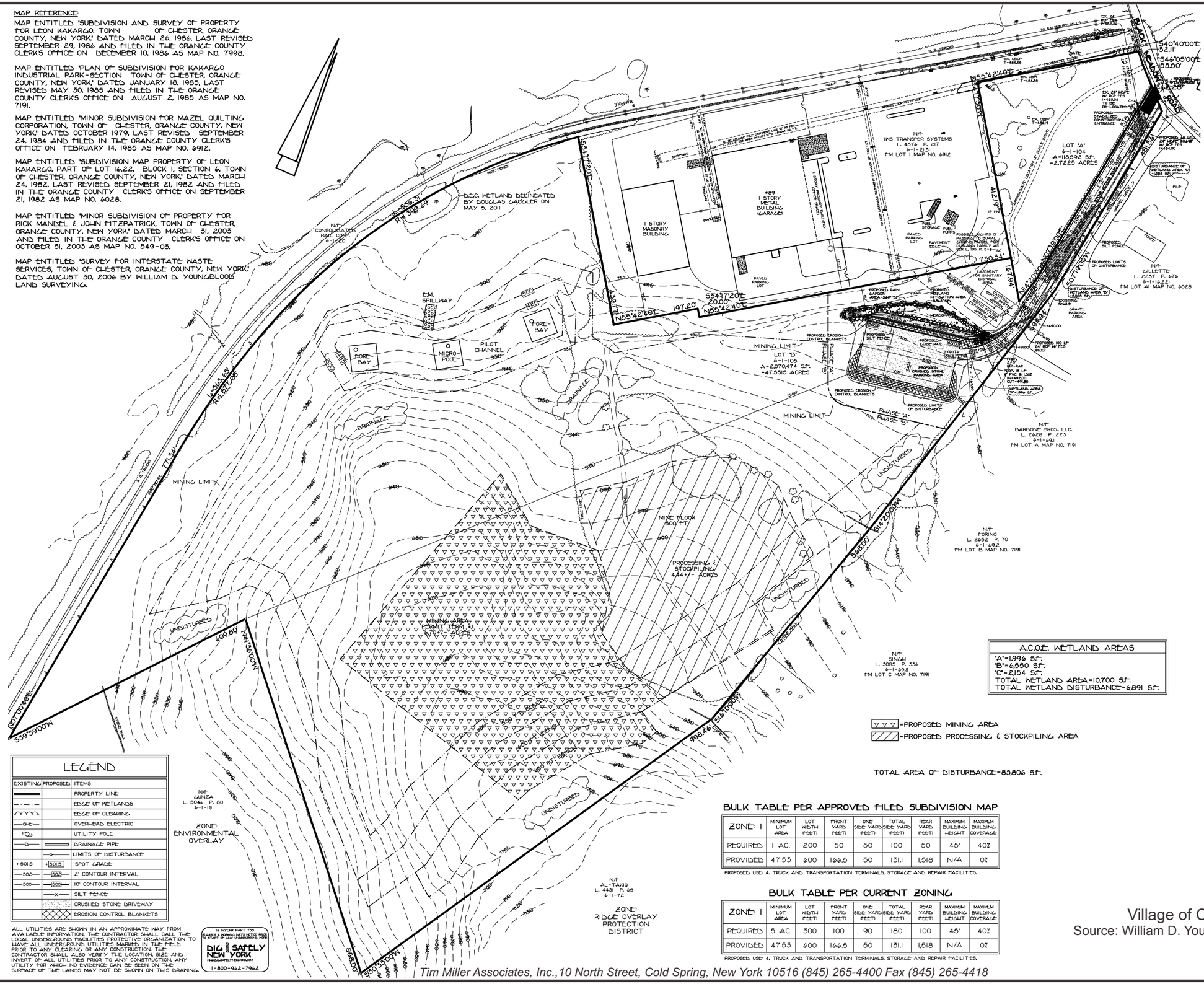
MAP ENTITLED 'PLAN OF SUBDIVISION FOR KAKARGO INDUSTRIAL PARK-SECTION TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED JANUARY 18, 1985, LAST REVISED MAY 30, 1985 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON AUGUST 2, 1985 AS MAP NO. 7191.

MAP ENTITLED 'MINOR SUBDIVISION FOR MAZEL QUILTING CORPORATION, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED OCTOBER 1979, LAST REVISED SEPTEMBER 24, 1984 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON FEBRUARY 14, 1985 AS MAP NO. 6912.

MAP ENTITLED 'SUBDIVISION MAP PROPERTY OF LEON KAKARGO, PART OF LOT 16.22, BLOCK 1, SECTION 6, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED MARCH 24, 1982, LAST REVISED SEPTEMBER 21, 1982 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON SEPTEMBER 21, 1982 AS MAP NO. 6028.

MAP ENTITLED 'MINOR SUBDIVISION OF PROPERTY FOR RICK MANDEL & JOHN FITZPATRICK, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED MARCH 31, 2003 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON OCTOBER 31, 2003 AS MAP NO. 549-03.

MAP ENTITLED 'SURVEY FOR INTERSTATE WASTE SERVICES, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK.' DATED AUGUST 30, 2006 BY WILLIAM D. YOUNGBLOOD LAND SURVEYING.



A.C.O.E. WETLAND AREAS
'A'=1,996 SF.
'B'=6,550 SF.
'C'=2,154 SF.
TOTAL WETLAND AREA=10,700 SF.
TOTAL WETLAND DISTURBANCE=6,891 SF.

▽▽▽=PROPOSED MINING AREA

▨=PROPOSED PROCESSING & STOCKPILING AREA

TOTAL AREA OF DISTURBANCE=83,806 SF.

LEGEND		
EXISTING	PROPOSED	ITEMS
		PROPERTY LINE
		EDGE OF WETLANDS
		EDGE OF CLEARING
—OHE—		OVERHEAD ELECTRIC
		UTILITY POLE
—D—	—D—	DRAINAGE PIPE
	—o—	LIMITS OF DISTURBANCE
+501.5	+501.5	SPOT GRADE
—502—	—502—	2' CONTOUR INTERVAL
—500—	—500—	10' CONTOUR INTERVAL
	—X—	SILT FENCE
		CRUSHED STONE DRIVEWAY
		EROSION CONTROL BLANKETS

ALL UTILITIES ARE SHOWN IN AN APPROXIMATE WAY FROM AVAILABLE INFORMATION. THE CONTRACTOR SHALL CALL THE LOCAL UNDERGROUND FACILITIES PROTECTIVE ORGANIZATION TO HAVE ALL UNDERGROUND UTILITIES MARKED IN THE FIELD PRIOR TO ANY CLEARING OR ANY CONSTRUCTION. THE CONTRACTOR SHALL ALSO VERIFY THE LOCATION, SIZE AND INVERT OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. ANY UTILITY FOR WHICH NO EVIDENCE CAN BE SEEN ON THE SURFACE OF THE LANDS MAY NOT BE SHOWN ON THIS DRAWING.

