2.9. NOISE

2.9.1. Introduction

This section summarizes the results of detailed noise analyses carried out to evaluate the potential impacts of the proposed reconstruction activities at the Dam on existing local noise levels. The proposed project is located on the Reservoir in the Town of Gilboa in southern Schoharie County, and is characterized as lightly populated and rural. The results of the detailed noise analysis show that the increase in noise levels due to the reconstruction activity would be highly noticeable at times; however, because reconstruction activities are temporary, once the Dam reconstruction is completed the future noise levels would be similar to the existing noise levels. Therefore, the proposed project would not result in the potential for a substantial environmental impact on noise levels.

As described in further detail in Section 1.5.9, Project Description, the proposed project would be implemented in five phases. The anticipated reconstruction schedule provides for Phase One which includes crest gates starting in December 2008, Phase Two site preparation activities to begin in the summer of 2009 and for Phase Three, Dam reconstruction activities to begin in 2010 and be completed in 2014. Phase Four and Five would be conducted in parallel and completed by 2014. After reviewing the various construction alternatives for the proposed actions associated with each phase, a reasonable worst case scenario was identified to provide the basis for the noise level assessment. It was determined that Phase Three would result in highest noise production and would represent the reasonable worst case scenario as discussed in the Section 2.9.5, Noise Analysis Methodology. The potential effects of the reasonable worst case scenario on existing noise levels are detailed in this noise analysis.

2.9.2. Noise Fundamentals

2.9.2.1. Noise Basics

Noise is defined as unwanted sound, and is measured in terms of "sound pressure". The unit of sound pressure is the decibel (dB). Noise exposure in a community is commonly expressed in terms of the A-weighted sound level (dBA); which approximates the frequency response of the human ear. The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected.

2.9.2.2. Noise Descriptors

In order to describe fluctuating noise over a specific period, commonly used noise descriptors such as L_{10}, L_{eq} and L_{max} were used. L_{10} is the sound pressure level (SPL) exceeded 10 percent of the measurement time period and is predominately used to describe noise levels associated with traffic. L_{eq} is the equivalent steady-state noise level and for this analysis' it is used to describe noise from onsite construction activities, or stationary noise. The L_{max} represents the maximum sound level during a given period. For this analysis, both the L_{eq} and L_{10} were used to measure ambient noise levels and to

make expected noise level determinations. All L_{eq} and L_{10} noise levels presented in this document represent the hourly equivalent sound level.

2.9.3. Applicable Noise Standards/ Guidelines

The New York City Environmental Quality Review (CEQR), New York State Environmental Quality Review Act (SEQRA), New York State Department of Transportation (NYSDOT), and the United States Department of Transportation (USDOT) Federal Highway Administration (FHWA) regulations and standards were examined for procedures used to conduct the noise analysis of the proposed project.

2.9.3.1. New York City CEQR

The CEQR Noise Exposure Guidelines establish four categories of acceptability based on receptor type and land use. The guidelines for 'generally acceptable' external exposure in residential areas are hourly equivalent sound levels of 65 dBA (L_{eq}) during daytime hours (between 7 AM and 10 PM) and 55 dBA (L_{eq}) during nighttime hours (10 PM to 7 AM). In addition, the CEQR indoor criteria of 45 dBA would be considered for the proposed project and would apply to residences.

2.9.3.2. New York State SEQRA

The SEQRA guidelines endorse the NYSDEC published Program Policy DEP-00-3, entitled "Assessing and Mitigating Noise Impacts," that states the addition of any noise source, in a non-industrial setting, should not raise the ambient sound level above a maximum of 65 dBA (L_{eq}).

2.9.4. Existing Noise Levels

The Dam is located in the Town of Gilboa, Schoharie County, and is bounded on the south by the existing Gilboa Dam; on the east and north by NYS Route 990V and on the west by the gravel access road connecting NYS Route 990V to the Dam's Earthfill Embankment.

The area surrounding the Dam is rural and there are a limited number of residences in the vicinity. There are approximately 20 sensitive receptors that may be susceptible to increased noise levels resulting from the temporary reconstruction of the Dam (Figure 2.9-1). The closest receptors include 14 residences, the Conesville School, the Conesville School District (CSD) Athletic Facilities, the Town Hall/Post Office, the Gilboa Museum, the Gilboa Highway Department, and the United Methodist Church. Potential noise levels at the above mentioned Town service buildings (non-residences) and church were evaluated during daytime hours of 7 AM to 10 PM. Noise levels at the residences were evaluated during both daytime hours of 7 AM to 10 PM and nighttime periods from 10 PM to 7AM.

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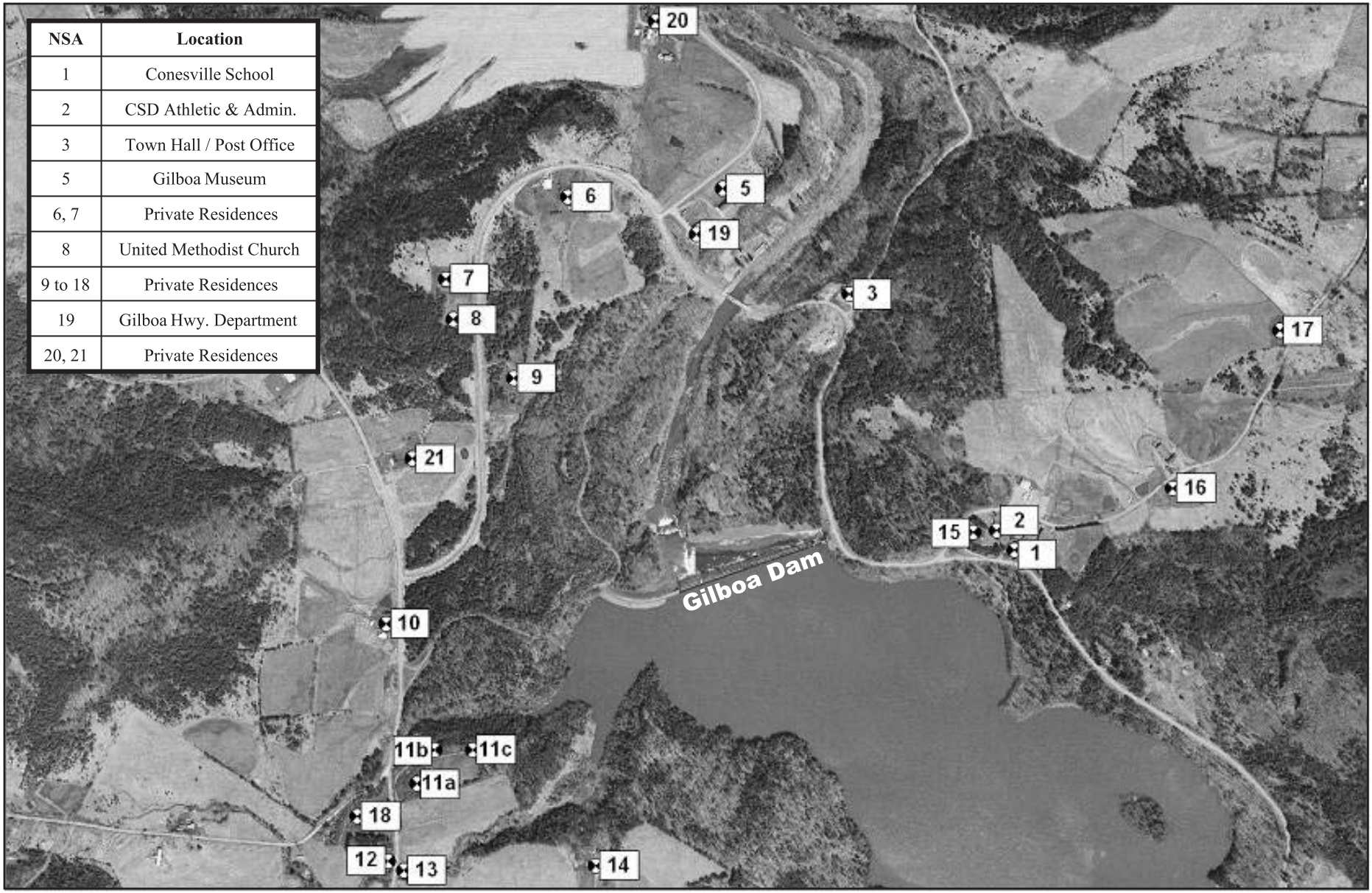

NSA	Location
1	Conesville School
2	CSD Athletic & Admin.
3	Town Hall / Post Office
5	Gilboa Museum
6, 7	Private Residences
8	United Methodist Church
9 to 18	Private Residences
19	Gilboa Hwy. Department
20, 21	Private Residences

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Project Noise Sensitive Receptors

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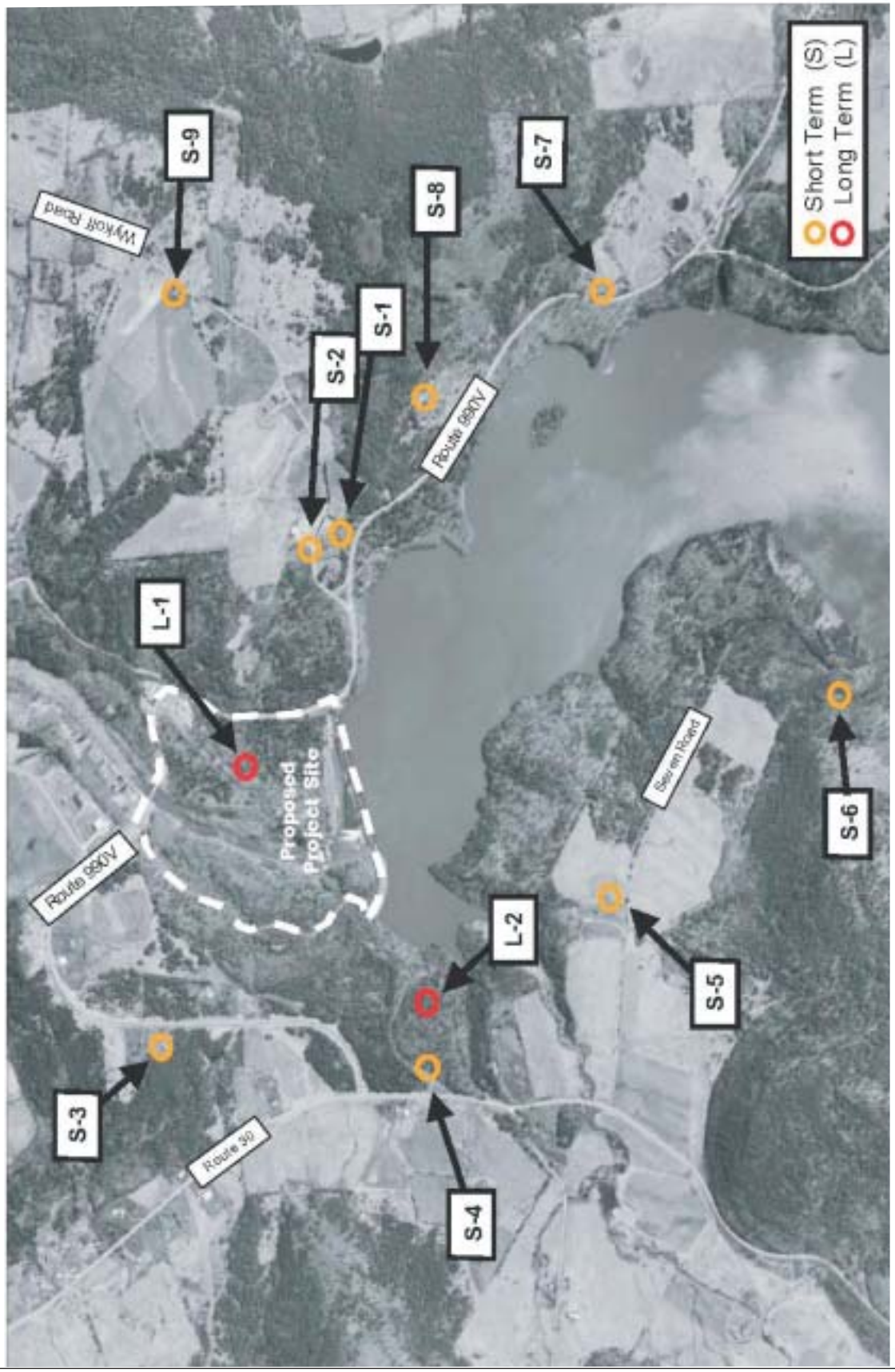
Figure 2.9-1

2.9.4.1. Noise Measurements

Ambient noise measurements were taken near residences, commercial uses, and on the proposed project site near Gates 16 and 19 to establish the current ambient noise for the area. Existing ambient noise levels, both short term and long term, were monitored between June 4 and June 6, 2006 at nearby sensitive receptors surrounding the Dam. During this time, ongoing emergency repairs to the Dam were taking place during weekdays; therefore noise measurements were collected from Saturday (June 4, 2006) through Monday morning (June 6, 2006) to provide a conservative baseline.

The short-term measurements were collected for 20 minute periods with an operator present during this time at various locations surrounding the Dam. These short-term measurements were collected between 10:45 AM and 5:00 PM for daytime periods, and between 11:00 PM and 2:00 AM for nighttime periods. Prior to commencing the short-term testing, two additional unattended long-term monitors were deployed simultaneously at locations on the proposed project site to collect ambient sound level data continuously for 48 hours. These data were collected for the purpose of documenting diurnal changes in environmental noise levels within the immediate vicinity of the proposed project site. During both short-term and long-term measurements, water was not spilling over the Dam and therefore, not creating additional background noise levels. Figure 2.9-2 identifies the location of the short-term (S) measurements during both daytime and nighttime periods and the long-term (L) measurements.

Existing Year noise levels measured in the areas surrounding the proposed project site were found to be 33 dBA L_{eq} to 37 dBA L_{eq} during nighttime hours, and 48 dBA L_{eq} to 55 dBA L_{eq} during daytime hours. The daytime and nighttime background noise levels at each receptor are summarized in Table 2.9-1.



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Location of Project Site and Noise Level Measurments

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Figure 2.9-2

TABLE 2.9-1
MEASURED EXISTING YEAR PROJECT AREA
AMBIENT NOISE LEVELS (dBA)

Noise Sensitive Receptor	Existing Daytime Ambient Sound Level (Leq)	Existing Nighttime Ambient Sound Level (Leq)
1 - Conesville School	48	37
2 - Conesville CSD Athletic & Admin.	48	37
3 - Town Hall / Post Office	55	33
5 - Gilboa Museum	55	33
6 - Private Residence	55	33
7 - Private Residence	55	33
8 - United Methodist Church	55	33
9 - Private Residence	55	33
10 - Private Residence	53	33
11a - Private Residence	53	33
11b - Private Residence	53	33
11c - Private Residence	53	33
12 - Private Residence	53	33
13 - Private Residence	53	33
14 - Private Residence	45	36
15 - Private Residence	48	37
16 - Private Residence	48	37
17 - Private Residence	48	37
18 - Private Residence	53	33
19 - Gilboa Highway Department	55	33
20 - Private Residence	55	33
21 - Private Residence	55	33

Notes: Table 2.9-1 does not include the sound of water spilling over the Dam.
Receptor number 4 was unoccupied, hence not included in the analysis.

2.9.5. Noise Analysis Methodology

The noise assessment was prepared in accordance with guidance provided in the CEQR Technical Manual. The associated modeling was completed using the United States Department of Transportation Federal Highway Administration (FHWA) Traffic Noise Model Version 2.5 (TNM), for mobile sources, and the Cadna-A three-dimensional model: a sophisticated software program for sound propagation and attenuation based on International Standard ISO 9613, and ANSI S1.26-1995, for stationary sources.

All measurements were completed in accordance with CEQR guidelines and followed generally accepted acoustic engineering American National Standards Institute (ANSI) practices to ensure a high-precision data set.