16 NYCRR PART 753 REQUIRES A MINIMUM THREE BUSINESS DAYS NOTICE PRIOR TO START OF ANY UNDERGROUND WORK

DIG SAFELY NEW YORK
1-800-962-7962

File 12020
04/23/12
JS:\12020

BULK TABLE PER APPROVED FILED SUBDIVISION MAP

ZONE: I	MINIMUM LOT AREA	LOT WIDTH (FEET)	FRONT YARD (FEET)	ONE SIDE YARD (FEET)	TOTAL SIDE YARD (FEET)	REAR YARD (FEET)	MAXIMUM BUILDING HEIGHT	MAXIMUM BUILDING COVERAGE
REQUIRED	1 AC.	200	50	50	100	50	45'	40%
PROVIDED	47.53	600	166.5	50	131.1	1,518	N/A	0%

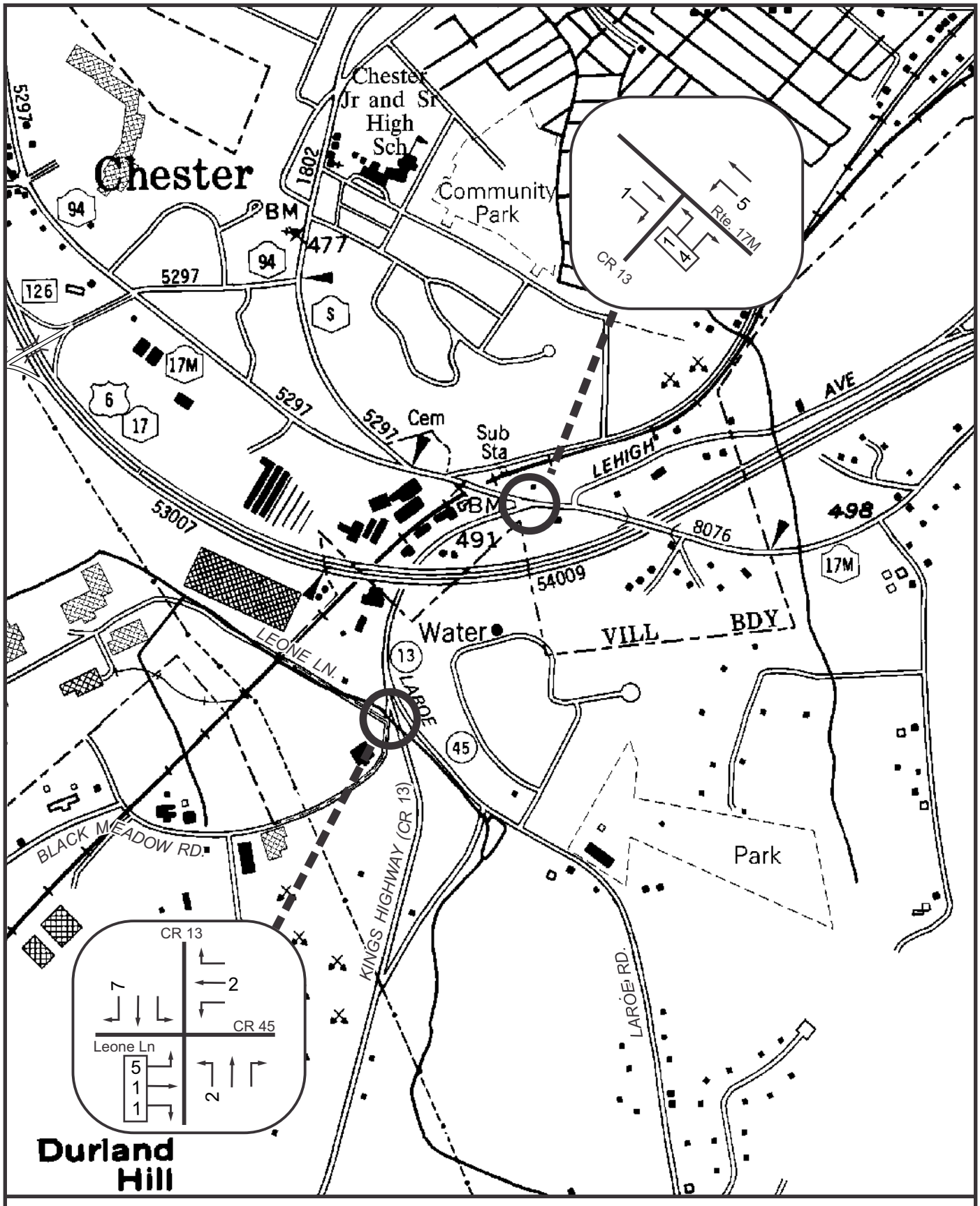
PROPOSED USE: 4. TRUCK AND TRANSPORTATION TERMINALS, STORAGE AND REPAIR FACILITIES.

BULK TABLE PER CURRENT ZONING

ZONE: I	MINIMUM LOT AREA	LOT WIDTH (FEET)	FRONT YARD (FEET)	ONE SIDE YARD (FEET)	TOTAL SIDE YARD (FEET)	REAR YARD (FEET)	MAXIMUM BUILDING HEIGHT	MAXIMUM BUILDING COVERAGE
REQUIRED	5 AC.	300	100	90	180	100	45'	40%
PROVIDED	47.53	600	166.5	50	131.1	1,518	N/A	0%

PROPOSED USE: 4. TRUCK AND TRANSPORTATION TERMINALS, STORAGE AND REPAIR FACILITIES.

Figure 6: Site Plan
Chester Hill
Village of Chester, Orange County, New York
Source: William D. Youngblood, Land Surveying, P.C., 08/24/11
Scale: 1" = 200'