The potential future noise levels at each sensitive receptor were calculated by summing up the measured existing ambient noise level, the expected increase in sound due to increased traffic, and the temporary noise increases from reconstruction activities. The summation includes measured ambient data, mobile source (traffic) noise modeling results, and construction noise modeling results. The modeling analysis for both mobile and stationary is described below.

2.9.5.1. Reasonable Worst Case Scenario

As mentioned previously, it was determined that Phase Three would result in the highest noise production. Therefore the potential effects of the reasonable worst case scenario during Phase Three (during the Reconstruction Peak Year) were analyzed and are summarized below.

The reasonable worst case scenario conditions include noise from both traffic-generated mobile sources and stationary sources. Although the reconstruction portion of the project would extend over at least five years, most of the reconstruction noise during that time would be intermittent. To capture the reasonable worst case impact, many traffic-related and reconstruction equipment noises were assumed to occur simultaneously. For example the reasonable worst case scenario assumes concurrent operation of all expected reconstruction equipment involved in major Dam reconstruction activities: reconstruction of the Dam façade, Spillway and Side Channel, work on the LLO structure, the West Training Wall, the Upper Gate Chamber and the Earthfill Embankment.

The reasonable worst-case scenario also assumes the worst-case traffic-related noise from the anticipated afternoon traffic peak hour which is conservatively estimated to include 20 delivery truck trip ends (all leaving), as well as 120 employee vehicle trip ends (40 arriving and 80 leaving) to and from the site occur at the same time. Daily hauling of demolition debris was conservatively estimated at approximately 1,400 tons/day.

The reasonable worst case noise level scenario during the Reconstruction Peak Year assumes the use of a temporary internal bridge for disposal of the demolition spoils at the abandoned Quarry Site located near Gate 18. The temporary internal bridge would allow the extension of the hauling operations to nighttime hours (up to 3 AM). This could

potentially shorten the reconstruction duration of Phase Three, however, the use of the temporary internal bridge would provide the opportunity to employ larger non-road trucks for nighttime hauling which would potentially produce audible noise levels during the nighttime hauling operations. In addition, a number of measures, described in detail in Section 1.5.11, Project Description, would be included to minimize the reconstruction noise to the maximum extent possible during all phases of the proposed project.

2.9.5.2. Reconstruction Site Spatial Assignments

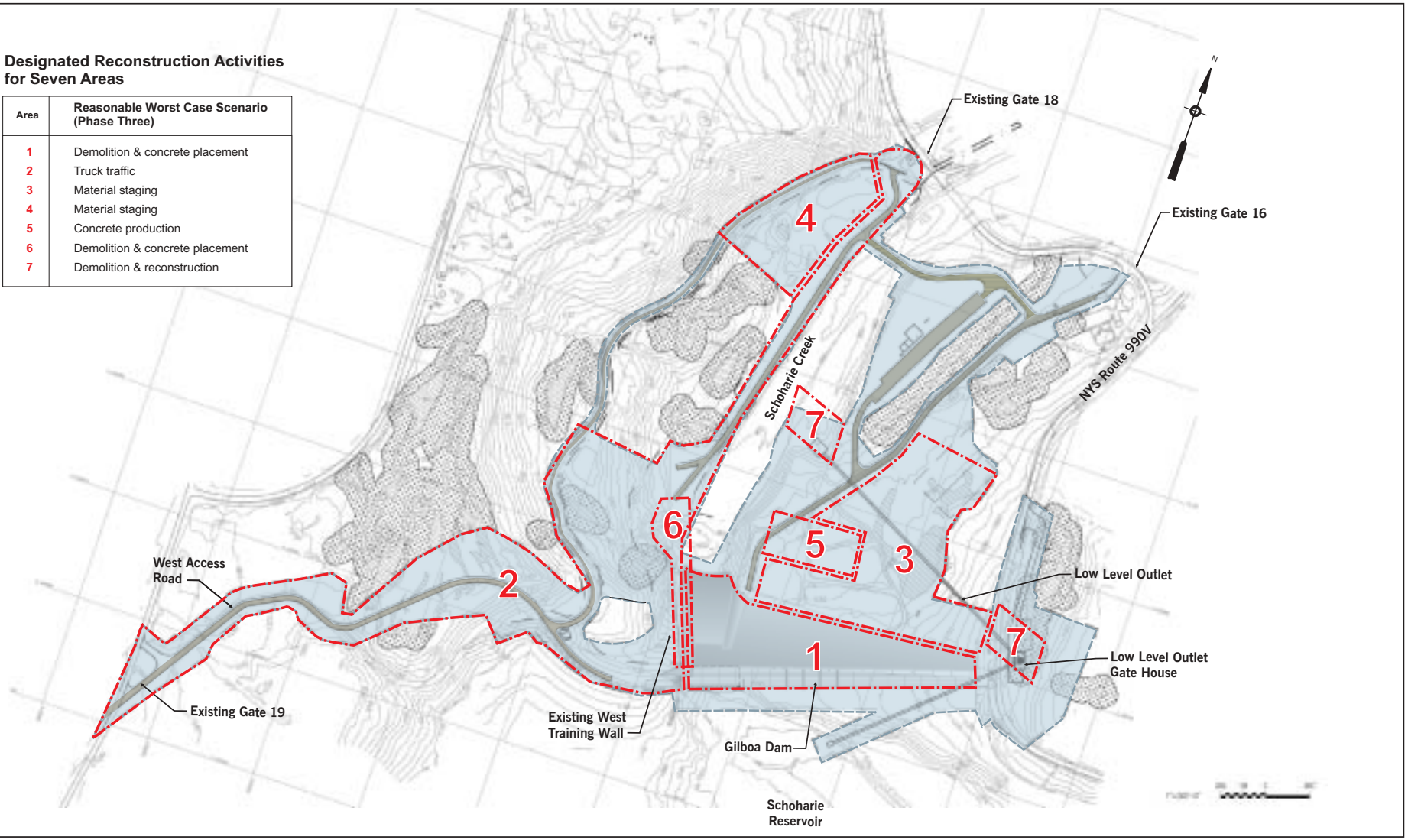
To estimate noise from the reasonable worst case scenario, the proposed project site has been divided spatially into seven areas to represent various types of reconstruction activities. As mentioned earlier, during the reasonable worst case scenario these reconstruction activities were assumed to occur simultaneously. The seven areas are described in Table 2.9-2 and depicted in Figure 2.9-3.

TABLE 2.9-2
DESIGNATED RECONSTRUCTION ACTIVITES
FOR SEVEN AREAS DURING PHASE THREE

AREA	REASONABLE WORST CASE SCENARIO (PHASE THREE)
1	Demolition & concrete placement
2	Truck traffic
3	Material staging
4	Material staging
5	Concrete production
6	Demolition & concrete placement
7	Demolition & reconstruction

Designated Reconstruction Activities for Seven Areas

Area	Reasonable Worst Case Scenario (Phase Three)
1	Demolition & concrete placement
2	Truck traffic
3	Material staging
4	Material staging
5	Concrete production
6	Demolition & concrete placement
7	Demolition & reconstruction



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Project Onsite Sound Source Areas

Figure 2.9-3

2.9.5.3. Mobile Source TNM Modeling

Mobile sources for the proposed project would be generated from offsite traffic related to reconstruction activities.

The TNM (Traffic Noise Model Version 2.5) was used to predict the resulting noise levels from offsite traffic for three traffic conditions: Existing Year, No-build Year (conditions that would exist if the reconstruction did not occur), and Reconstruction Peak Year. The traffic projections entered into the TNM for these analyses are summarized in the traffic section (Section 2.10, Traffic and Transportation). The No-build Year traffic conditions assumes a one percent growth from the Existing Year conditions to account for development projects and typical increases in driving trends in absence of the proposed reconstruction. The Reconstruction Peak Year with reconstruction condition assumes that all future project-generated truck traffic would enter the site from the west on NYS Route 990V, with approximately one-half of that traffic approaching the project area from the north on NYS Route 30, and one-half from the west on NYS Route 30. The traffic data used in the model were based on the reasonable worst case scenario (as described earlier).

2.9.5.4. Stationary Source Cadna-A Acoustic Modeling

The onsite and offsite noise level increases due to reconstruction equipment were assessed using the Cadna-A acoustic model. The primary sources of sound from the proposed project are onsite equipment used for reconstruction activities. This onsite noise was modeled as a stationary, rather than mobile, source since the noise produced from mobile machinery would be perceived at the sensitive receptors as if it were stationary given the distance between the sensitive receptors and this equipment. The acoustic profiles for each potential noise source, and the associated acoustic usage factors, have been developed for this analysis using reference noise emission levels primarily drawn from NYCDEP Construction Noise Rules.[1] These Rules include reference to noise levels and acoustic usage factors for various pieces of construction equipment measured at a distance of 50 feet.

The "acoustic usage factor" for a piece of equipment represents the percentage of time in which that piece of equipment produces its maximum noise level. This factor reflects not only the time that the equipment is "on", but also the time that the equipment is at, or near, its maximum noise level. The estimated reference noise levels for each unit of equipment, along with their associated acoustical usage factors, are summarized in Table 2.9-3 and shown in Figure 2.9-4.

[1] Title 15 of the Rules of the City of New York, Chapter 28 – Citywide Reconstruction Noise Mitigation, Appendix – Noise Emission Reference Levels and Usage Factors, Effective July 1, 2007.

CONTRACT B - DAYTIME CONDITION

Project Area 1 Demo & Concrete Placement	No.	Project Area 3 Material Staging	No.	Project Area 4 Spoils Area	No.	Project Area 5 Concrete Production	No.	Project Area 6 West Wall Construction	No.	Project Area 7 Low Level Outlet Const.	No.
Heavy Crane	3	Bulldozer	2	Bulldozer	1	Batch Plant	1	Heavy Crane	1	Tunnel Boring Machine	1
Manlift	3	Air Compressor	3	Dump Trucks	6	Mixer Truck	3	Manlift	1	Hydraulic Surface Drill	1
Generator - Diesel	1	Generator-Diesel	2	Loader-Wheel	1	Dump Trucks	1	Generator - Diesel	1	Water Excavating Pump	1
Jack Hammers	3	Loader-Wheel	2	Pick-Up Truck	1	Loader-Wheel	1	Generator - Propane	1	Generator-Diesel	1
Air Compressor	3	Forklift	3	Back-up Beepers	8	Back-up Beepers	4	Air Compressor	1	Air Compressor	1
Generator - Propane	2	Generator-Propane	1	Diesel Light Fixtures				Bulldozer	1	Dump Trucks	1
Hydra Break Ram / Rock Drill	2	Flat-Bed Truck	1					Loader-Wheel	1	Shovel Dropping	1
Fuel Truck	1	Conveyor	1					Vibrating Roller	1	Fuel Truck/Pick-Up Truck	1
Shovel Dropping	1	Pick-Up Truck	5					Dump Trucks	1	Loader-Wheel	1
Dump Trucks	2	Fuel Truck	1					Mixer Trucks	1	Heavy Duty Crane	1
Mixer Truck	1	Dump Trucks	1					Excavator		Forklift	1
Diesel Light Fixtures		Forklift	1					Hydra Break Ram / Rock Drill		Mixing Truck	1
Back-up Beepers	4	Diesel Light Fixtures						Shovel Dropping		Blasting Activities	
		Back-up Beepers	8					Back-up Beepers	4	Back-up Beepers	4

CONTRACT B - NIGHTTIME CONDITION

Project Area 1 Concrete Placement	No.	Project Area 3 Material Staging	No.	Project Area 4 Spoils Area	No.	Project Area 5 Concrete Production	No.	Project Area 6 West Wall Construction	No.	Project Area 7 Low Level Outlet Const.	No.
Heavy Crane	1	Bulldozer		Bulldozer	1	Batch Plant	1	Heavy Crane		Tunnel Boring Machine	1
Manlift	1	Air Compressor	1	Dump Trucks	4	Mixer Truck	3	Manlift		Hydraulic Surface Drill	
Generator - Diesel	1	Generator-Diesel	1	Loader-Wheel		Dump Trucks		Generator - Diesel		Water Excavating Pump	1
Jack Hammers		Loader-Wheel		Pick-Up Truck	1	Loader-Wheel	1	Generator - Propane		Generator-Diesel	1
Air Compressor	1	Forklift		Back-up Beepers	4	Back-up Beepers	4	Air Compressor		Air Compressor	1
Generator - Propane	1	Generator-Propane	1	Diesel Light Fixtures	2			Bulldozer		Dump Trucks	
Hydra Break Ram / Rock Drill		Flat-Bed Truck						Loader-Wheel		Shovel Dropping	
Fuel Truck	1	Conveyor						Vibrating Roller		Fuel Truck/Pick-Up Truck	1
Shovel Dropping	1	Pick-Up Truck	2					Dump Trucks		Loader-Wheel	
Dump Trucks	2	Fuel Truck	1					Mixer Trucks		Heavy Duty Crane	
Mixer Truck	1	Dump Trucks						Excavator		Forklift	
Diesel Light Fixtures	2	Forklift	1					Hydra Break Ram / Rock Drill		Mixing Truck	1
Back-up Beepers	4	Diesel Light Fixtures	2					Shovel Dropping		Blasting Activities	

CONTRACT A - SITE PREP ACTIVITIES

Complete Project Area Daytime - Only Activities	No.
Loader - Backhoe	2
Bulldozer / Clippers	5
Dump Trucks	4
Mixing Truck	2
Pick-Up Truck	3
Fuel Truck	1
Loader - Wheel	1
Chainsaw	2
Tub Grinder/Chipper	1
Heavy Crane	1

CONTRACT B - TEMPORARY DAYTIME CONDITIONS

Project Area 6 West Wall Demolition	No.	Project Area 7 Low Level Outlet Demo.	No.
Heavy Crane	1	Tunnel Boring Machine	
Manlift	1	Hydraulic Surface Drill	1
Generator - Diesel	1	Water Excavating Pump	1
Generator - Propane	1	Generator-Diesel	1
Air Compressor	1	Air Compressor	1
Bulldozer		Dump Trucks	1
Loader-Wheel		Shovel Dropping	1
Vibrating Roller		Fuel Truck/Pick-Up Truck	1
Dump Trucks	1	Loader-Wheel	1
Mixer Trucks		Heavy Duty Crane	1
Excavator	1	Forklift	1
Hydra Break Ram / Rock Drill	1	Mixing Truck	1
Shovel Dropping	1	Blasting Activities	1
Back-up Beepers	4	Back-up Beepers	4

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Estimated Project On-Site Construction Equipment

Figure 2.9-4

TABLE 2.9-3
ONSITE PROJECT EQUIPMENT REFERENCE NOISE LEVELS AND ACOUSTIC USAGE FACTORS

Equipment	Reference Sound Level at 50 feet (L_{max}, dBA)*	Acoustic Usage Factor*
Concrete Batch Plant	83	15%
Heavy Duty Crane	81	16%
Bulldozer	82	40%
Excavator	81	40%
Jack Hammer	89	20%
Hydraulic Break Ram	90	10%
Flat-Bed Truck with Boom	74	40%
Loader – Wheel	79	40%
Loader – Backhoe	78	40%
Rock Drill	81	20%
Air Compressor	78	40%
Grader	85	40%
Heavy-Duty Roller/Compactor	83	20%
Dump Truck	76	40%
Manlift	75	20%
Fork Lift	80[1]	20%
Pick-Up Truck	75	40%
Fuel Truck	80	40%
Mixer Truck	80	40%
Generator – Diesel	81	50%
Generator – Propane	73	50%
Conveyor	80[1]	15%
Diesel Light Fixture	81	50%
Shovel Dropping	87	20%
Chainsaw	84	20%
Water Pump	81	50%
Drill Rig	79	20%
Blasting Activities	94	0.01%[1]
Tub Grinder	88	20%
Back-up Beeper	83	1.25%[2]

Notes:

* Reference noise levels and acoustic usage factors are from the NYCDEP Construction Noise Rules (CNR) unless otherwise noted.

[1] Power Plan Construction Noise Guide, Bolt Beranek and Newman, Inc.

[2] 25% of factor for "warning horn" in NYCDEP CNR.

2.9.6. Temporary Reconstruction Noise Results

The potential increase in noise levels generated by the reconstruction activities during the Reconstruction Peak Year was analyzed at the project's noise-sensitive receptors in the Gilboa Dam study area. As part of the mobile and stationary analysis (defined in Section 2.9-5), the projected reconstruction noise levels are presented in this section.

2.9.6.1. Mobile Sources Noise Analysis Results

The modeling results associated with the offsite (roadway) construction traffic yielded increases lower than 5 dBA (L_{eq}). According to CEQR, the threshold for a significant mobile source impact is a 5 dBA (L_{eq}) increase above No-Build noise levels. Since this threshold would not be exceeded as a result of the proposed project no further analysis was conducted.

2.9.6.2. Stationary Sources Noise Analysis Results

The modeling results for the stationary source analysis are presented for both daytime and nighttime work. As mentioned previously, the difference between the daytime and nighttime reconstruction equipment lists reflects the fact that nighttime reconstruction would be restricted to hauling activities and would not include demolition activities. Demolition would be restricted to daytime hours only in the Contractor's specifications. This restriction is driven entirely by noise minimization efforts. As the proposed reconstruction project progresses, equipment needs would change. Figure 2.9-4 presents a list of the reasonable worst case reconstruction equipment: one for daytime activities and one for nighttime activities. Below are the results of the daytime and nighttime stationary source noise model.

Daytime Reconstruction Activities

The peak reconstruction activities are anticipated to increase the ambient noise levels by 1 to 5 dBA, resulting noise levels ranging from 48 dBA to 55 dBA (Leq), at various sensitive receptors within the study area (see Table 2.9-4). These increased levels could be readily noticeable at the sensitive receptors, though not intrusive. In addition, the maximum noise levels would be below the acceptable daytime criteria of 65 dBA (L_{eq}). These reconstruction noise levels are projected to occur during the peak activities in Phase Three of the reconstruction under the reasonable worst case conditions, and would be temporary in nature. For the other four phases of the reconstruction, the noise levels are anticipated to be lower. Tables 2.9-4 summarizes the results of the daytime Reconstruction Peak Year noise analysis.

Nighttime Reconstruction Activities

The peak nighttime reconstruction activities are anticipated to range from 41 dBA to 49 dBA. With the extremely low nighttime background levels, noise from nighttime reconstruction activities would be readily noticeable and may even be intrusive at some receptors. This is reflected by the projected increase in the nighttime ambient noise levels by 5 to 16 dBA. However, these nighttime levels are below the nighttime ambient noise criteria of 55 dBA. Without the proposed reconstruction activities, the nighttime

ambient noise levels ranged from 33 dBA to 37 dBA at the various sensitive receptors within the study area, as shown in Table 2.9-5. The area around the Dam is normally extremely quiet at night unless there is a storm even that overflows the Dam. The background nighttime reconstruction noise assumptions do not include the typical noise associated with excess water spilling over the Dam (78 dBA at 150 feet). This intermittent occurrence is currently audible at some of the residences. Although there would be a noise level increase during the nighttime activities this increase would not be greater than the 78 dBA associated with excess water spilling over the Dam.

Although temporary nighttime reconstruction noise would be readily noticeable, and may even be intrusive at some receptor locations, it would not likely to have an adverse effect on the surrounding area. An USEPA study shows that the indoor noise levels with windows opened[2] are typically 12 dBA lower than the outdoor levels. The nighttime noise levels of 41 to 49 dBA represent the outdoor noise level at the various receptors. Therefore, the contribution from the temporary nighttime reconstruction activities to indoor noise levels would be 29 dBA to 37 dBA. The indoor levels at the receptors would not exceed the 45 dBA interior noise criteria.

The nighttime reconstruction noise would result primarily from work related to construction demolition and warm weather concrete placement and would generally be limited to certain construction periods. The noise levels are modeled for the peak reconstruction activities during Phase Three of the reconstruction under the reasonable worst case conditions. Any nighttime reconstruction activities in the other four phases would not produce noise levels approaching the modeled levels. As stated in the project description (Section 1.5.11, Project Description), this analysis assumes the nighttime activities would be limited to a maximum of 55 days over a two year period during Phase Three, and would occur intermittently over the two year period. Furthermore, the projected reconstruction noise levels reflected the condition that all equipment would be operating simultaneously. Such a condition is unlikely to occur frequently or for an extended period of time. It is expected that only a fraction of the equipment would be operating most of the time, making the modeling results a conservative estimate.

During normal reconstruction days, there would be localized or limited work and it is possible that a single activity such as hauling, demolition, or making concrete could occur at rates greater than those assumed in the reasonable worst case scenario without exceeding the overall noise levels estimated from the reasonable worst case scenario. Therefore, if the Contractor is willing to demonstrate, via noise modeling, that alternative reconstruction sequencing would create the same or less noise levels, NYCDEP may allow the Contractor to follow the alternative reconstruction sequencing (Section 1.5.11, Project Description).

[2] EPA, "Protective Noise Levels", EPA 550/9-79-100, November 1979.

TABLE 2.9-4
MAXIMUM POTENTIAL DAYTIME NOISE LEVELS
DURING RECONSTRUCTION PEAK YEAR (dBA)

Noise Sensitive Receptor	No-Build Year Noise Level	Reconstruction Peak Year Noise Level	Maximum Increase During Reconstruction
	L_{eq}	L_{eq}	
1 - Conesville School	48	53	5
2 - Conesville CSD Athletic & Admin.	48	53	5
3 - Town Hall / Post Office	55	58	3
5 - Gilboa Museum	55	58	3
6 - Private Residence	55	57	2
7 - Private Residence	55	57	2
8 - United Methodist Church	55	57	2
9 - Private Residence	55	58	3
10 - Private Residence	53	56	3
11a - Private Residence	53	55	2
11b - Private Residence	53	55	3
11c - Private Residence	53	56	3
12 - Private Residence	53	57	4
13 - Private Residence	53	57	4
14 - Private Residence	45	49	4
15 - Private Residence	48	53	5
16 - Private Residence	48	50	2
17 - Private Residence	48	49	1
18 - Private Residence	53	55	2
19 - Gilboa Highway Department	55	59	4
20 - Private Residence	55	56	1
21 - Private Residence	55	57	2

Note: Receptor number 4 was unoccupied, hence not included in the analysis.

TABLE 2.9-5
MAXIMUM POTENTIAL NIGHTTIME NOISE LEVELS
DURING RECONSTRUCTION PEAK YEAR (dBA)

Noise Sensitive Receptor	No-Build Year Noise Level	Reconstruction Peak Year Noise Level	Maximum Increase During Reconstruction
	L_{eq}	L_{eq}	
1 - Conesville School	37	46	9*
2 - Conesville CSD Athletic & Admin.	37	48	11*
3 - Town Hall / Post Office	33	48	15*
5 - Gilboa Museum	33	51	18*
6 - Private Residence	33	44	11
7 - Private Residence	33	44	11
8 - United Methodist Church	33	45	12*
9 - Private Residence	33	49	16
10 - Private Residence	33	44	11
11a - Private Residence	33	45	12
11b - Private Residence	33	45	12
11c - Private Residence	33	46	13
12 - Private Residence	33	44	11
13 - Private Residence	33	41	8
14 - Private Residence	36	44	8
15 - Private Residence	37	48	11
16 - Private Residence	37	43	6
17 - Private Residence	37	42	5
18 - Private Residence	33	45	12
19 - Gilboa Highway Department	33	52	19*
20 - Private Residence	33	43	10
21 - Private Residence	33	45	12

* Non-Residential Locations

Note: Receptor number 4 was unoccupied, hence not included in the analysis.

2.9.7. Conclusion

Based on the noise modeling results, there would be temporary increases in noise levels during the reconstruction of the Dam. As mentioned previously the mobile source noise associated with the Dam reconstruction activities would not exceed the 5 dBA threshold and therefore no further analysis was conducted on expected noise levels during the Reconstruction Peak Year. Therefore, the noise levels from daytime reconstruction activities are not considered to be significant impacts.

Stationary source noise during the daytime are anticipated to increase the ambient noise levels by 1 to 5 dBA, resulting noise level ranging from 49 dBA to 59 dBA (Leq). These increased levels could range from being not noticeable to readily noticeable at the sensitive receptors and are well below the 65 dBA CEQR outdoor daytime criteria.

With the extremely low nighttime background levels, stationary source noise from nighttime reconstruction activities could be readily noticeable and may even be intrusive at some receptors. This is reflected by the projected increase in the nighttime ambient noise levels by 5 to 16 dBA. However, these nighttime levels are below the nighttime outdoor ambient noise exposure guidelines of 55 dBA as well as the indoor guideline of 45 dBA.

As outlined in Section 2.9-5, Noise Analysis Methodology, many measures would be implemented to minimize the reconstruction noise to the maximum extent possible. Possible noise reductions were investigated for each individual piece of equipment and are shown in Table 2.9-3. The lowest noise emitting equipment in its class would be required onsite, and noise attenuation measures, such as silencers and enclosures, would be required where it could reasonably be implemented.

Although noise levels would increase during both daytime and nighttime reconstruction activities, all noise levels are below the CEQR ambient noise exposure guidelines and would be temporary in nature. Once the reconstruction project is completed, the Dam would resume its normal operational activities and the ambient noise would return to pre-reconstruction levels. Therefore it is not anticipated that there would be any adverse impacts on Noise due to the proposed project.

2.10. TRAFFIC AND TRANSPORTATION

This section examines the potential for operational and temporary reconstruction impacts on the area's transportation system resulting from trips generated by the proposed reconstruction of the Dam. The existing operating conditions of the area's transportation system, including traffic, parking, pedestrian safety and mass transit are also presented in this section. The study area for these traffic and transportation analyses was established based upon anticipated volumes, logical traffic routes, and potentially problematic areas. The methodologies for data collection and analyses are presented throughout this section.

The Dam is located approximately forty miles southwest of Albany within the Town of Gilboa, in Schoharie County, New York and is accessible via NYS Route 990V and NYS Route 30. The Dam is approximately thirty-five miles west of the New York Thruway (I-87) and twenty-five miles south of Interstate 88 (I-88). Figure 2.10-1 illustrates the surrounding road network and intersections within the project area in relation to the surrounding transportation network.

2.10.1. Existing Conditions

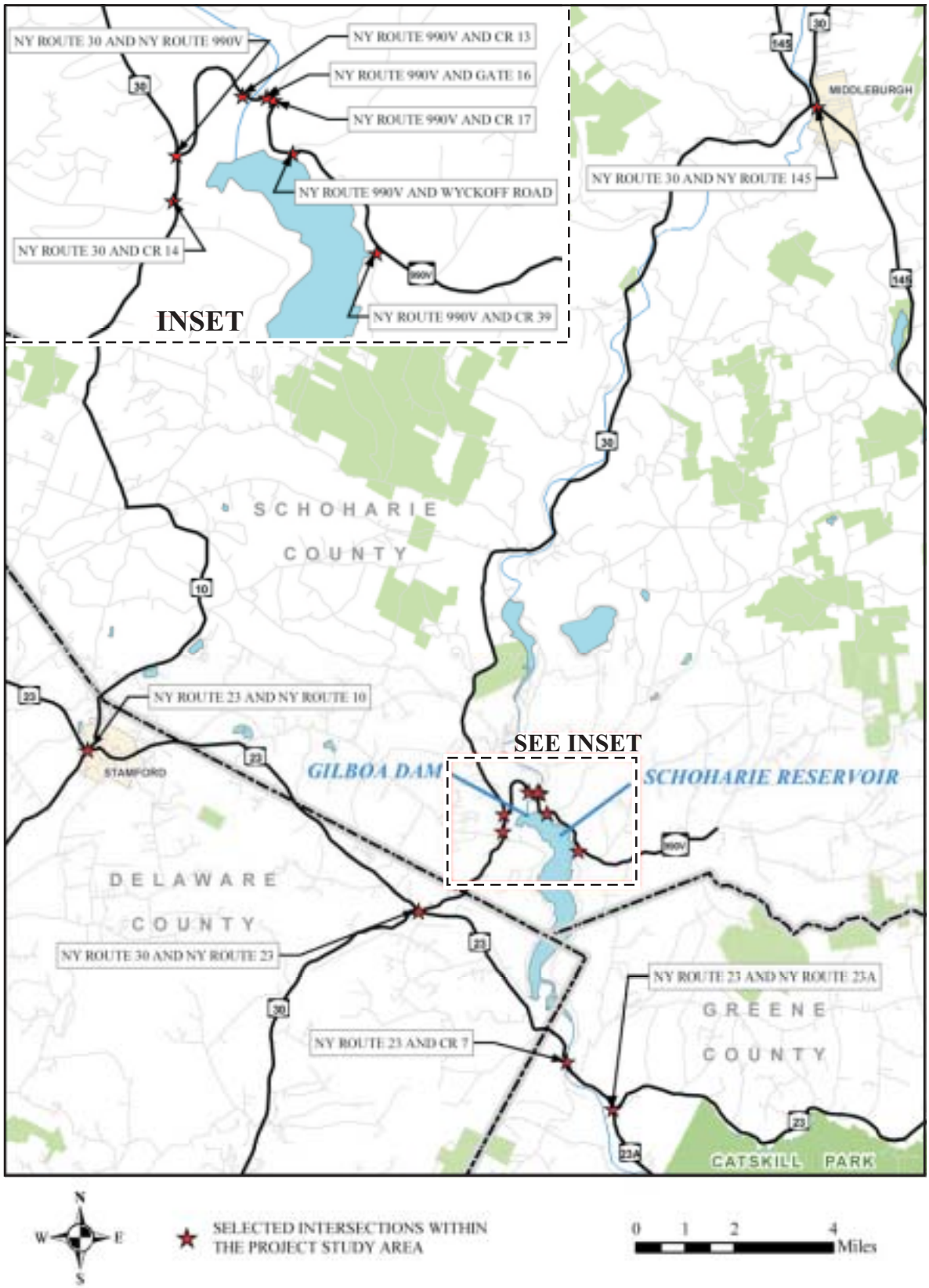
This section identifies the study area and street systems considered in the analyses and describes the operation of the various intersections, their approaches and lane groups, based on their ability to process traffic as calculated using the Highway Capacity Manual (HCM) methodologies. The study area comprises the intersections relevant to the study of reconstruction and operational traffic for the proposed reconstruction of the Dam, and is the subject of this section.

For this study, existing conditions are an amalgamation of traffic volumes established in the Existing Year.

2.10.1.1. Surrounding Roadway Network

The primary arterials serving the Dam and the surrounding communities are NYS Route 30, running along the west side of the Reservoir, and NYS Route 23, running along the south west side of the Reservoir. NYS Route 990V runs along the north side of the Reservoir and County Road (CR) 39/7 runs along the east side of the Reservoir. The traffic study area for this site showing the intersections examined, is presented in Figure 2.10-1. A discussion of the key travel routes are as follows and shown in Figure 2.10-2.

NYS Route 30 is a two-lane north-south rural arterial that travels through Schoharie County. NYS Route 30 connects with I-88 approximately twenty-five miles north of the Reservoir. There are no traffic signals on NYS Route 30 within the study area, and use of the roadside for on-street parking is not evident. The posted speed limit along NYS Route 30 in the project area is 35 miles per hour (mph). Undeveloped wooded areas generally border NYS Route 30 in the study area. In the Town of Grand George, approximately five miles southwest of the Dam site, single-family residential homes and small retail businesses are predominant land uses.