N

W E

S

LEGEND

XX Outbound

XX Inbound

Figure 7: Site Generated AM Peak Hour Traffic

Chester Hill

Village of Chester, Orange County, New York

Base Map: NYS DOT Planimetric, Warwick Quad

Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

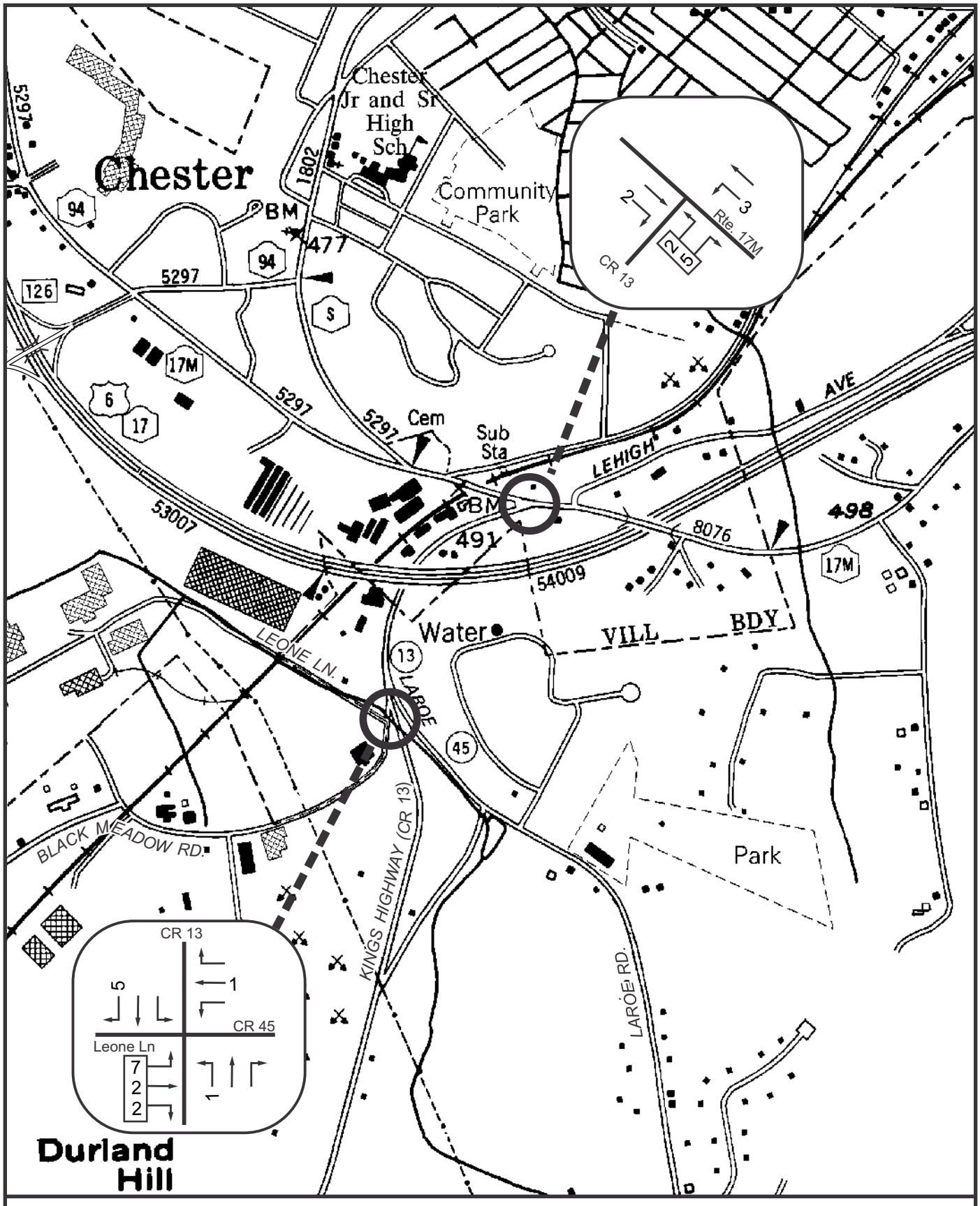


Figure 8: Site Generated PM Peak Hour Traffic

Chester Hill

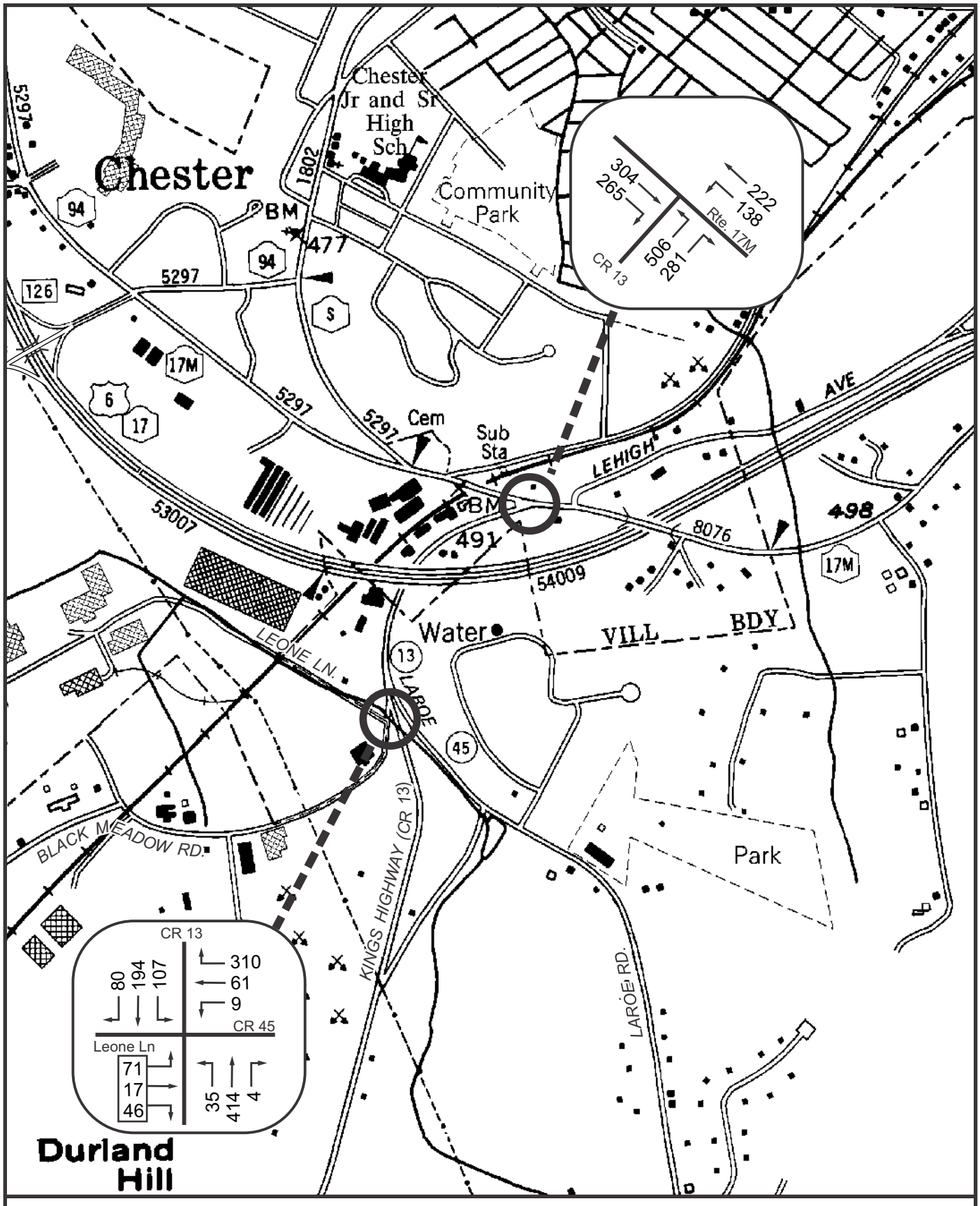
Village of Chester, Orange County, New York