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Surrounding Road Network and Intersections Within the Project Area

CAT 211 Engineering Design Services and Design During Construction for the Reconstruction of Catskill Watershed Dams and Associated Facilities

Gannett Fleming HAZEN AND SAWYER Environmental Engineers & Scientists

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Figure 2.10-1

ROUTE NYS ROUTE 30

NEW YORK STATE ROUTE 23A

COUNTY ROAD 39/7/53 (PRATTSVILLE ROAD/HYLAN BOULEVARD)

SCHOHARIE COUNTY ROAD 17 (FLAT CREEK ROAD)

NEW YORK STATE ROUTE 23

NEW YORK STATE ROUTE 10

SCHOHARIE COUNTY ROAD 14 (SOUTH GILBOA ROAD)

WYCKOFF ROAD

NEW YORK STATE ROUTE 990V

NEW YORK STATE ROUTE 145

SCHOHARIE COUNTY ROAD 13 (STRYKER ROAD)

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CAT 211 Engineering Design Services and Design During Construction for the Reconstruction of Catskill Watershed Dams and Associated Facilities

Gannett Fleming HAZEN AND SAWYER Environmental Engineers & Scientists

A Joint Venture

Gilboa Dam Rehabilitation Project - Key Travel Routes

Figure 2.10-2

NYS Route 23 is a two-lane, east-west rural arterial that travels the eastern part of New York State. NYS Route 23 connects with both I-87 and I-88, east and west of the Reservoir, respectively. NYS Route 23 could potentially be used as a truck route for the proposed Dam reconstruction. Within the study area, all intersections with NYS Route 23 are unsignalized, with the exception of the signalized intersection at NYS Route 10. The posted speed limit along NYS Route 23 in the project area varies between 25 and 40 mph. The land uses along NYS Route 23 in the study area are generally undeveloped wooded areas and farms. Single-family residential homes and small retail businesses are predominant land uses in the Towns of Prattsville (located approximately five miles southeast of the Dam), Grand George (approximately five miles to the southwest) and Stamford (approximately ten miles to the west). Off-street parking lots front the roadway to facilitate patronage of the small retail businesses. During the winter season, NYS Route 23 is used to access Windham Ski Mountain.

NYS Route 990V is a two-lane, east-west rural collector roadway that links NYS Route 30 and Schoharie CRs 39 (Prattsville Road) and 59 (Bull Hill Road). The roadway provides a travel route along the northern side of the Reservoir and connects with the Dam Gate 16 access point. The land uses on NYS Route 990V consist of undeveloped wooded areas, the NYCDEP police station, the Town of Gilboa municipal building and small businesses. Off-street parking areas are located adjacent to the Reservoir to provide scenic overlook opportunities.

Within the study area, NYS Route 23A at NYS Route 23 is an unsignalized T-intersection. NYS Route 23A is an east-west rural arterial in Greene County. NYS Route 23A has one travel lane in each direction and runs south of NYS Route 23. The land along NYS Route 23A in the study area is undeveloped wooded areas. During the winter season, NYS Route 23A is used to access Hunter Ski Mountain.

NYS Route 10 is a two-lane north-south rural arterial that travels between Hamilton and Delaware Counties. NYS Route 10 connects with I-88 and could potentially be used as a truck route for the Dam reconstruction. Within the study area, the intersection of NYS Route 10 at NYS Route 23 is signalized. The land uses along NYS Route 10 in the study area are single-family residential homes and small retail businesses, but outside of the study area undeveloped wooded areas and farms are the predominant land uses. Off-street parking areas are located adjacent to the Stamford central business district (approximately ten miles west of the Dam site) to facilitate parking for small retail businesses.

NYS Route 145 is a two-lane north-south rural arterial that travels between Greene and Schoharie Counties. NYS Route 145 connects with I-88 and could be used as a potential truck route during the proposed Dam reconstruction. Within the study area, Route 145 at NYS Route 30 is a signalized intersection. The land uses along NYS Route 145 in the study area are single-family residential homes and small retail businesses. Pull-off parallel parking areas are located adjacent to the Middleburgh central business district (approximately twenty miles north of the Dam site) to facilitate access to small retail businesses.

CR 39/7/53 are parts of a minor two-lane north-south rural roadway that connects NYS Route 23 at its southern terminus and NYS State Route 990V at its northern terminus. The roadway provides a travel route along the east side of the Reservoir and is identified differently in each of the three counties that the roadway travels through: Schoharie CR 39 (Prattsville Road), Green CR 7 (Hylan Boulevard), and Delaware CR 53 (Prattsville-Gilboa Road). The lands along CR 39/7/53 consist of undeveloped wooded areas. Parking along the roadway is not permitted. The roadway is not a favored truck route due to steep vertical profiles along some portions of the road.

Schoharie CR 14 (South Gilboa Road) is a minor two-lane east-west rural roadway that connects NYS Route 30 at its eastern terminus and NYS Route 23 at its western terminus. The lands along CR 14 consist of undeveloped wooded areas and farms.

Stryker Road, designated as Schoharie CR 13, is a two-lane north-south minor roadway that connects NYS Route 990V at its southern terminus. Schoharie CR 13 meets NYS Route 30 just south of Mine Kill State Park. The land uses on Schoharie CR 13 consist of a church, farms, and undeveloped wooded areas.

Schoharie CR 17 (Flat Creek Road) is a narrow, steeply-graded, two-lane roadway following a north-south alignment. Schoharie CR 17 at its southern terminus intersects with NYS Route 990V to form an unsignalized T-type intersection. The lands along Schoharie CR 17 consist of undeveloped wooded areas.

Wyckoff Road is a minor north-south rural roadway that connects with NYS Route 990V at its southern terminus at an unsignalized T-intersection. Wyckoff Road has one travel lane in each direction. Wyckoff Road primarily serves as an access road to Gilboa-Conesville school.

Access to the proposed Dam project site would be provided at three gated control points:

- Gate 16 - located off of NYS Route 990V between CR 13 (Stryker Road) and CR 17 (Flat Creek Road)

- Old Dam Access Road - located off of NYS Route 30 between CR 14 (South Gilboa Road) and NYS Route 990V.

- Gate 18 – located off of NYS Route 990V between Stryker Road and the Schoharie Creek Bridge.

All three access points, Gate 16, Old Dam Access Road and Gate 18 access points are unpaved access roads used only by NYCDEP personnel and provide direct access to the Dam.

2.10.2. Data Collection Activities

2.10.2.1. Intersection Turning Movement Counts.

Traffic counts for the study area were collected at twelve intersections on Wednesday, May 17, 2006 and Thursday, May 18, 2006 between the hours of 6:00 AM to 9:00 AM, and 2:00 PM to 6:00 PM. Manual turning movement traffic volume counts were conducted to quantify traffic activity, develop the peak hour traffic volume figures, and obtain traffic travel pattern characteristics. The data collection included manual Turning Movement Counts (TMCs) collected during the weekday morning and evening peak periods; travel speed and delay data collection; 24-hour Automatic Traffic Recorder (ATR) counts; traffic control device inventory; intersection condition assessments; and observation of traffic, pedestrian, and parking operations. Existing signal timing schedules and traffic signal plans, accident data and permanent count station volume information were requested and obtained from New York State Department of Transportation (NYSDOT).

Manual intersection TMCs were conducted at the following study intersections as shown in Table 2.10-1 and Figure 2.10-1:

TABLE 2.10-1
SELECTED INTERSECTIONS WITHIN THE PROJECT STUDY AREA

Intersection No.	DESCRIPTION
1	NYS Route 30 and NYS Route 23 *(flashing beacon)*
2	NYS Route 30 and CR 14 (South Gilboa Road) *(unsignalized)*
3	NYS Route 30 and NYS Route 990V *(unsignalized)*
4	NYS Route 990V and CR 13 (Stryker Road) *(unsignalized)*
5	NYS Route 990V and Gate 16 Access Road *(unsignalized)*
6	NYS Route 990V and CR 17 (Flat Creek Road) *(unsignalized)*
7	NYS Route 990V and Entrances to Gilboa School Athletic Fields and Administration Offices (Wyckoff Road) *(unsignalized)*
8	NYS Route 990V and CR 39 (Prattsville Road) *(unsignalized)*
9	NYS Route 23 and CR 7 (Hylan Boulevard) *(unsignalized)*
10	NYS Route 23 and NYS Route 10 *(signalized)*
11	NYS Route 30 and NYS Route 145 *(signalized)*
12	NYS Route 23 and NYS Route 23A *(unsignalized)*

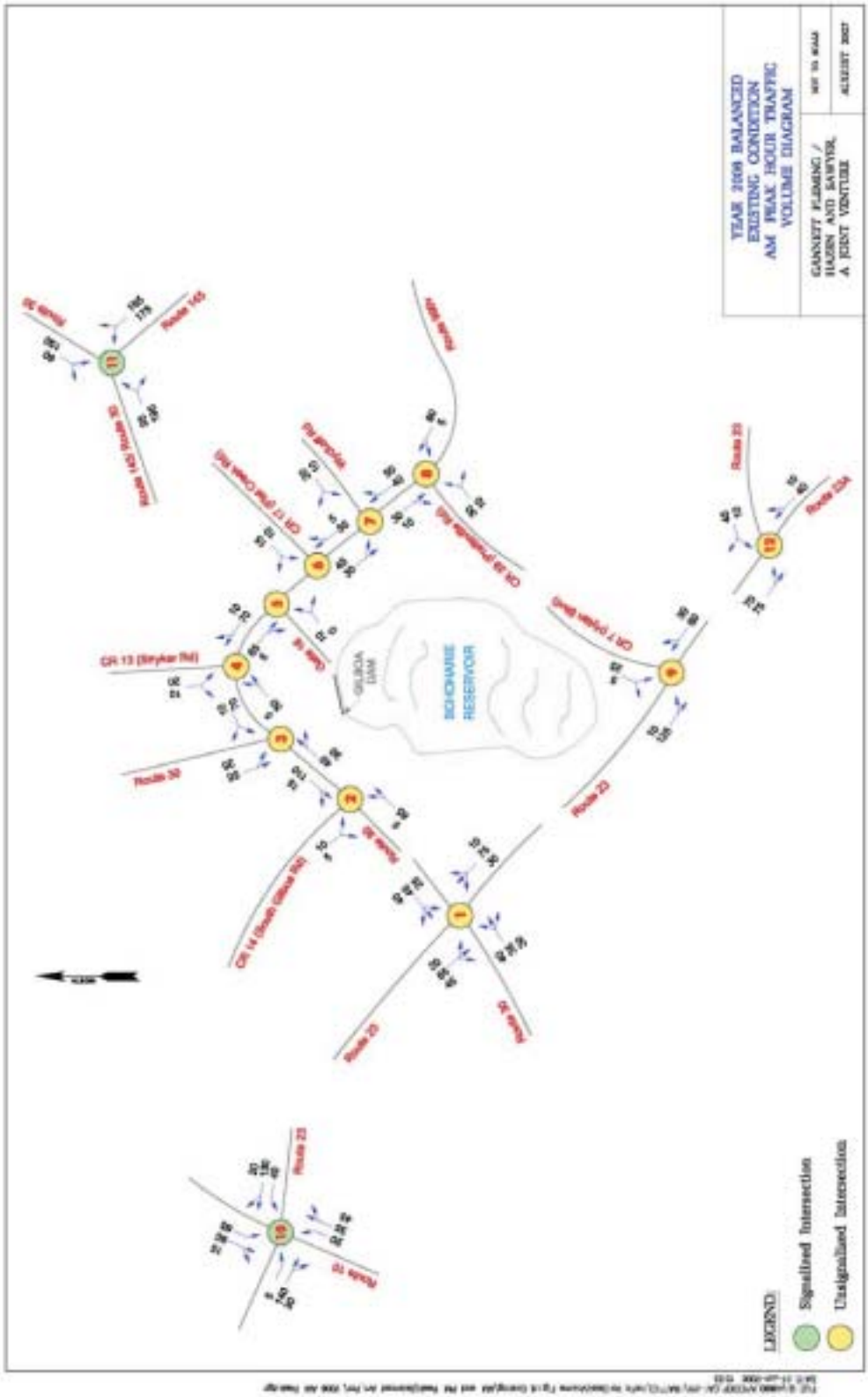
Due to their proximity to each other and to the site, the intersections at NYS Route 30 and CR 14, Route 30 and NYS Route 990V, NYS Route 990V and CR 13, NYS Route 990V and Gate 16, NYS Route 990V and CR 17, NYS Route 990V and Wyckoff Road, NYS Route 990V and CR 39 (Intersection Numbers 2 thru 8) were inventoried on May 17, 2006. The remaining five intersections were inventoried on May 18, 2006.

Table 2.10-2 shows the morning and evening peak hours of each individual study intersection. The peak hour turning volumes for Intersections Numbers 2 thru 8 were balanced, due to their close proximity and the morning and evening peak hours correlated

relatively well between these intersections. Existing Year existing morning and evening balanced peak hour volume diagrams are presented in Figure 2.10-3 and Figure 2.10-4.

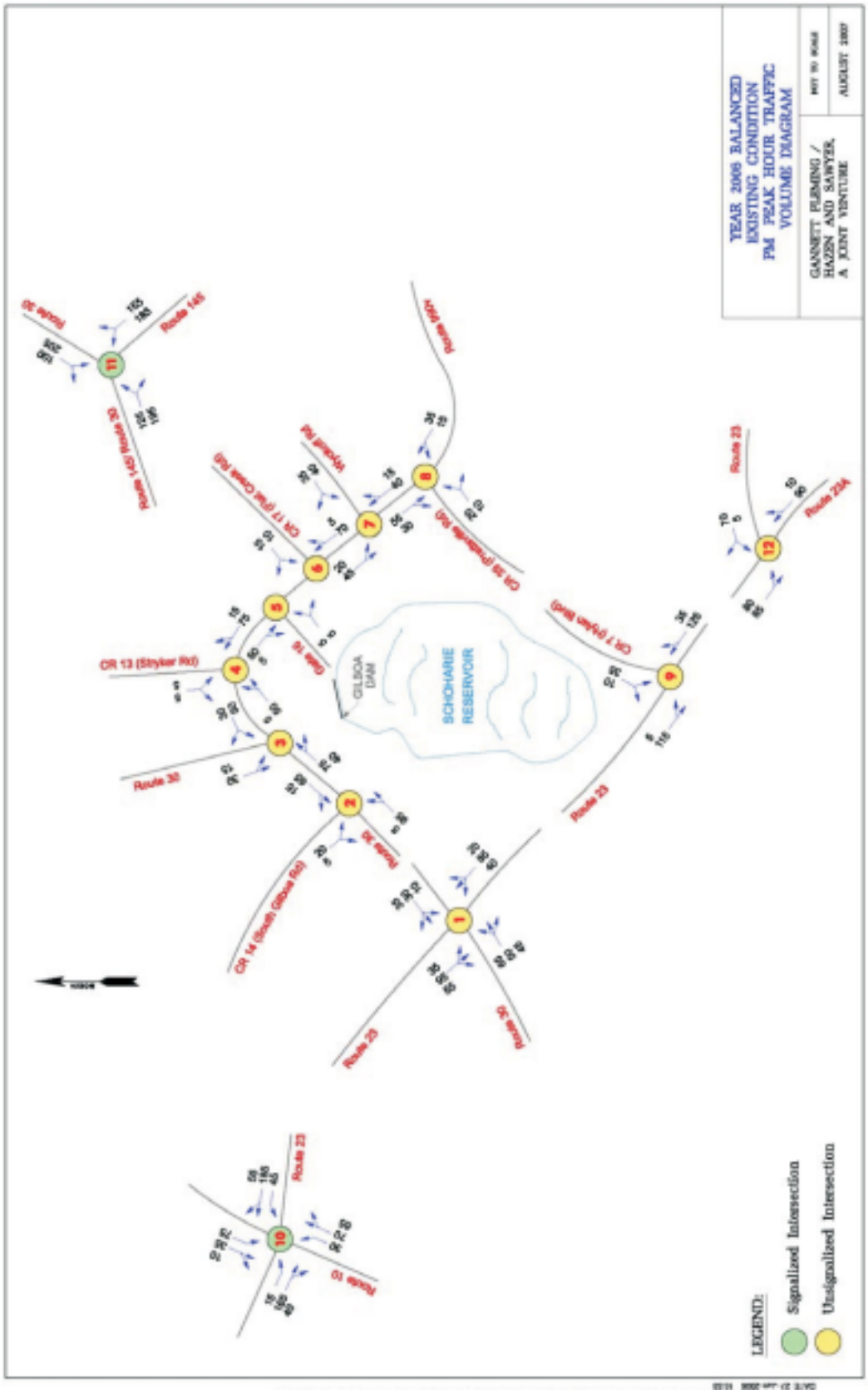
TABLE 2.10-2
AM AND PM PEAK HOURS SUMMARY

COUNT DATE	INTERSECTION	AM PEAK	PM PEAK
Thursday May 18, 2006	#1 - NYS Route 30 and NYS Route 23	7:15 AM - 8:15 AM	3:00 PM - 4:00 PM
Wednesday May 17, 2006	#2 - NYS Route 30 and CR 14 (South Gilboa Road)	7:30 AM - 8:30 AM	3:15 PM - 4:15 PM
Wednesday May 17, 2006	#3 - NYS Route 30 and NYS Route 990V	7:30 AM - 8:30 AM	3:15 PM - 4:15 PM
Wednesday May 17, 2006	#4 - NYS Route 990V and CR 13 (Stryker Road)	7:30 AM - 8:30 AM	2:45 PM - 3:45 PM
Wednesday May 17, 2006	#5 - NYS Route 990V and Gate 16 Access Road	7:15 AM - 8:15 AM	2:45 PM - 3:45 PM
Wednesday May 17, 2006	#6 - NYS Route 990V and CR 17 (Flat Creek Road)	7:15 AM - 8:15 AM	2:45 PM - 3:45 PM
Wednesday May 17, 2006	#7 - NYS Route 990V and Wyckoff Road	7:15 AM - 8:15 AM	2:45 PM - 3:45 PM
Wednesday May 17, 2006	#8 - NYS Route 990V and CR 39 (Prattsville Road)	7:15 AM - 8:15 AM	2:45 PM - 3:45 PM
Thursday May 18, 2006	#9 - NYS Route 23 and CR 7 (Hylan Boulevard)	7:15 AM - 8:15 AM	3:30 PM - 4:30 PM
Thursday May 18, 2006	#10 - NYS Route 23 and NYS Route 10	7:15 AM - 8:15 AM	3:30 PM - 4:30 PM
Thursday May 18, 2006	#11 - NYS Route 30 and NYS Route 145	7:30 AM - 8:30 AM	3:45 PM - 4:45 PM
Thursday May 18, 2006	#12 - NYS Route 23 and NYS Route 23A	7:00 AM - 8:00 AM	3:30 PM - 4:30 PM



EXISTING YEAR AM PEAK HOUR TRAFFIC VOLUME DIAGRAM

Figure 2.10-3



EXISTING YEAR PM PEAK HOUR TRAFFIC VOLUME DIAGRAM

Figure 2.10-4

In addition to TMC's traffic counts, vehicle classifications were collected at each manual count location. As per the CEQR Technical Manual for air quality modeling, vehicles are classified into categories as seen in Table 2.10-3 below. It should be noted that for traffic capacity analysis purposes heavy vehicles were classified as any vehicle in a heavy-duty class.

TABLE 2.10-3
VEHICAL CLASSIFICATIONS

Traffic Capacity Analysis Classification*	**Description**
Cars	Autos
	Sport–utility vehicles (SUVs)
	Taxis
	Light–duty trucks (those with four wheels, including vans and ambulances)
Heavy Vehicles	Heavy–duty gasoline – powered trucks and buses (heavy duty trucks have six or more wheels)
	Heavy–duty diesel – powered trucks and buses (heavy duty trucks have six or more wheels)

*For the purposes of this traffic study, the vehicles have been classified as cars or heavy vehicles as shown in the table.

Manual counts indicate that truck traffic is relatively significant at the locations where count data was collected. Heavy vehicles percentages are shown in Table 2.10-4 below.

TABLE 2.10-4
HEAVY VEHICLES PERCENTAGES

Location	Direction	Road	Heavy Vehicles %	
			AM Peak	PM Peak
Intersection #1 Route 30 and Route 23	*Northbound*	Route 30	12 %	9 %
	Southbound	Route 30	16 %	11 %
	Eastbound	Route 23	8 %	1 %
	Westbound	Route 23	7 %	10 %
Intersection #2 Route 30 and CR 14 (South Gilboa Road)	*Northbound*	Route 30	19 %	13 %
	Southbound	Route 30	14 %	15 %
	Eastbound	CR 14	0 %	15 %
Intersection #3 Route 30 and Route 990V	*Northbound*	Route 30	15 %	9 %
	Southbound	Route 30	24 %	25 %
	Westbound	Route 990V	0 %	7 %
Intersection #4 Route 990V and CR 13 (Stryker Road)	*Northbound*	Route 990V	0 %	9 %
	Southbound	Route 990V	1 %	7 %
	Eastbound	CR 13	4 %	13 %
Intersection #5,6 Route 990V and Gate 16 Route 990V and CR 17 (Flat Creek Road)	*Northbound*	Route 990V	7 %	8 %
	Southbound	Route 990V	2 %	4 %
	Eastbound	CR 17	0 %	4 %
	Westbound	Gate 16	0 %	0%
Intersection #7 Route 990V and Wyckoff Road	*Northbound*	Route 990V	7 %	14 %
	Southbound	Route 990V	10 %	22 %
	Eastbound	Wyckoff Road	12 %	13 %
Intersection #8 Route 990V and CR 39 (Prattsville Road)	*Northbound*	Route 990V	10 %	8 %
	Southbound	Route 990V	7 %	20 %
	Westbound	Prattsville Road	14 %	13 %
Intersection #9 Route 23 and CR 7 (Hylan Boulevard)	*Southbound*	Hylan Boulevard	20 %	8 %
	Eastbound	Route 23	15 %	8 %
	Westbound	Route 23	13 %	12 %
Intersection #10 Route 23 and Route 10	*Northbound*	Route 10	10 %	7 %
	Southbound	Route 10	2 %	6 %
	Eastbound	Route 23	3 %	1 %
	Westbound	Route 23	6 %	8%
Intersection #11 Route 30 and Route 145	*Northbound*	Route 30	6 %	7 %
	Southbound	Route 30	12 %	3 %
	Westbound	Route 145	6 %	5 %
Intersection #12 Route 23 and Route 23A	*Northbound*	Route 23A	9 %	11 %
	Southbound	Route 23A	9 %	7 %
	Eastbound	Route 23	8 %	3 %

2.10.2.2. Automatic Traffic Recorder Data

Continuous traffic volumes were obtained in 15-minute intervals for consecutive 24-hour periods through the use of ATR devices at twenty strategic locations throughout the study area. ATR counts were continuously collected from Monday, May 15, 2006 thru Tuesday, May 23, 2006 to determine travel trends on the local roadway network of the traffic study area. ATR installations collected traffic volumes at the locations described below in Table 2.10-5.

TABLE 2.10-5
ATR INSTALLATIONS COLLECTED TRAFFIC VOLUMES

ATR LOCATIONS
Intersection #1 - NYS Route 30 and NYS Route 23 ***(flashing beacon)*** ∉ ATR Location #1 - Route 23 (east of intersection), ATR #1 (Volume Count) ∉ ATR Location #2 - Route 30 (south of intersection), ATR #2, #3 (Volume and Classification Count) ∉ ATR Location #3 - Route 23 (west of intersection), ATR #4 (Volume Count) ∉ ATR Location #4 - Route 30 (north of intersection), ATR #5 (Volume Count)
Intersection #2 - NYS Route 30 and CR 14 (South Gilboa Road) ***(unsignalized)*** ∉ ATR Location #5 - CR 14 (west of intersection), ATR #6 (Volume Count)
Intersection #3 - NYS Route 30 and NYS Route 990V ***(unsignalized)*** ∉ ATR Location #6 - Route 30 (north of intersection), ATR #7, #8 (Volume and Classification Count) ∉ ATR Location #7 - Route 990V (east of intersection), ATR #9 (Volume Count)
Intersection #6 - NYS Route V and CR 17 (Flat Creek Road) ***(unsignalized)*** ∉ ATR Location #8 - Route 990V (west of intersection), ATR #10 (Volume Count) ∉ ATR Location #9 - Route CR 17 (north of intersection), ATR #11 (Volume Count) ∉ ATR Location #10 - Route 990V (south of intersection), ATR #12, #13 (Volume and Classification Count)
Intersection #7 NYS Route 990V and Entrances to Gilboa School Athletic Fields and Administration Offices (Wyckoff Road) ***(unsignalized)*** ∉ ATR Location #11 - Wyckoff Road (north of intersection), ATR #14 (Volume Count)
Intersection #8 - NYS Route 990V and CR 39 (Prattsville Road) ***(unsignalized)*** ∉ ATR Location #12 - Route 990V (west of intersection), ATR #15 (Volume Count) ∉ ATR Location #13 - Route 990V (east of intersection), ATR #16 (Volume Count)
Intersection #9 - NYS Route 23 and CR 7 (Hylan Boulevard) ***(unsignalized)*** ∉ ATR Location #14 - CR 7 (north of intersection), ATR #17 (Volume Count) ∉ ATR Location #15 – Route 23 (south of intersection), ATR #18, #19 (Volume and Classification Count)
Intersection #12 - NYS Route 23 and NYS Route 23A ***(unsignalized)*** ∉ ATR Location #16 – Route 23 (east of intersection), ATR #20 (Volume Count) ∉ ATR Location #17 – Route 23A (south of intersection), ATR #21 (Volume Count)
Intersection #10 - NYS Route 23 and NYS Route 10 ***(signalized)*** ∉ ATR Location #18 – Route 23 (east of intersection), ATR #22, #23 (Volume and Classification Count)
Intersection #11 - NYS Route 30 and NYS Route 145 ***(signalized)*** ∉ ATR Location #19 – Route 145 (west of intersection), ATR #24 (Volume Count) ∉ ATR Location #20– Route 30 (north of intersection), ATR #25 (Volume Count)

At five of the twenty ATR locations, the volumes were broken up into the thirteen classes of the Federal Highway Administration's classification system as described below in Table 2.10-6:

TABLE 2.10-6
THIRTEEN CLASSES OF
THE FEDERAL HIGHWAY ADMINISTRATION

CLASS	TYPE	DESCRIPTION
1	Motorcycles	All two- or three-wheeled motorized vehicles. Normal vehicles in this category have saddle type seats and are steered by handle bars rather than wheels. This category includes motorcycles, motor scooters, mopeds, motor-powered bicycles, and three-wheel motorcycles. This vehicle type may be reported at the option of the State.
2	Passenger Cars	All sedans, coupes, and station wagons manufactured primarily for the purpose of carrying passengers and including those passenger cars pulling recreational or other light trailers.
3	Other Two-Axle, Four-Tire Single Unit Vehicles	All two-axle, four tire, vehicles, other than passenger cars. Included in this classification are pickups, panels, vans, and other vehicles such as campers, motor homes, ambulances, hearses, and carryalls. Other two-axle, four-tire single unit vehicles pulling recreational or other light trailers are included in this classification.
4	Buses	All vehicles manufactured as traditional passenger-carrying buses with two axles and six tires or three or more axles. This category includes only traditional buses (including school buses) functioning as passenger-carrying vehicles. All two-axle, four-tire single unit vehicles. Modified buses should be considered to be a truck and be appropriately classified.
5	Two-Axle, Six-Tire, Single Unit Trucks	All vehicles on a single frame including trucks, camping and recreational vehicles, motor homes, etc., having two axles and dual rear wheels.

6	Three-Axle Single Unit Trucks	All vehicles on a single frame including trucks, camping and recreational vehicles, motor homes, etc., having three axles.
7	Four or More Axle Single Unit Trucks	All trucks on a single frame with four or more axles.
8	Four or Less Axle Single Trailer Trucks	All vehicles with four or less axles consisting of two units, one of which is a tractor or straight truck power unit.
9	Five-Axle Single Trailer Trucks	All five-axle vehicles consisting of two units, one of which is a tractor or straight truck power unit.
10	Six or More Axle Single Trailer Trucks	All vehicles with six or more axles consisting of two units, one of which is a tractor or straight truck power unit.
11	Five or Less Axle Multi-Trailer Trucks	All vehicles with five or less axles consisting of three or more units, one of which is a tractor or straight truck power unit.
12	Six-Axle Multi-Trailer Trucks	All six-axle vehicles consisting of three or more units, one of which is a tractor or straight truck power unit.
13	Seven or More Axle Multi-Trailer Trucks	All vehicles with seven or more axles consisting of three or more units, one of which is a tractor or straight truck power unit.

Data was collected for travel speed and delay data along NYS Route 30, NYS Route 23, NYS Route 990V and CR 39/7 (Prattsville Road/Hylan Boulevard) concurrently with the manual count effort. Travel speed and delay data were collected via the "floating car technique," in which the survey car seeks to travel at the speed of a normal car in the traffic stream by passing approximately the same number of cars as pass it. Table 2.10-7 shows the average speed of all vehicles at select locations.

TABLE 2.10-7
SPEED DATA

Roadway Section	Average Travel Speed (mph)			
	Northbound/ Eastbound:		Southbound/ Westbound:	
	AM Peak	PM Peak	AM Peak	PM Peak
NYS Route 30 between Duggan Hill Road and Stryker Road (CR 13)	54	52	47	51
NYS Route 23 between South Gilboa Road (CR 14) and Airport Road (CR 23C)	52	54	51	52
NYS Route 990V between NYS Route 30 and Bear Kill Road (CR 18)	46	45	47	44
CR 39/7 (Prattsville Road/Hylan Boulevard) between NYS Route 990V and NYS Route 23	37	48	43	48

2.10.2.3. NYS Route 30 - Permanent Count Station Volume Data

During the field visits and study area observations, a permanent count station was identified along NYS Route 30 immediately north of the NYS Route 990V unsignalized intersection. Traffic volumes from this count station for Year 2005 were requested and obtained from NYSDOT Region 9. The traffic count information was analyzed to determine any potential seasonal variations in traffic volumes over the year. The Average Daily Traffic (ADT) during weekday hours (Monday 6:00 AM to Friday Noon) for NYS Route 30 are shown in Table 2.10-8 below.