Base Map: NYS DOT Planimetric, Warwick Quad

Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



N

W E

S

LEGEND

XX Outbound

XX Inbound

Figure 9: Build AM Peak Hour Traffic

Chester Hill

Village of Chester, Orange County, New York

Base Map: NYS DOT Planimetric, Warwick Quad

Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

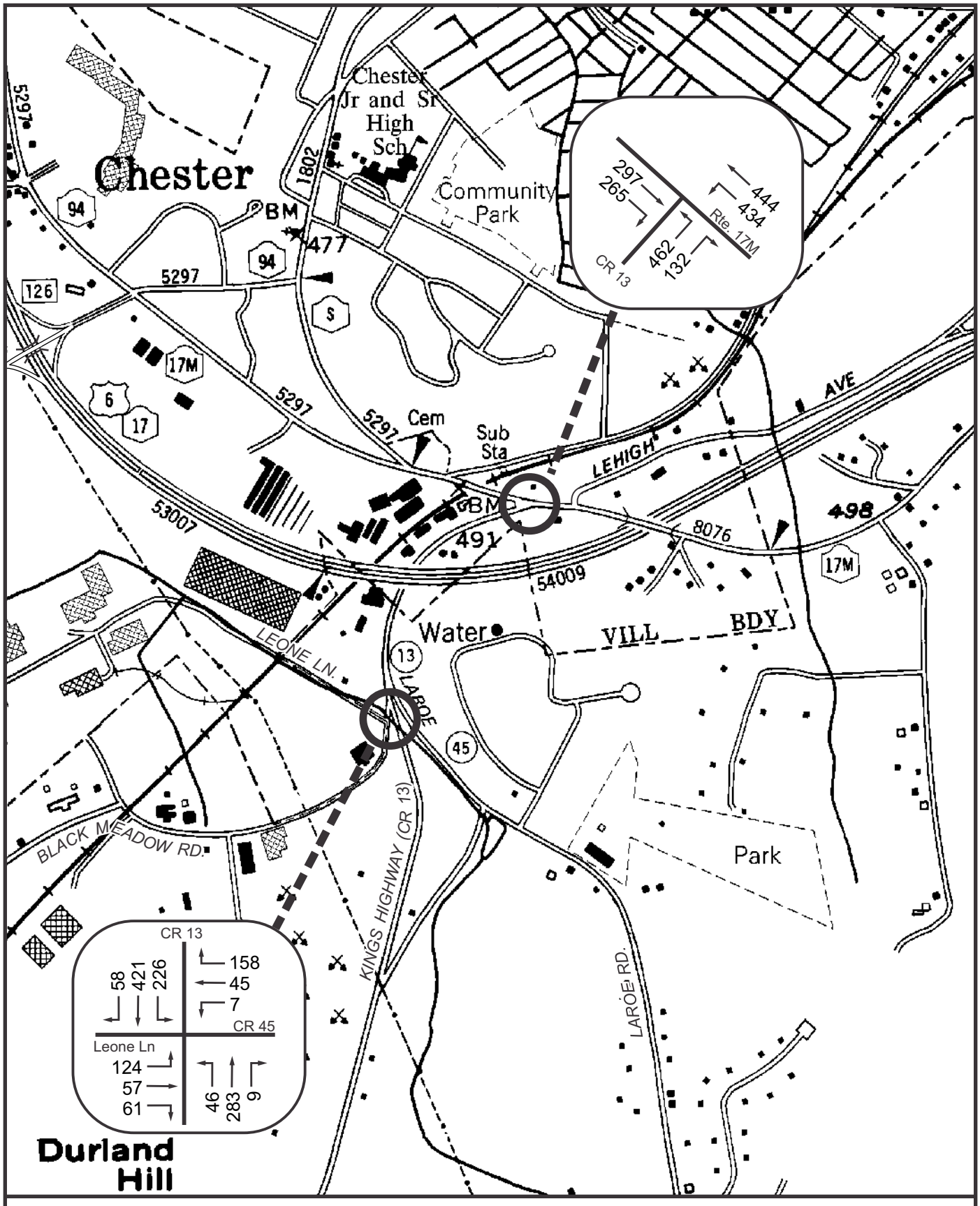


Figure 10: Build PM Peak Hour Traffic
Chester Hill
Village of Chester, Orange County, New York
Base Map: NYS DOT Planimetric, Warwick Quad
Scale: 1 inch = 1000 feet

File 12020 04/23/12
JS:\12020

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

APPENDIX B

Performance Measures
Level of Service Criteria

Traffic: Performance Measures

Introduction

The Highway Capacity Manual[1] and the *Highway Capacity Software*[2] procedures document the methodology used for modeling levels of service, average vehicle delay, and volume -to-capacity ratios at both signalized and unsignalized intersections. Level of service is a measure of the operational quality of an intersection; level of service A is the highest, most efficient level, and level of service F is the lowest level. The operational quality of an intersection for the automobile mode is based on the average amount of time a vehicle is delayed. Levels of service are examined by 'lane group', the set of lanes allowing common movement(s) on an approach. Approaches to intersections are assigned primary directions for clarity as depicted on the traffic volume figures.

The *Highway Capacity Software* modeled results are applied to peak hour periods only. During off peak periods, which is the majority of the time, drivers typically will find operations better than the modeled peak hour results. During peak periods the experience of individual drivers can vary, because the model calculates average delay.

Level of Service Criteria Signalized Intersections

When analyzing activity at signalized intersections, an understanding of the definition of level of service for the Automobile mode is essential:

Automobile Mode

Level of service can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize level of service for the entire intersection or an approach. Control delay and volume-to-capacity ratio are used to characterize level of service for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure to driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each level of service.

Level of service A describes operations with a control delay of 10 seconds per vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

Level of service B describes operations with control delay between 10 and 20 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with Level of service A.

Level of service C describes operations with control delay between 20 and 35 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of

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[1] Transportation Research Board of the National Academies, Highway Capacity Manual, Washington D.C. , 2010.

[2] *Highway Capacity Software*, Computer software, Version 6.1, Mctrans, Gainsville, Florida, 2011.

vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

Level of service D describes operations with control delay between 35 and 55 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is higher and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

Level of service E describes operations with control delay between 55 and 80 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

Level of service F describes operations with control delay exceeding 80 seconds per vehicle or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 seconds per vehicle when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group level of service is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 seconds per vehicle represents failure from a delay perspective).

The Table below lists the level of service thresholds established for the automobile mode at a signalized intersection.[3]

Signalized Intersections Level of Service Criteria Automobile Mode For Lane Groups		
Average Control Delay (Seconds Per Vehicle)	Volume-to-capacity Ratio less than or equal to one **Level of Service**	Volume-to-capacity Ratio greater than one **Level of Service**
less than or equal to 10	A	F
greater than 10 and less than or equal to 20	B	F
greater than 20 and less than or equal to 35	C	F
greater than 35 and less than or equal to 55	D	F
greater than 55 and less than or equal to 80	E	F
greater than 80	F	F

[1] From Transportation Research Board of the National Academies, Highway Capacity Manual, Washington D.C. , Volume 3 page 18-6, Exhibit 18-4, 2010. Abbreviations and mathematical symbols have been replaced for reader clarity. Table limited to lane groups (lane or group of lanes sharing a common movement)

The New York State Department of Transportation (NYS DOT) generally seeks in urban areas for a level of service D or better (delay of 55 seconds or less for a signalized intersection) for all lane groups however:

[3] From Transportation Research Board of the National Academies, Highway Capacity Manual, Washington D.C. , Volume 3 page 18-6, 2010. Abbreviations and mathematical symbols have been replaced for reader clarity.

In some cases, it may be necessary to accept level of service E or F on individual lane groups due to unreasonable costs or impacts associated with improving the level of service.[4]

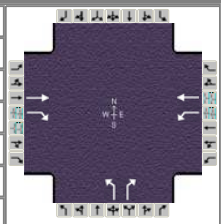
[4] From NYS DOT, Highway Design Manual, Revision 62, April 13, 2011, (page 5-103) with abbreviations replaced for reader clarity.

APPENDIX C

Level of Service Analysis

2010 HCS Signalized Intersection Results Summary

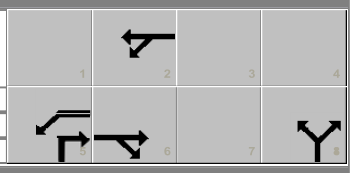
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Kings Highway (CR13)	Analysis Year	Existing	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way EXAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		242	237	94	200		471		234			

Signal Information			
Cycle, s	95.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	20.0	20.0	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

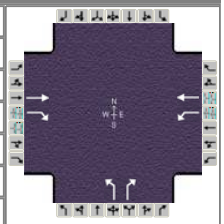


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	25.0	25.0	50.0	45.0	45.0	0.0	
Change Period, (*Y+Rc*), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway (*MAH*), s	0.0	3.0	3.1	3.0	3.1	3.1	0.0	
Queue Clearance Time (g_s), s		16.2	4.0	5.1	42.0	42.0		
Green Extension Time (g_e), s	0.0	0.6	0.2	0.4	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	278	66	108	230	0	541	0	269	0		
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	1743	1477	1757	1845	0	1691	0	1505	0		
Queue Service time (g_s), s	0.0	14.2	3.5	2.0	3.1	0.0	25.9	40.0	7.6	0.0		
Cycle Queue Clearance Time (g_c), s	0.0	14.2	3.5	2.0	3.1	0.0	25.9	40.0	7.6	0.0		
Capacity (*c*), veh/h		367	311	446	874		712	0	950			
Volume-to-Capacity Ratio (*X*)	0.000	0.758	0.211	0.242	0.263	0.000	0.760	0.000	0.283	0.000		
Available Capacity (c_a), veh/h		734	622	815	874		712	0	950			
Back of Queue (*Q*), veh/ln		5.9	1.2	1.0	1.0		10.4		2.1			
Overflow Queue (Q_3), veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio (*RQ*)	0.0	0.5	0.2	0.3	0.0	0.0	0.4	0.0	0.8	0.0		
Uniform Delay (d_1), s/veh		35.2	31.0	12.5	5.6		23.4	0.0	7.9			
Incremental Delay (d_2), s/veh	0.0	1.2	0.1	0.1	0.1	0.0	4.4	0.0	0.1	0.0		
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay (*d*), s/veh		36.5	31.1	12.6	5.7		27.9	0.0	7.9			
Level of Service (LOS)		D	C	B	A		C		A			
Approach Delay, s/veh / LOS	35.4	D		7.9	A		21.2	C		0.0		
Intersection Delay s/veh / LOS	21.5						C					