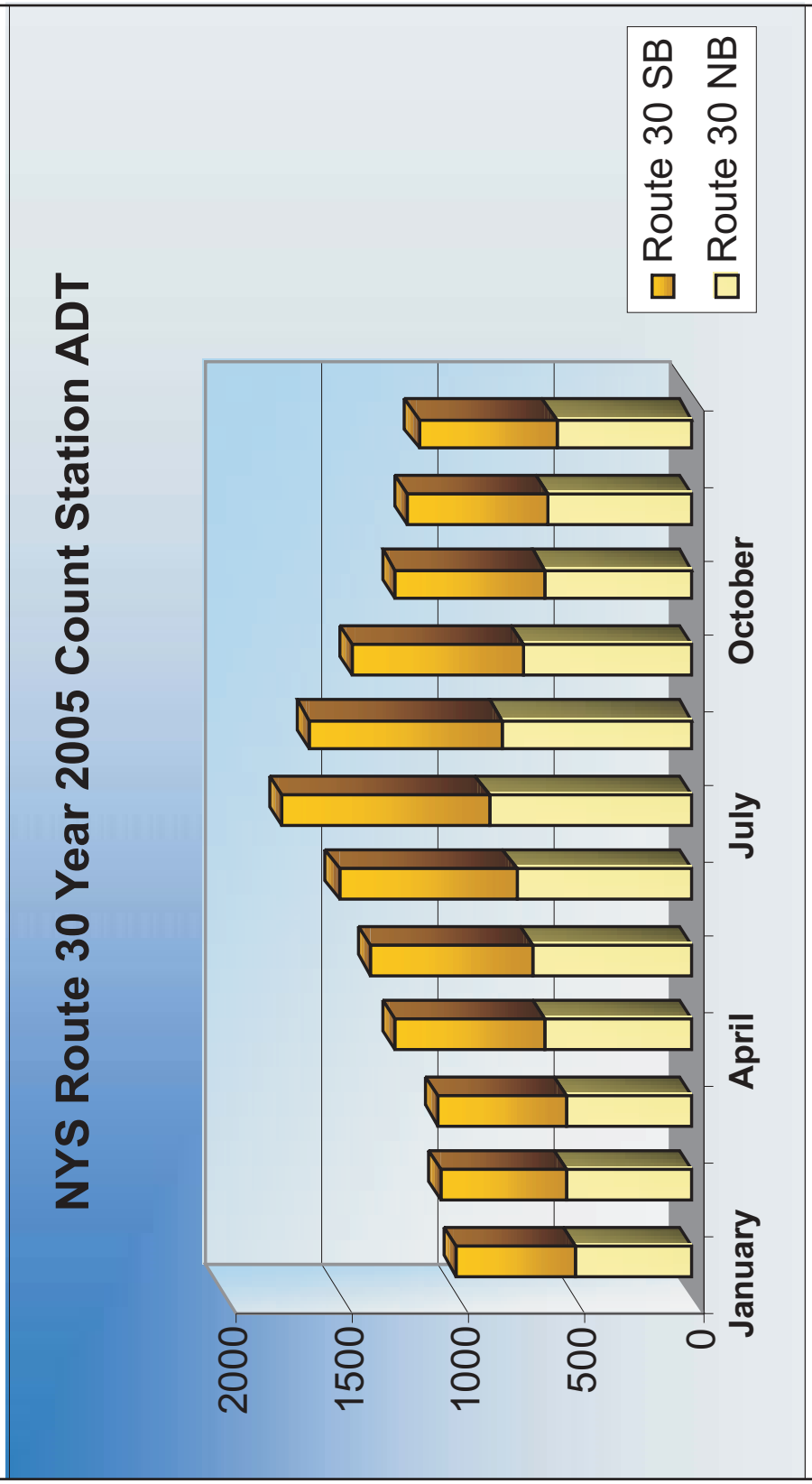
TABLE 2.10-8
NYS ROUTE 30 PERMANENT COUNT STATION VOLUME DATA

NYS Route 30 Year 2005 Average Daily Traffic (ADT) Data		
Month	**NYS Route 30 Northbound Vehicles**	**NYS Route 30 Southbound Vehicles**
January	504	509
February	541	541
March	544	551
April	637	638
May	688	694
June	757	761
July	875	887
August	820	827
September	725	738
October	633	641
November	615	612
December	587	590

As shown in both the Table 2.10-8 and Figure 2.10-5, gradual increases in traffic volume in both directions of NYS Route 30 are evident from January through July (the peak month in the year), followed by a gradual decline in traffic from July through December.

A comparison has shown that May 2006 ATR (ATR # 7 and 8) average weekday AM and PM peak hour data correlates very well with the May 2005 permanent count station average weekday AM and PM peak hour data. Tables 2.10-9 and 2.10-10 show NYS Route 30 Year 2005 and Existing Year morning and evening peak hour data respectively. Therefore no further volume adjustments to the Existing Year were necessary.

It should be noted that the Year 2005 permanent count station data shows that volumes are at the lowest levels of the year during the winter months. Based on this data, it is concluded that the Hunter and Windham Ski Resorts do not generate a significant amount of traffic from the roadways within the study area during the winter months and that the Existing Year balanced volume diagrams account for the highest existing seasonal volume activity within the study area.



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NYS Route 30 Year 2005 Count Station ADT

Figure 2.10-5

TABLE 2.10-9
NYS ROUTE 30 YEAR 2005 AND EXISTING YEAR AM PEAK VOLUME DATA

2005 Count Station-Average Weekday AM Peak Hour Data (AM Peak 07:00 - 08:00)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	35	70	105
July	38	53	91

Existing Year ATR Count-Average Weekday AM Peak Hour Data (AM Peak 07:00 - 08:00)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	34	68	102

Existing Year Manual Count Balanced AM Peak Hour Data (AM Peak 07:30 - 08:30)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	45	80	125

TABLE 2.10-10
NYS ROUTE 30 YEAR 2005 AND EXISTING YEAR PM PEAK VOLUME DATA

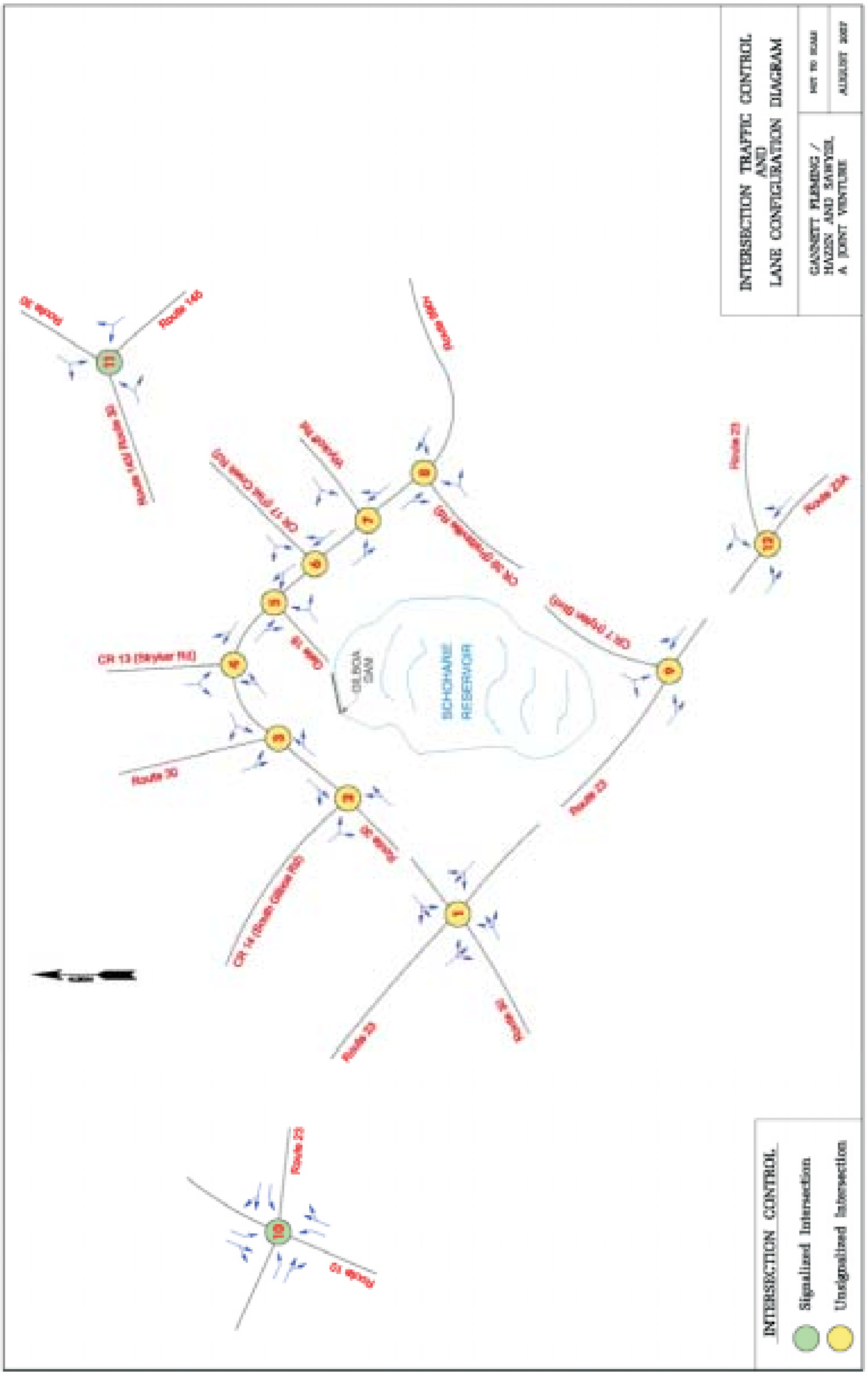
2005 Count Station-Average Weekday PM Peak Hour Data (PM Peak 03:00 - 04:00)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	70	52	122
July	83	73	156

Existing Year ATR Count-Average Weekday PM Peak Hour Data (PM Peak 03:00 - 04:00)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	70	50	119

Existing Year Manual Count Balanced PM Peak Hour Data (PM Peak 03:15 - 04:15)			
Month	**NYS Route 30 Northbound**	**NYS Route 30 Southbound**	**Total**
May	105	45	150

2.10.2.4. Intersection Traffic Control and Lane Configurations

The NYS Route 23 and NYS Route 10 intersection (Intersection Number 10) and the NYS Route 30 and NYS Route 145 intersection (Intersection Number 11) are signalized. The NYS Route 30 and NYS Route 23 intersection (Intersection Number 1) is two-way stop-controlled with a flashing beacon. The remaining nine intersections within the study area are unsignalized with stop sign traffic control. Figure 2.10-6 displays the existing traffic control and the lane configurations of the intersections within the study area.



INTERSECTION TRAFFIC CONTROL AND LANE CONFIGURATION

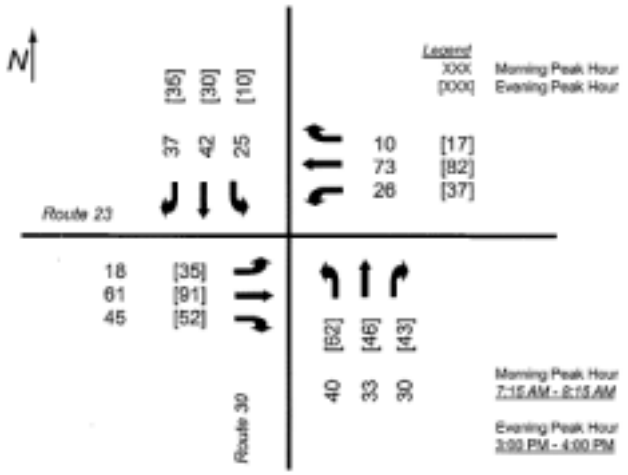
2.10.2.5. Intersection Evaluations

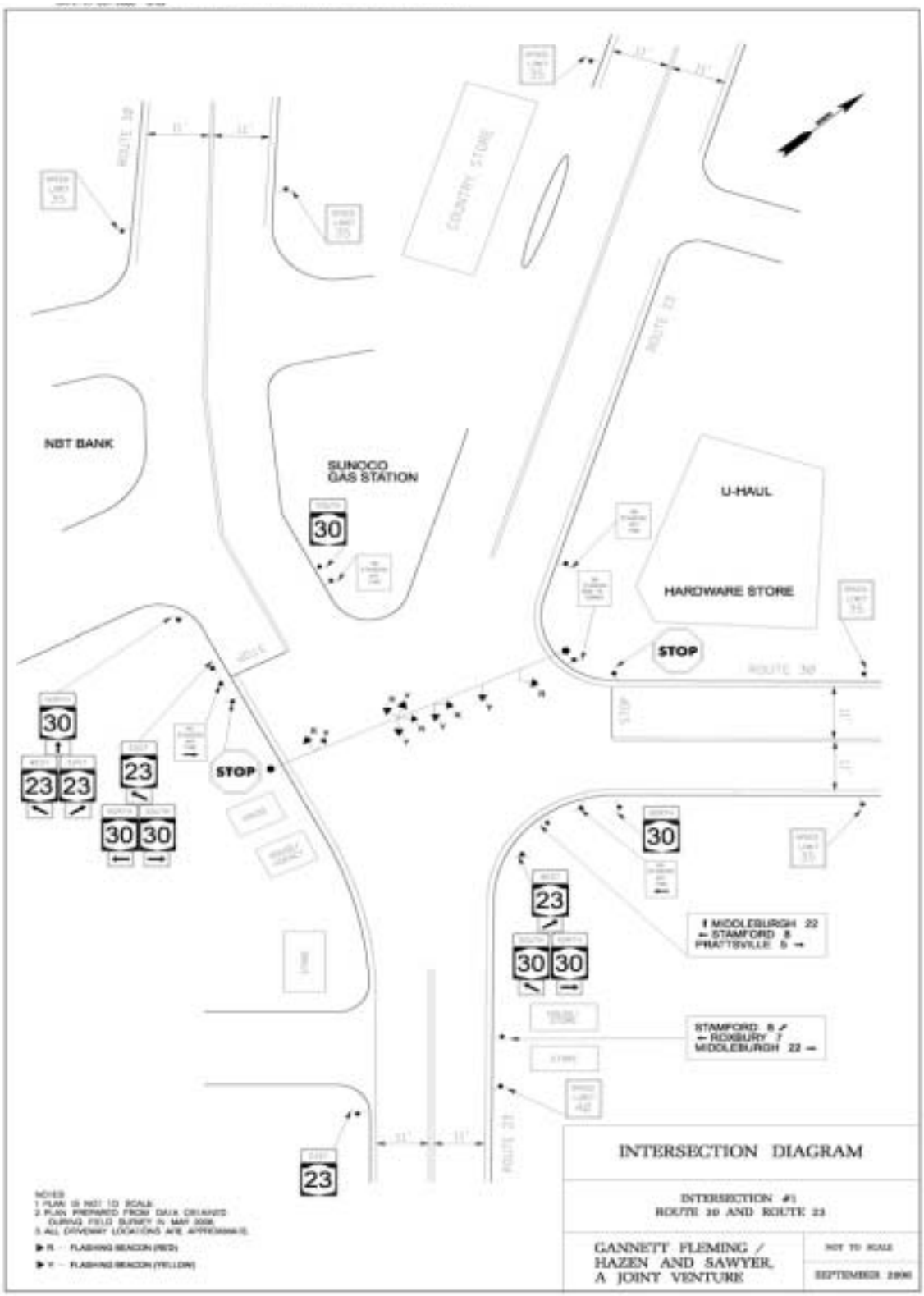
Existing Year traffic conditions were analyzed as the base conditions in order to assess impacts that the proposed reconstruction project volume may have on the existing roadway network. The traffic volumes used in the capacity analyses are those that were provided in Figures 2.10-3 and 2.10-4. Intersection geometry, configuration layout and peak hour volumes are presented below for intersections #1 through #12. A summary table is also provided following the evaluations as Table 2.10-11.