2010 HCS Signalized Intersection Results Summary

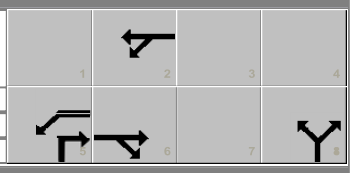
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.85
Intersection	Kings Highway (CR13)	Analysis Year	Existing	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way EXPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		242	361	363	391		422		99			

Signal Information			
Cycle, s	95.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	20.6	20.0	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

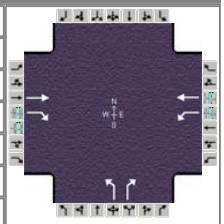


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	25.0	25.6	50.6	45.0	45.0	0.0	
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway *(MAH)*, s	0.0	3.1	3.1	3.0	3.1	3.1	0.0	
Queue Clearance Time *(g_s)*, s		15.8	19.8	10.2	42.0	42.0		
Green Extension Time *(g_e)*, s	0.0	0.9	0.8	0.8	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	0	285	213	427	460	0	496	0	116	0		
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	0	1845	1563	1774	1863	0	1774	0	1579	0		
Queue Service time *(g_s)*, s	0.0	13.8	11.9	17.8	8.2	0.0	21.6	40.0	2.8	0.0		
Cycle Queue Clearance Time *(g_c)*, s	0.0	13.8	11.9	17.8	8.2	0.0	21.6	40.0	2.8	0.0		
Capacity *(c)*, veh/h		386	327	458	889		742	0	1001			
Volume-to-Capacity Ratio *(X)*	0.000	0.738	0.651	0.933	0.518	0.000	0.669	0.000	0.116	0.000		
Available Capacity *(c_a)*, veh/h		772	654	817	889		742	0	1001			
Back of Queue *(Q)*, veh/ln		6.1	4.4	5.9	2.2		8.7		0.8			
Overflow Queue *(Q_3)*, veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio *(RQ)*	0.0	0.5	1.0	*1.6*	0.1	0.0	0.3	0.0	0.3	0.0		
Uniform Delay *(d_1)*, s/veh		35.4	34.6	22.0	6.0		22.5	0.0	6.9			
Incremental Delay *(d_2)*, s/veh	0.0	1.1	0.8	6.3	0.2	0.0	1.9	0.0	0.0	0.0		
Initial Queue Delay *(d_3)*, s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay *(d)*, s/veh		36.4	35.4	28.3	6.2		24.4	0.0	6.9			
Level of Service (LOS)		D	D	C	A		C		A			
Approach Delay, s/veh / LOS	36.0	D		16.8	B		21.1	C		0.0		
Intersection Delay s/veh / LOS	22.9						C					

2010 HCS Signalized Intersection Results Summary

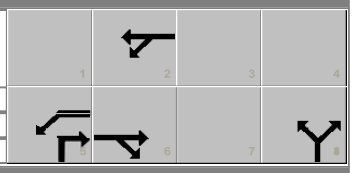
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Kings Highway (CR13)	Analysis Year	No-Build	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way NBAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		304	264	133	222		505		277			

Signal Information			
Cycle, s	96.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	20.0	21.6	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

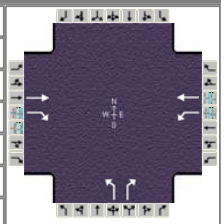


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	26.6	25.0	51.6	45.0	45.0	0.0	
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway *(MAH)*, s	0.0	3.0	3.1	3.0	3.2	3.2	0.0	
Queue Clearance Time *(g_s)*, s		20.8	5.1	5.4	42.0	42.0		
Green Extension Time *(g_e)*, s	0.0	0.8	0.3	0.4	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	0	349	97	153	255	0	580	0	318	0		
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	0	1743	1477	1757	1845	0	1691	0	1505	0		
Queue Service time *(g_s)*, s	0.0	18.8	5.2	3.1	3.4	0.0	29.6	40.0	9.8	0.0		
Cycle Queue Clearance Time *(g_c)*, s	0.0	18.8	5.2	3.1	3.4	0.0	29.6	40.0	9.8	0.0		
Capacity *(c)*, veh/h		389	330	438	890		700	0	935			
Volume-to-Capacity Ratio *(X)*	0.000	0.897	0.293	0.349	0.287	0.000	0.829	0.000	0.341	0.000		
Available Capacity *(c_a)*, veh/h		722	612	802	890		700	0	935			
Back of Queue *(Q)*, veh/ln		8.0	1.8	1.4	1.1		12.6		2.8			
Overflow Queue *(Q_3)*, veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio *(RQ)*	0.0	0.7	0.4	0.4	0.1	0.0	0.5	0.0	*1.1*	0.0		
Uniform Delay *(d_1)*, s/veh		36.4	31.2	13.0	5.2		25.2	0.0	8.8			
Incremental Delay *(d_2)*, s/veh	0.0	3.2	0.2	0.2	0.1	0.0	8.3	0.0	0.1	0.0		
Initial Queue Delay *(d_3)*, s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay *(d)*, s/veh		39.6	31.3	13.2	5.3		33.5	0.0	8.9			
Level of Service (LOS)		D	C	B	A		C		A			
Approach Delay, s/veh / LOS	37.8	D		8.3	A		24.8	C		0.0		
Intersection Delay s/veh / LOS	24.3						C					

2010 HCS Signalized Intersection Results Summary

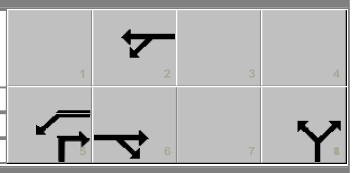
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.85
Intersection	Kings Highway (CR13)	Analysis Year	No-Build	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way NBPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		297	396	433	442		460		127			

Signal Information			
Cycle, s	105.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	27.6	22.4	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

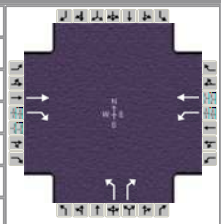


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	27.4	32.6	60.0	45.0	45.0	0.0	
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway *(MAH)*, s	0.0	3.1	3.1	3.0	3.1	3.1	0.0	
Queue Clearance Time *(g_s)*, s		21.3	26.7	8.9	42.0	42.0		
Green Extension Time *(g_e)*, s	0.0	1.1	0.9	0.9	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	0	349	254	509	520	0	541	0	149	0		
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	0	1845	1563	1774	1863	0	1774	0	1579	0		
Queue Service time *(g_s)*, s	0.0	19.3	16.0	24.7	6.9	0.0	28.6	40.0	3.9	0.0		
Cycle Queue Clearance Time *(g_c)*, s	0.0	19.3	16.0	24.7	6.9	0.0	28.6	40.0	3.9	0.0		
Capacity *(c)*, veh/h		394	334	535	976		676	0	1016			
Volume-to-Capacity Ratio *(X)*	0.000	0.887	0.761	0.952	0.533	0.000	0.801	0.000	0.147	0.000		
Available Capacity *(c_a)*, veh/h		702	595	744	976		676	0	1016			
Back of Queue *(Q)*, veh/ln		8.8	6.1	10.1	1.7		12.7		1.2			
Overflow Queue *(Q_3)*, veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio *(RQ)*	0.0	0.7	*1.0*	*2.3*	0.1	0.0	0.5	0.0	0.4	0.0		
Uniform Delay *(d_1)*, s/veh		40.1	38.8	22.0	3.6		29.0	0.0	7.4			
Incremental Delay *(d_2)*, s/veh	0.0	2.8	1.4	22.4	0.3	0.0	6.7	0.0	0.0	0.0		
Initial Queue Delay *(d_3)*, s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay *(d)*, s/veh		42.9	40.2	44.4	3.9		35.7	0.0	7.4			
Level of Service (LOS)		D	D	D	A		D		A			
Approach Delay, s/veh / LOS	41.8	D		23.9	C		29.5	C		0.0		
Intersection Delay s/veh / LOS	30.2						C					

2010 HCS Signalized Intersection Results Summary

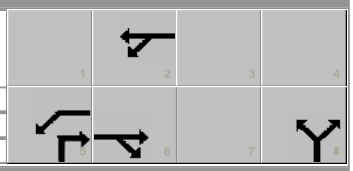
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Kings Highway (CR13)	Analysis Year	Build	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way BAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		304	265	138	222		506		281			

Signal Information			
Cycle, s	96.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	20.0	21.6	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

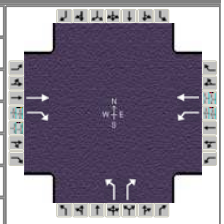


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	26.6	25.0	51.6	45.0	45.0	0.0	
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway *(MAH)*, s	0.0	3.0	3.1	3.0	3.2	3.2	0.0	
Queue Clearance Time *(g_s)*, s		20.8	5.2	5.4	42.0	42.0		
Green Extension Time *(g_e)*, s	0.0	0.8	0.3	0.4	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	0	349	98	159	255	0	582	0	323	0		
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	0	1743	1477	1757	1845	0	1691	0	1505	0		
Queue Service time *(g_s)*, s	0.0	18.8	5.3	3.2	3.4	0.0	29.7	40.0	10.0	0.0		
Cycle Queue Clearance Time *(g_c)*, s	0.0	18.8	5.3	3.2	3.4	0.0	29.7	40.0	10.0	0.0		
Capacity *(c)*, veh/h		389	330	438	890		700	0	935			
Volume-to-Capacity Ratio *(X)*	0.000	0.897	0.296	0.362	0.287	0.000	0.830	0.000	0.345	0.000		
Available Capacity *(c_a)*, veh/h		722	612	802	890		700	0	935			
Back of Queue *(Q)*, veh/ln		8.0	1.8	1.5	1.1		12.6		2.8			
Overflow Queue *(Q_3)*, veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio *(RQ)*	0.0	0.7	0.4	0.5	0.1	0.0	0.5	0.0	*1.1*	0.0		
Uniform Delay *(d_1)*, s/veh		36.4	31.2	13.1	5.2		25.3	0.0	8.8			
Incremental Delay *(d_2)*, s/veh	0.0	3.2	0.2	0.2	0.1	0.0	8.4	0.0	0.1	0.0		
Initial Queue Delay *(d_3)*, s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay *(d)*, s/veh		39.6	31.4	13.3	5.3		33.7	0.0	8.9			
Level of Service (LOS)		D	C	B	A		C		A			
Approach Delay, s/veh / LOS	37.8	D		8.4	A		24.8	C		0.0		
Intersection Delay s/veh / LOS	24.3						C					

2010 HCS Signalized Intersection Results Summary

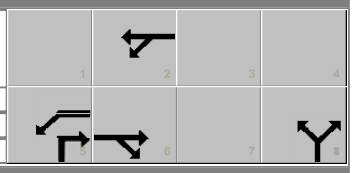
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 18, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.85
Intersection	Kings Highway (CR13)	Analysis Year	Build	Analysis Period	1> 7:00
File Name	01 Route 17M and Kings Highway Three Way BPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		297	398	434	444		462		132			

Signal Information			
Cycle, s	105.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	27.7	22.5	40.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	1.0	1.0	1.0	0.0	0.0	0.0	

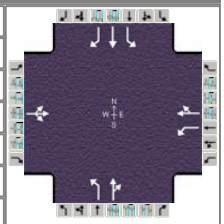


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	8	8	7	
Case Number	0.0	3.0	1.0	4.0	9.0	9.0	0.0	
Phase Duration, s	0.0	27.5	32.7	60.2	45.0	45.0	0.0	
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Max Allow Headway *(MAH)*, s	0.0	3.1	3.1	3.0	3.1	3.1	0.0	
Queue Clearance Time *(g_s)*, s		21.3	26.8	9.0	42.0	42.0		
Green Extension Time *(g_e)*, s	0.0	1.1	0.9	1.0	0.0	0.0	0.0	
Phase Call Probability		1.00	1.00	1.00	1.00	1.00		
Max Out Probability		0.00	0.00	0.00	1.00	1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	0	349	256	511	522	0	544	0	155	0		
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	0	1845	1563	1774	1863	0	1774	0	1579	0		
Queue Service time *(g_s)*, s	0.0	19.3	16.2	24.8	7.0	0.0	28.8	40.0	4.1	0.0		
Cycle Queue Clearance Time *(g_c)*, s	0.0	19.3	16.2	24.8	7.0	0.0	28.8	40.0	4.1	0.0		
Capacity *(c)*, veh/h		394	334	536	977		675	0	1016			
Volume-to-Capacity Ratio *(X)*	0.000	0.887	0.768	0.953	0.535	0.000	0.806	0.000	0.153	0.000		
Available Capacity *(c_a)*, veh/h		702	595	743	977		675	0	1016			
Back of Queue *(Q)*, veh/ln		8.8	6.2	10.1	1.7		12.9		1.2			
Overflow Queue *(Q_3)*, veh/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Queue Storage Ratio *(RQ)*	0.0	0.7	*1.0*	*2.3*	0.1	0.0	0.5	0.0	0.4	0.0		
Uniform Delay *(d_1)*, s/veh		40.1	38.9	22.0	3.6		29.1	0.0	7.4			
Incremental Delay *(d_2)*, s/veh	0.0	2.8	1.4	22.6	0.3	0.0	7.0	0.0	0.0	0.0		
Initial Queue Delay *(d_3)*, s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay *(d)*, s/veh		43.0	40.3	44.6	3.9		36.1	0.0	7.4			
Level of Service (LOS)		D	D	D	A		D		A			
Approach Delay, s/veh / LOS	41.9	D		24.0	C		29.7	C		0.0		
Intersection Delay s/veh / LOS	30.3						C					

2010 HCS Signalized Intersection Results Summary

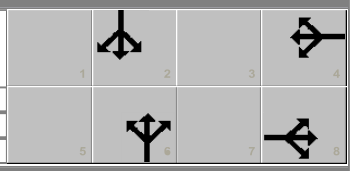
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Black Meadow Road	Analysis Year	Existing	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway EXAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	62	7	18	2	30	259	15	389	1	84	179	69

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	25.0	20.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