NYS Route 30 and NYS Route 23 (INTERSECTION #1)

Control:	∉ *Unsignalized; STOP control on NYS Route 30 approaches* ∉ *Flashing beacon - traffic control with red flashing signals for NYS Route 30 approaches and yellow flashing signals for NYS Route 23 approaches*
Geometry:	*Four-leg intersection*
Speed Limit:	∉ *35 mph on NYS Route 30* ∉ *40 mph on NYS Route 23*
Roadway Configuration:	∉ *Both NYS Route 23 and NYS Route 30 approaches are single lane*
Intersection Lighting:	*Mounted to the electrical poles on northeast, northwest, and southeast intersection corners*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 440 vehicles*
	PM Peak - Entering Traffic Volume – 540 vehicles

Peak Hour Traffic Volumes





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INTERSECTION #1
NYS ROUTE 30 and NYS ROUTRE 23

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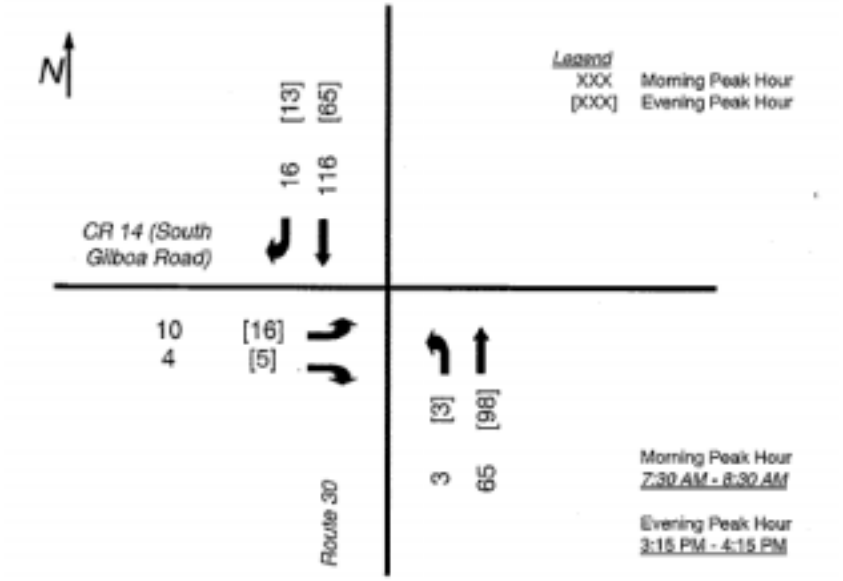
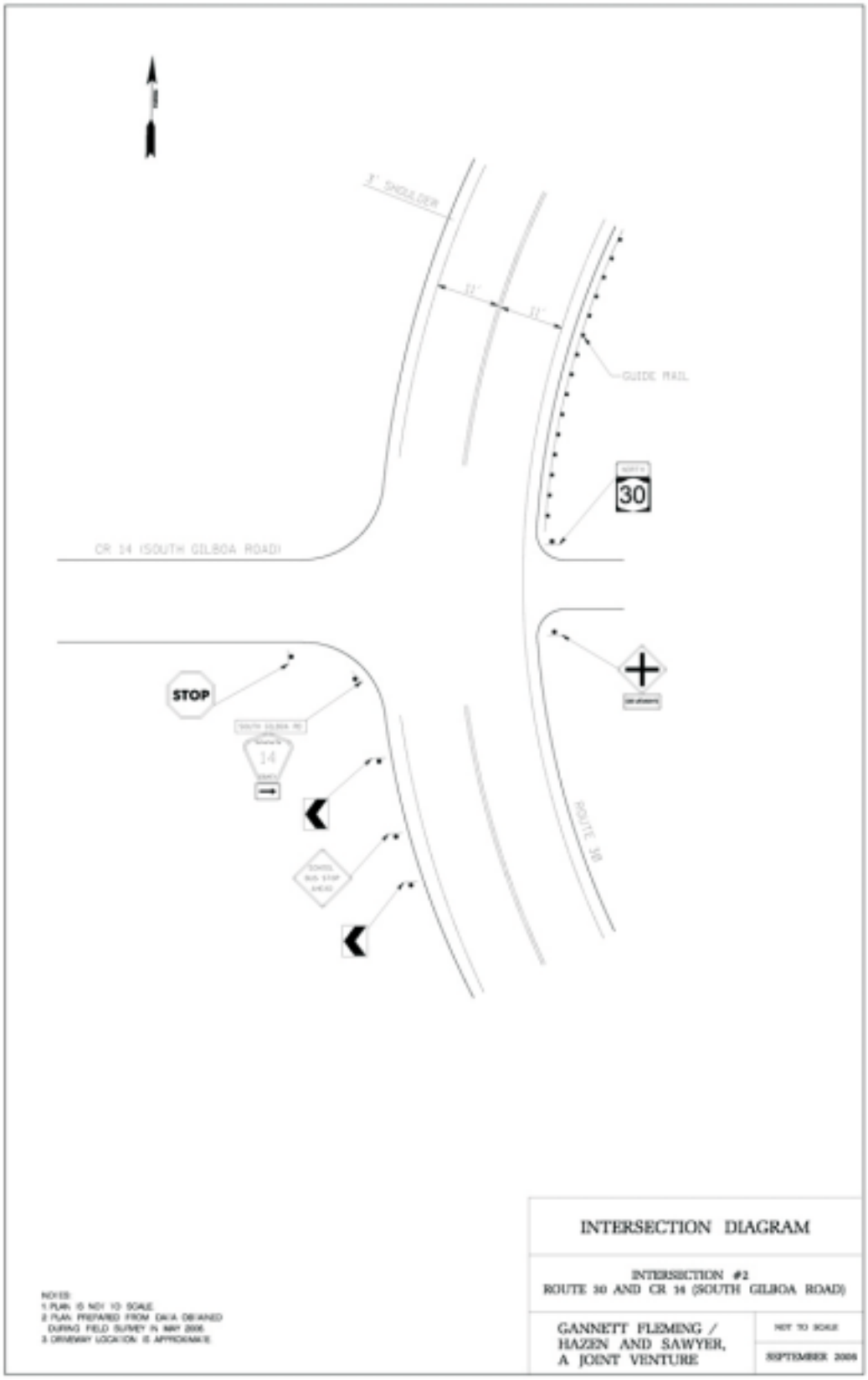
Figure 2.10-7

NYS Route 30 and CR 14 (South Gilboa Road) (INTERSECTION #2)

Control:	∉ *Unsignalized; STOP control on CR 14 (South Gilboa Road) approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 30 as the major road*
Speed Limit:	∉ *55 mph on NYS Route 30* ∉ *Not Specified on CR 14 (Assumed 30 mph)*
Roadway Configuration:	∉ *Both NYS Route 30 and CR 14 approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 214 vehicles*
	PM Peak - Entering Traffic Volume - 200 vehicles

Peak Hour Traffic Volumes





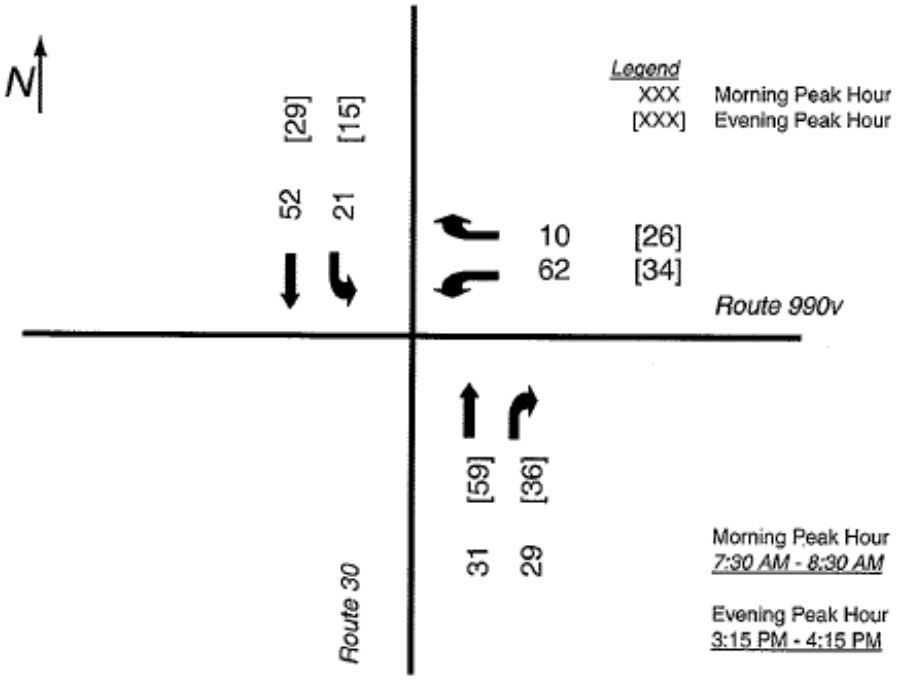
INTERSECTION #2
NYS ROUTE 30 and CR 14
(South Gilboa Road)

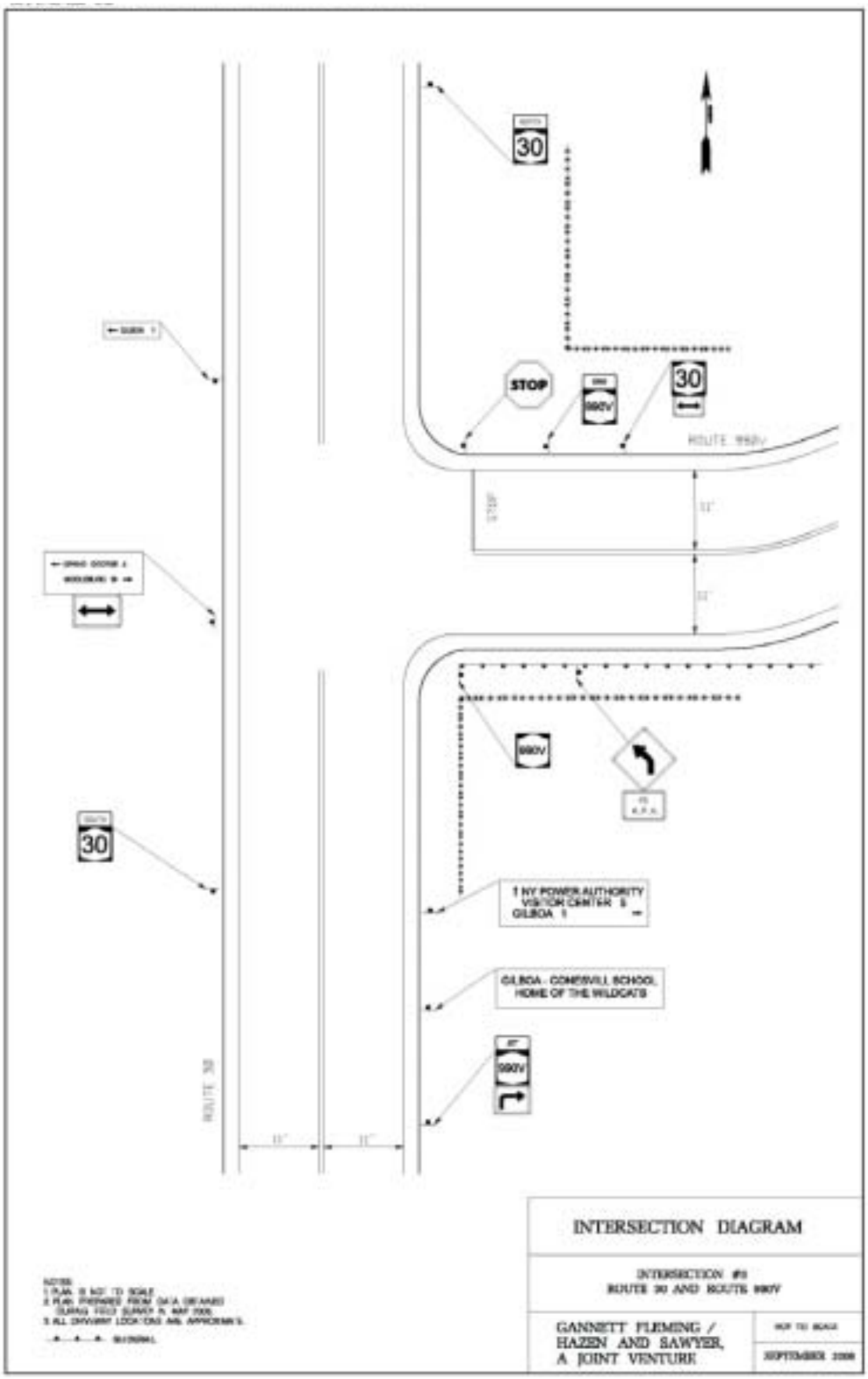
Figure 2.10-8

NYS Route 30 and NYS Route 990V (INTERSECTION #3)

Control:	∉ *Unsignalized; STOP control on NYS Route 990V approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 30 as the major road*
Speed Limit:	∉ *50 mph on NYS Route 30* ∉ *45 mph on NYS Route 99Vv*
Roadway Configuration:	∉ *Both NYS Route 30 and NYS Route 990V approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 205 vehicles*
	PM Peak - Entering Traffic Volume - 199 vehicles

Peak Hour Traffic Volumes





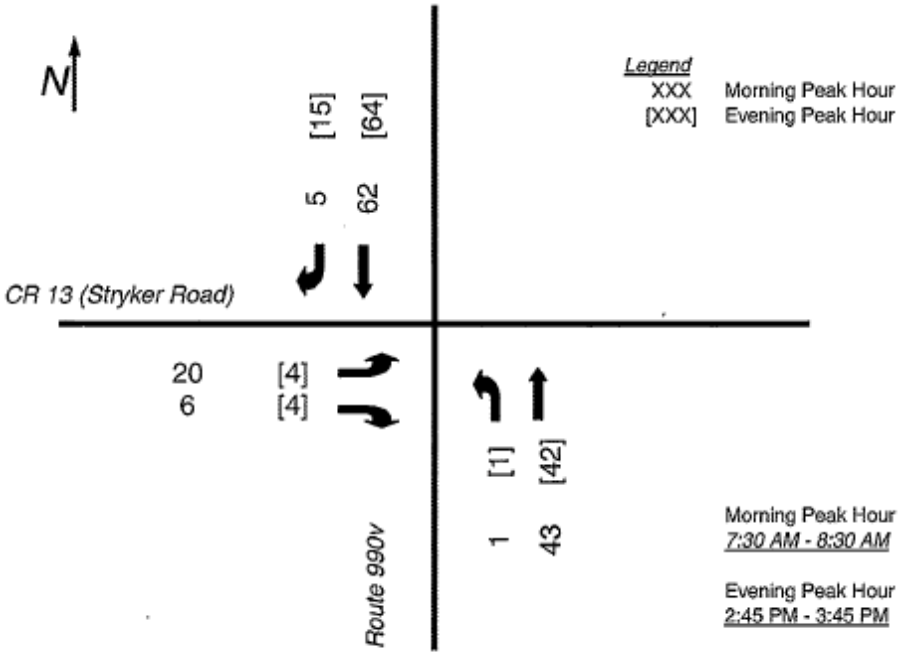
INTERSECTION #3
NYS ROUTE 30 and NYS
ROUTE 990V

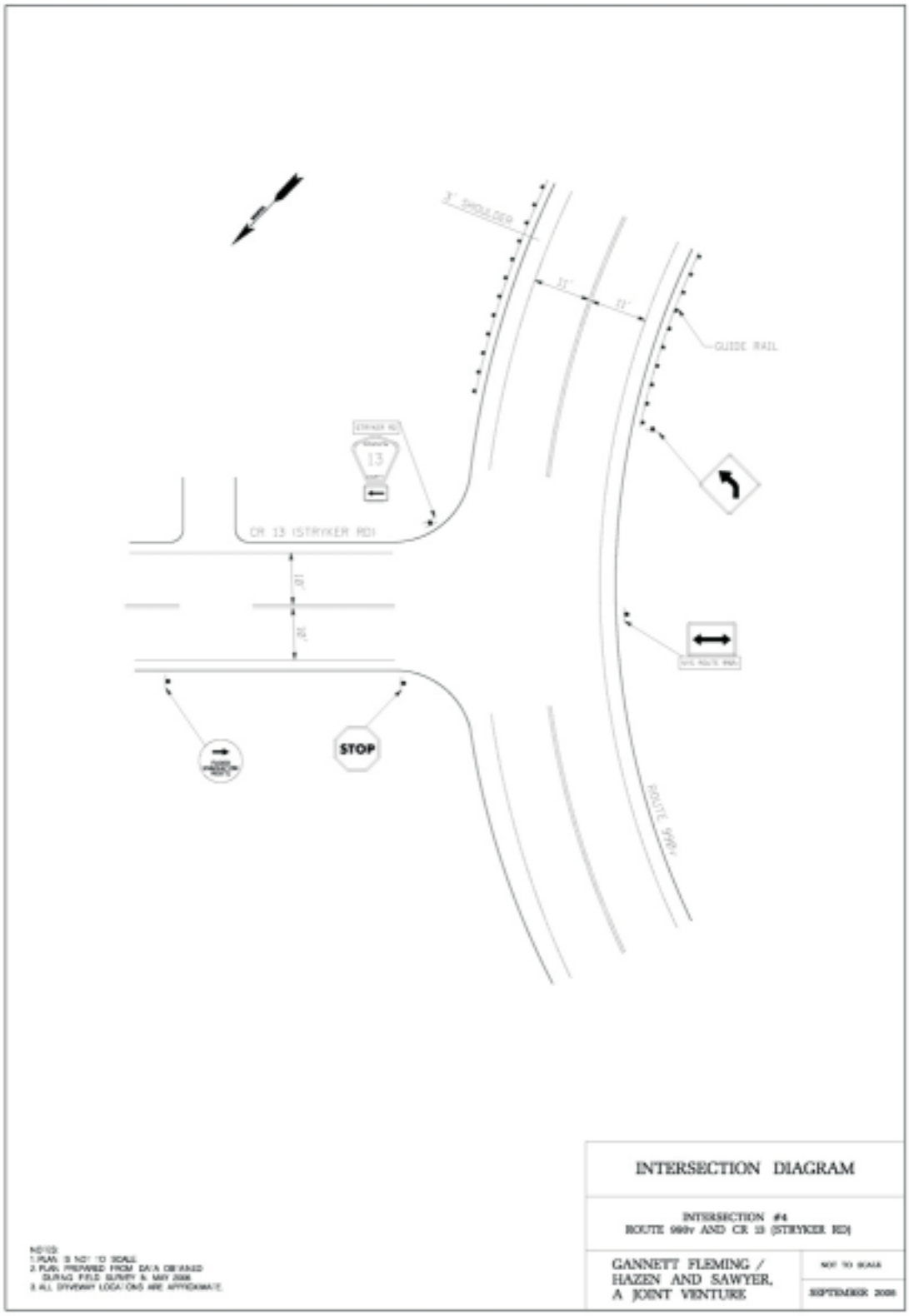
Figure 2.10-9

NYS Route 990V and CR 13 (Stryker Road) (INTERSECTION #4)

Control:	∉ *Unsignalized; STOP control on CR 13 (Stryker Road) approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 99Vv as the major road*
Speed Limit:	∉ *45 mph on NYS Route 990V* ∉ *Not Specified on CR 13 (Assumed 30 mph)*
Roadway Configuration:	∉ *Both NYS Route 990V and CR 13 approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 137 vehicles*
	PM Peak - Entering Traffic Volume - 130 vehicles

Peak Hour Traffic Volumes





INTERSECTION #4
NYS ROUTE 990V and
CR13 (Stryker rd.)