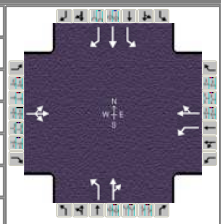


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway *(MAH)*, s	3.4	3.4	3.4	3.4	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s)*, s	16.6	16.6	16.7	16.7	11.9	11.9	17.0	17.0
Green Extension Time *(g_e)*, s	0.4	0.4	0.4	0.4	1.7	1.7	1.6	1.6
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.98	0.98	1.00	1.00	0.00	0.00	0.02	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate *(v)*, veh/h	100	0	0	2	0	332	17	0	448	97	206	79
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	455	0	0	1207	0	1501	1138	0	1809	854	1696	1495
Queue Service time *(g_s)*, s	4.6	0.0	0.0	0.1	0.0	9.9	0.5	0.0	9.9	5.1	4.1	1.7
Cycle Queue Clearance Time *(g_c)*, s	14.6	0.0	0.0	14.7	0.0	9.9	4.7	0.0	9.9	15.0	4.1	1.7
Capacity *(c)*, veh/h	278			250		546	563		822	366	771	680
Volume-to-Capacity Ratio *(X)*	0.360	0.000	0.000	0.009	0.000	0.609	0.031	0.000	0.545	0.264	0.267	0.117
Available Capacity *(c_a)*, veh/h	278			250		546	666		987	443	925	816
Back of Queue *(Q)*, veh/ln	1.3			0.0		2.9	0.1		3.0	0.9	1.2	0.4
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.1	0.1
Uniform Delay *(d_1)*, s/veh	17.2			22.4		14.3	10.8		10.9	16.3	9.3	8.6
Incremental Delay *(d_2)*, s/veh	0.3	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.2	0.1	0.1	0.0
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay *(d)*, s/veh	17.5			22.4		15.7	10.8		11.1	16.4	9.4	8.7
Level of Service (LOS)	B			C		B	B		B	B	A	A
Approach Delay, s/veh / LOS	17.5	B		15.8	B		11.1	B		11.0	B	
Intersection Delay s/veh / LOS	12.8						B					

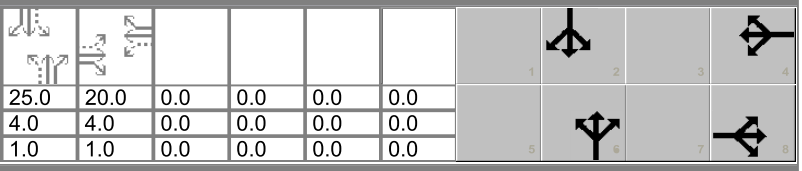
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.99
Intersection	Black Meadow Road	Analysis Year	Existing	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway EXPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	26	35	3	21	124	17	263	2	173	394	50

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



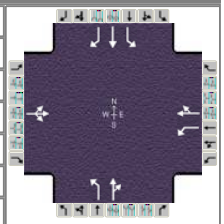
	EB		WB			
Green	25.0	20.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2
Queue Clearance Time (g_s), s	12.0	12.0	12.1	12.1	11.1	11.1	13.9	13.9
Green Extension Time (g_e), s	0.5	0.5	0.4	0.4	1.8	1.8	1.8	1.8
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.03	0.03	0.03	0.03	0.00	0.00	0.01	0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	173	0	0	3	0	146	17	0	268	175	398	51
Adjusted Saturation Flow Rate (*s*), veh/h/ln	849	0	0	1140	0	1525	973	0	1842	1075	1810	1595
Queue Service time (g_s), s	6.2	0.0	0.0	0.1	0.0	3.7	0.7	0.0	5.1	6.8	8.5	1.0
Cycle Queue Clearance Time (g_c), s	10.0	0.0	0.0	10.1	0.0	3.7	9.1	0.0	5.1	11.9	8.5	1.0
Capacity (*c*), veh/h	416			339		554	424		837	520	823	725
Volume-to-Capacity Ratio (*X*)	0.415	0.000	0.000	0.009	0.000	0.264	0.041	0.000	0.320	0.336	0.484	0.070
Available Capacity (c_a), veh/h	416			339		554	512		1005	618	987	870
Back of Queue (*Q*), veh/ln	1.8			0.0		1.0	0.1		1.6	1.6	2.6	0.3
Overflow Queue (Q_3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio (*RQ*)	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.4	0.1	0.0
Uniform Delay (d_1), s/veh	14.5			18.4		12.3	13.7		9.6	13.4	10.5	8.4
Incremental Delay (d_2), s/veh	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.7			18.4		12.4	13.7		9.7	13.5	10.7	8.5
Level of Service (LOS)	B			B		B	B		A	B	B	A
Approach Delay, s/veh / LOS	14.7		B	12.5		B	9.9		A	11.3		B
Intersection Delay s/veh / LOS	11.6						B					

2010 HCS Signalized Intersection Results Summary

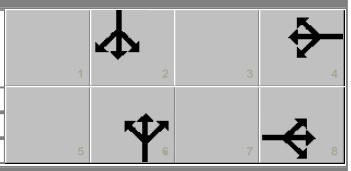
General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Black Meadow Road	Analysis Year	No-Build	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway NBAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	67	16	45	9	59	310	33	414	4	107	194	107

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	25.0	20.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						

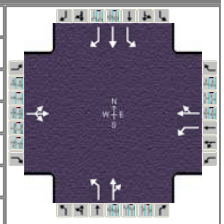


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3
Queue Clearance Time (g_s), s	21.3	21.3	21.8	21.8	12.9	12.9	20.0	20.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	2.1	2.1	1.8	1.8
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	1.00	1.00	1.00	1.00	0.01	0.01	0.12	0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	147	0	0	10	0	424	38	0	480	123	223	123
Adjusted Saturation Flow Rate (*s*), veh/h/ln	428	0	0	1156	0	1514	1120	0	1806	829	1696	1495
Queue Service time (g_s), s	5.7	0.0	0.0	0.5	0.0	13.6	1.2	0.0	10.9	7.1	4.5	2.7
Cycle Queue Clearance Time (g_c), s	19.3	0.0	0.0	19.8	0.0	13.6	5.7	0.0	10.9	18.0	4.5	2.7
Capacity (*c*), veh/h	255			145		551	548		821	344	771	680
Volume-to-Capacity Ratio (*X*)	0.576	0.000	0.000	0.071	0.000	0.770	0.069	0.000	0.585	0.358	0.289	0.181
Available Capacity (c_a), veh/h	255			145		551	650		985	419	925	816
Back of Queue (*Q*), veh/ln	1.8			0.1		4.7	0.3		3.3	1.2	1.3	0.7
Overflow Queue (Q_3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio (*RQ*)	0.2	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.3	0.1	0.1
Uniform Delay (d_1), s/veh	17.9			27.1		15.5	11.2		11.1	17.8	9.4	8.9
Incremental Delay (d_2), s/veh	2.1	0.0	0.0	0.1	0.0	6.2	0.0	0.0	0.2	0.2	0.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	20.0			27.2		21.7	11.2		11.4	18.1	9.5	9.0
Level of Service (LOS)	C			C		C	B		B	B	A	A
Approach Delay, s/veh / LOS	20.0		C	21.8		C	11.4		B	11.6		B
Intersection Delay s/veh / LOS	15.2						B					

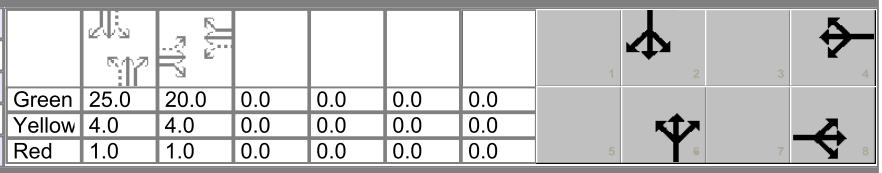
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.99
Intersection	Black Meadow Road	Analysis Year	No-Build	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway NBPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	117	55	59	7	44	158	45	283	9	226	421	53

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



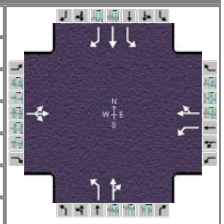
	EB		WB			
Green	25.0	20.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2
Queue Clearance Time (g_s), s	15.1	15.1	15.4	15.4	13.2	13.2	17.7	17.7
Green Extension Time (g_e), s	0.5	0.5	0.5	0.5	2.2	2.2	2.1	2.1
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.38	0.38	0.46	0.46	0.02	0.02	0.06	0.06

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	233	0	0	7	0	204	45	0	295	228	425	54
Adjusted Saturation Flow Rate (*s*), veh/h/ln	906	0	0	1079	0	1542	949	0	1834	1049	1810	1595
Queue Service time (g_s), s	7.7	0.0	0.0	0.3	0.0	5.3	2.0	0.0	5.7	9.9	9.2	1.0
Cycle Queue Clearance Time (g_c), s	13.1	0.0	0.0	13.4	0.0	5.3	11.2	0.0	5.7	15.7	9.2	1.0
Capacity (*c*), veh/h	428			267		561	403		834	498	823	725
Volume-to-Capacity Ratio (*X*)	0.545	0.000	0.000	0.026	0.000	0.364	0.113	0.000	0.354	0.458	0.517	0.074
Available Capacity (c_a), veh/h	428			267		561	490		1001	594	987	870
Back of Queue (*Q*), veh/ln	2.7			0.1		1.5	0.4		1.8	2.0	2.8	0.3
Overflow Queue (Q_3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio (*RQ*)	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.4	0.1	0.1
Uniform Delay (d_1), s/veh	15.4			21.1		12.8	14.7		9.7	14.8	10.7	8.5
Incremental Delay (d_2), s/veh	0.8	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	16.2			21.2		13.0	14.7		9.8	15.1	10.9	8.5
Level of Service (LOS)	B			C		B	B		A	B	B	A
Approach Delay, s/veh / LOS	16.2		B	13.3		B	10.5		B	12.1		B
Intersection Delay s/veh / LOS	12.5						B					

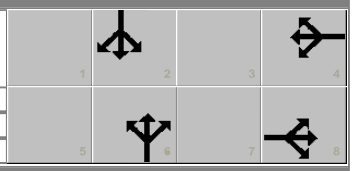
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	AM Peak Hour	PHF	0.87
Intersection	Black Meadow Road	Analysis Year	Build	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway BAM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71	17	46	9	61	310	35	414	4	107	194	80

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



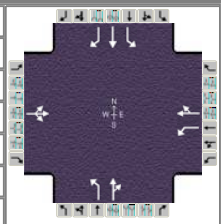
	EB		WB			
Green	25.0	20.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3
Queue Clearance Time (g_s), s	22.0	22.0	22.0	22.0	12.9	12.9	20.0	20.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	2.0	2.0	1.8	1.8
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	1.00	1.00	1.00	1.00	0.01	0.01	0.11	0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	154	0	0	10	0	426	40	0	480	123	223	92
Adjusted Saturation Flow Rate (*s*), veh/h/ln	419	0	0	1149	0	1515	1120	0	1806	829	1696	1495
Queue Service time (g_s), s	6.3	0.0	0.0	0.0	0.0	13.7	1.3	0.0	10.9	7.1	4.5	2.0
Cycle Queue Clearance Time (g_c), s	20.0	0.0	0.0	20.0	0.0	13.7	5.8	0.0	10.9	18.0	4.5	2.0
Capacity (*c*), veh/h	252			131		551	548		821	344	771	680
Volume-to-Capacity Ratio (*X*)	0.610	0.000	0.000	0.079	0.000	0.774	0.073	0.000	0.585	0.358	0.289	0.135
Available Capacity (c_a), veh/h	252			131		551	650		985	419	925	816
Back of Queue (*Q*), veh/ln	1.9			0.1		4.8	0.3		3.3	1.2	1.3	0.5
Overflow Queue (Q_3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio (*RQ*)	0.2	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.3	0.1	0.1
Uniform Delay (d_1), s/veh	18.6			27.5		15.5	11.2		11.1	17.8	9.4	8.7
Incremental Delay (d_2), s/veh	3.1	0.0	0.0	0.1	0.0	6.4	0.0	0.0	0.2	0.2	0.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	21.7			27.6		21.9	11.3		11.4	18.1	9.5	8.8
Level of Service (LOS)	C			C		C	B		B	B	A	A
Approach Delay, s/veh / LOS	21.7		C	22.1		C	11.4		B	11.7		B
Intersection Delay s/veh / LOS	15.5						B					

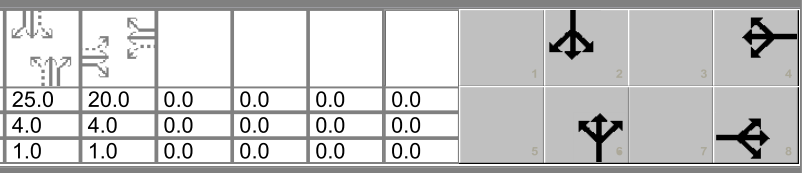
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TMA			Duration, h	1.00
Analyst	AAC	Analysis Date	Apr 17, 2012	Area Type	Other
Jurisdiction	Town of Chester	Time Period	PM Peak Hour	PHF	0.99
Intersection	Black Meadow Road	Analysis Year	Build	Analysis Period	1> 7:00
File Name	02 Black Meadow Road and Kings Highway BPM.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	124	57	61	7	45	158	46	283	9	226	421	58

Signal Information			
Cycle, s	55.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	25.0	20.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	8	8	4	4	6	6	2	2
Case Number	8.0	8.0	6.0	6.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0
Change Period, *(Y+Rc)*, s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway *(MAH)*, s	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s)*, s	16.0	16.0	16.3	16.3	13.2	13.2	17.7	17.7
Green Extension Time *(g_e)*, s	0.5	0.5	0.4	0.4	2.2	2.2	2.1	2.1
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.66	0.66	0.80	0.80	0.02	0.02	0.07	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate *(v)*, veh/h	244	0	0	7	0	205	46	0	295	228	425	59
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	897	0	0	1068	0	1543	949	0	1834	1049	1810	1595
Queue Service time *(g_s)*, s	8.6	0.0	0.0	0.3	0.0	5.4	2.0	0.0	5.7	9.9	9.2	1.1
Cycle Queue Clearance Time *(g_c)*, s	14.0	0.0	0.0	14.3	0.0	5.4	11.2	0.0	5.7	15.7	9.2	1.1
Capacity *(c)*, veh/h	425			248		561	403		834	498	823	725
Volume-to-Capacity Ratio *(X)*	0.575	0.000	0.000	0.029	0.000	0.365	0.115	0.000	0.354	0.458	0.517	0.081
Available Capacity *(c_a)*, veh/h	425			248		561	490		1001	594	987	870
Back of Queue *(Q)*, veh/ln	2.9			0.1		1.5	0.4		1.8	2.0	2.8	0.3
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.4	0.1	0.1
Uniform Delay *(d_1)*, s/veh	15.7			21.9		12.8	14.7		9.7	14.8	10.7	8.5
Incremental Delay *(d_2)*, s/veh	1.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay *(d)*, s/veh	17.0			22.0		13.0	14.7		9.8	15.1	10.9	8.5
Level of Service (LOS)	B			C		B	B		A	B	B	A
Approach Delay, s/veh / LOS	17.0	B		13.3	B		10.5	B		12.0	B	
Intersection Delay s/veh / LOS	12.7						B					