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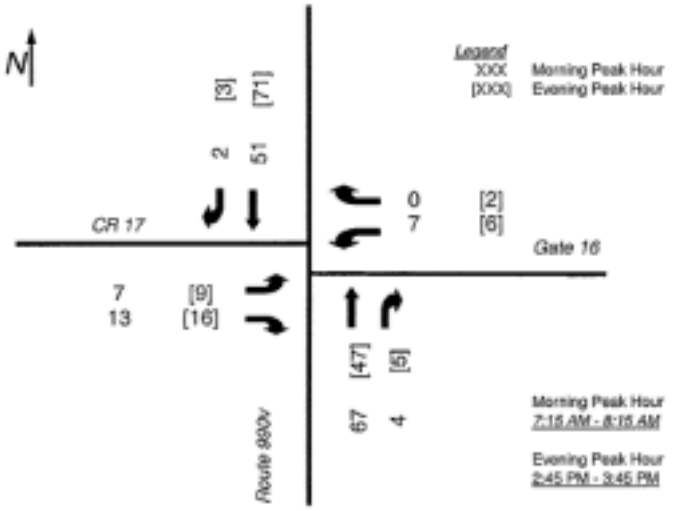
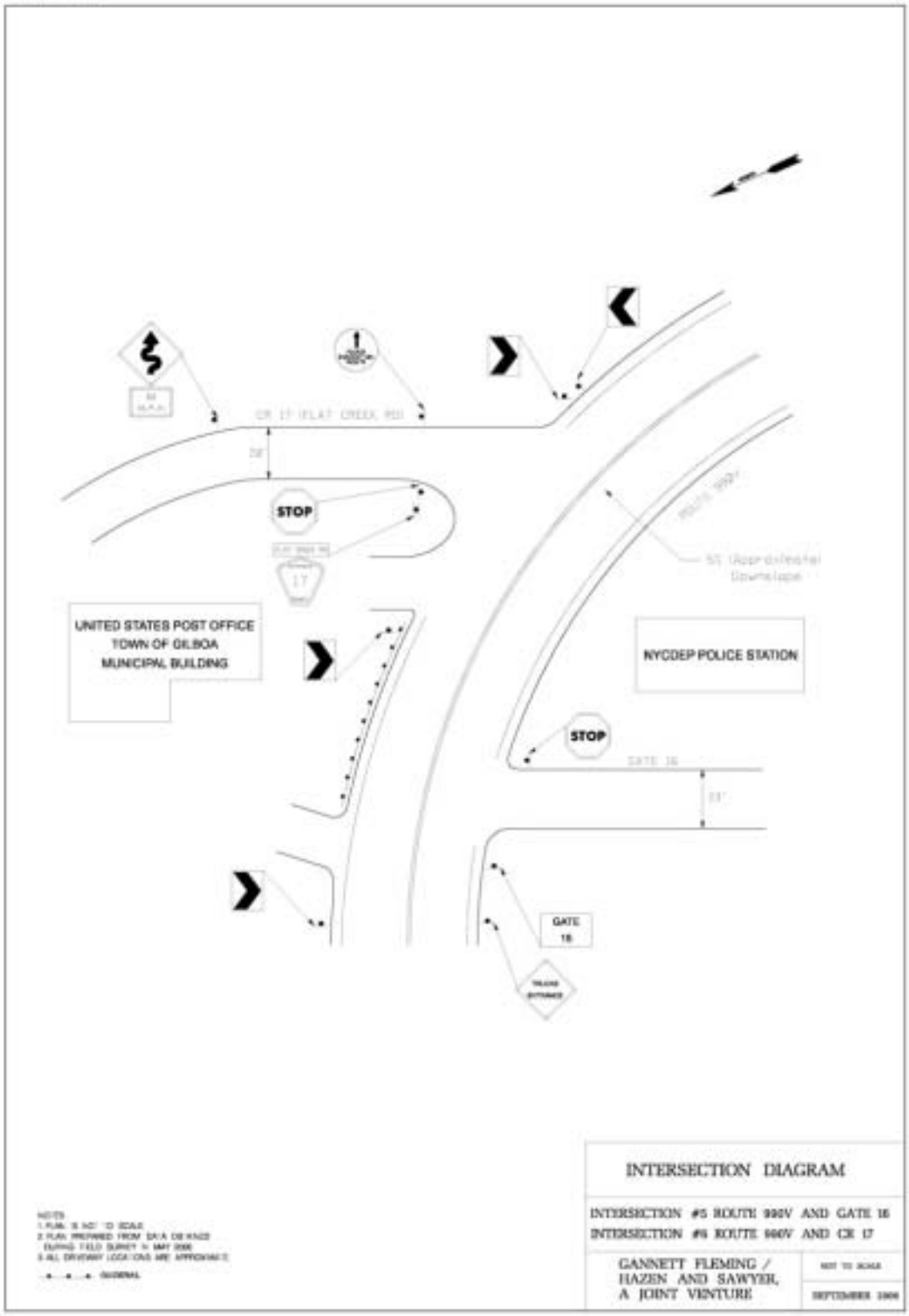
Figure 2.10-10

NYS Route 990V and Gate 16 Access Road (INTERSECTION #5) / NYS Route 990V and CR 17 (Flat Creek Road) (INTERSECTION #6)

Control:	∉ *Unsignalized; STOP control on Gate 16 approach* ∉ *Unsignalized; STOP control on CR 17 approach*
Geometry:	*Intersection # 5 and Intersection #6 – Closely spaced three-leg "T" intersections, with NYS Route 990V as the major road*
Speed Limit:	∉ *30 mph on NYS Route 99Vv* ∉ *Not Specified on Gate 16 (Assumed 25 mph)* ∉ *Not Specified on CR 17 (Assumed 30 mph)*
Roadway Configuration:	∉ *NYS Route 990V, Gate 16 and CR 17 approaches are single lane*
Intersection Lighting:	*Light pole at Gate 16 approach*
Peak Hour Traffic:	*NYS Route 990V and Gate 16 Intersection* *AM Peak - Entering Traffic Volume – 142 vehicles* *NYS Route 990V and CR 17* *AM Peak - Entering Traffic Volume – 140 vehicles*
	NYS Route 990V and Gate 16 Intersection *PM Peak - Entering Traffic Volume - 147 vehicles* *NYS Route 99Vv and CR 17* *PM Peak - Entering Traffic Volume - 148 vehicles*

Peak Hour Traffic Volumes





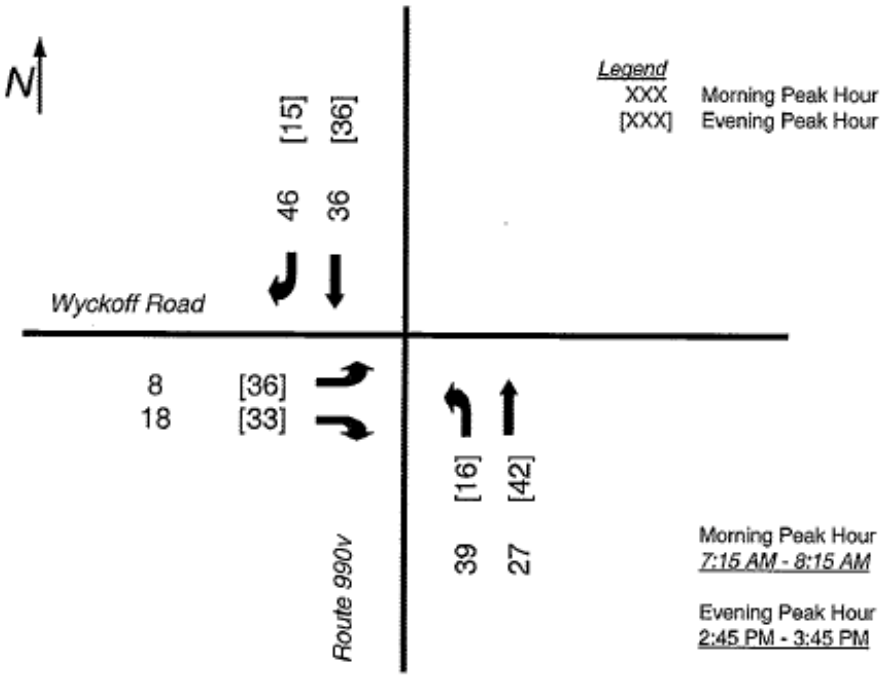
INTERSECTION #5 NYS ROUTE 990V and GATE 16
INTERSECTION #6 NYS ROUTE 990V and CR 17

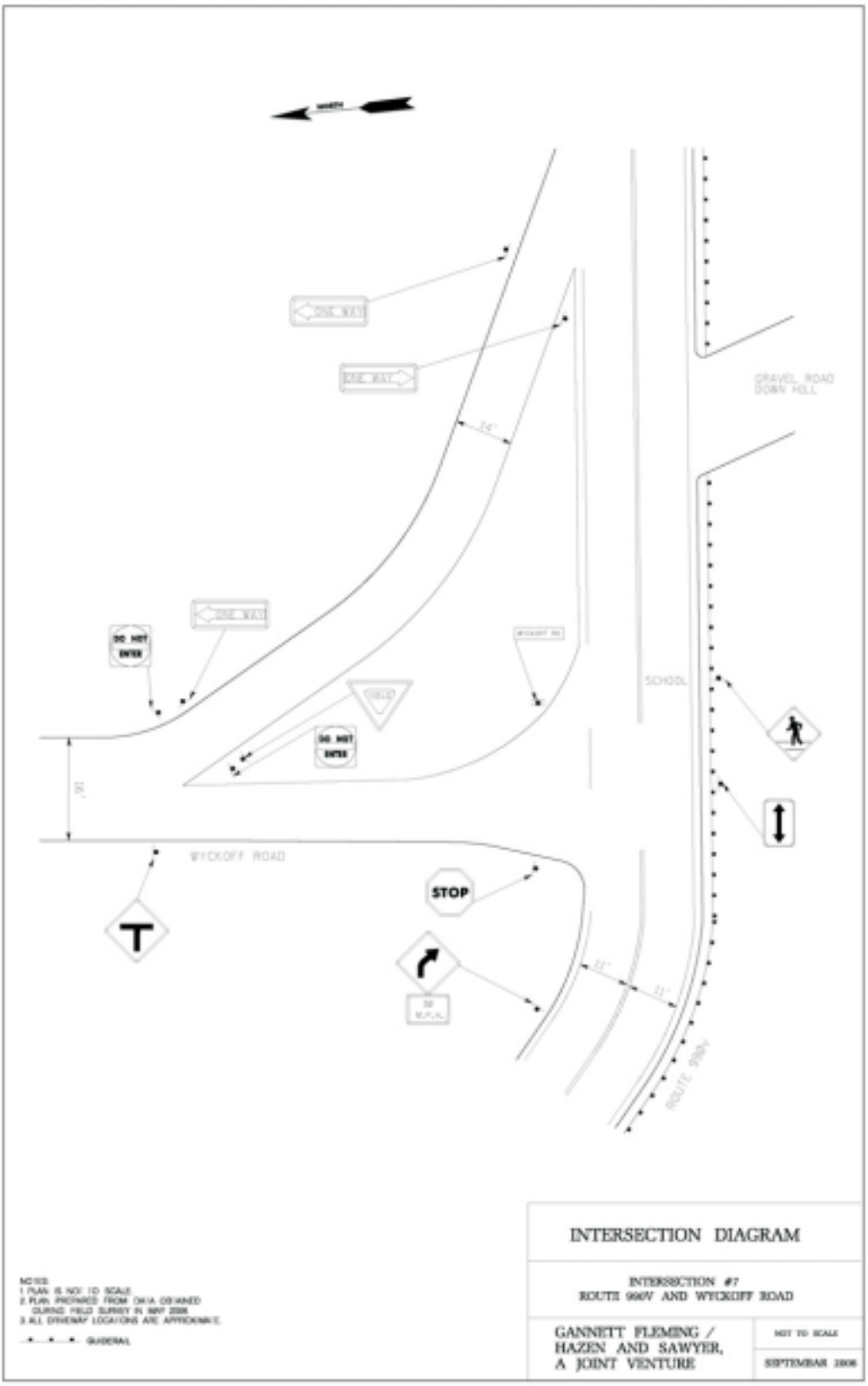
Figure 2.10-11

NYS Route 990V and Wyckoff Road (INTERSECTION #7)

Control:	∉ *Unsignalized; STOP control on Wyckoff Road approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 990V as the major road*
Speed Limit:	∉ *35 mph on NYS Route 990V* ∉ *Not Specified on Wyckoff Road (Assumed 30 mph)*
Roadway Configuration:	∉ *Both NYS Route 990V and Wyckoff Road approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 174 vehicles*
	PM Peak - Entering Traffic Volume - 178 vehicles

Peak Hour Traffic Volumes





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INTERSECTION #7
NYS ROUTE 990V and WYCKOFF ROAD

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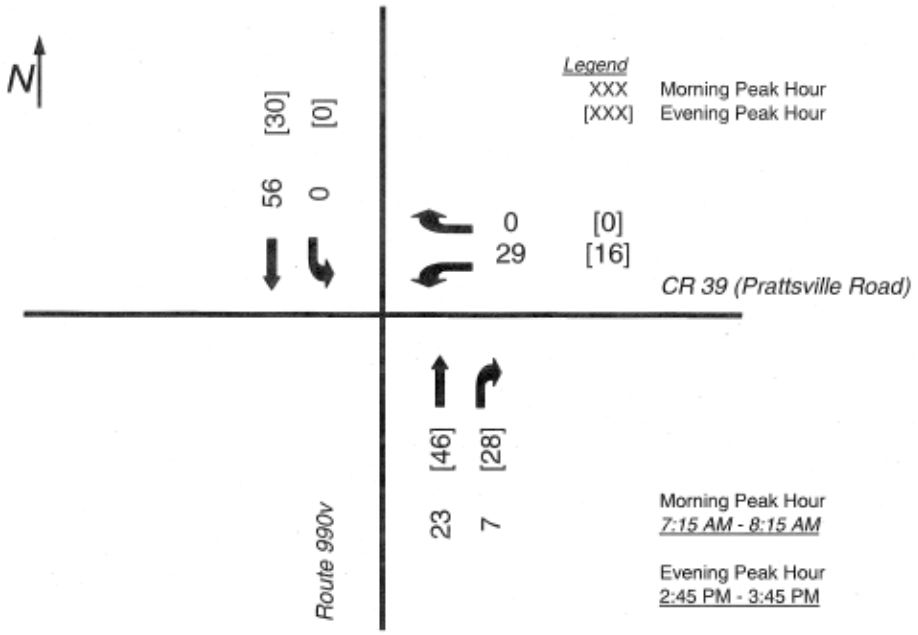
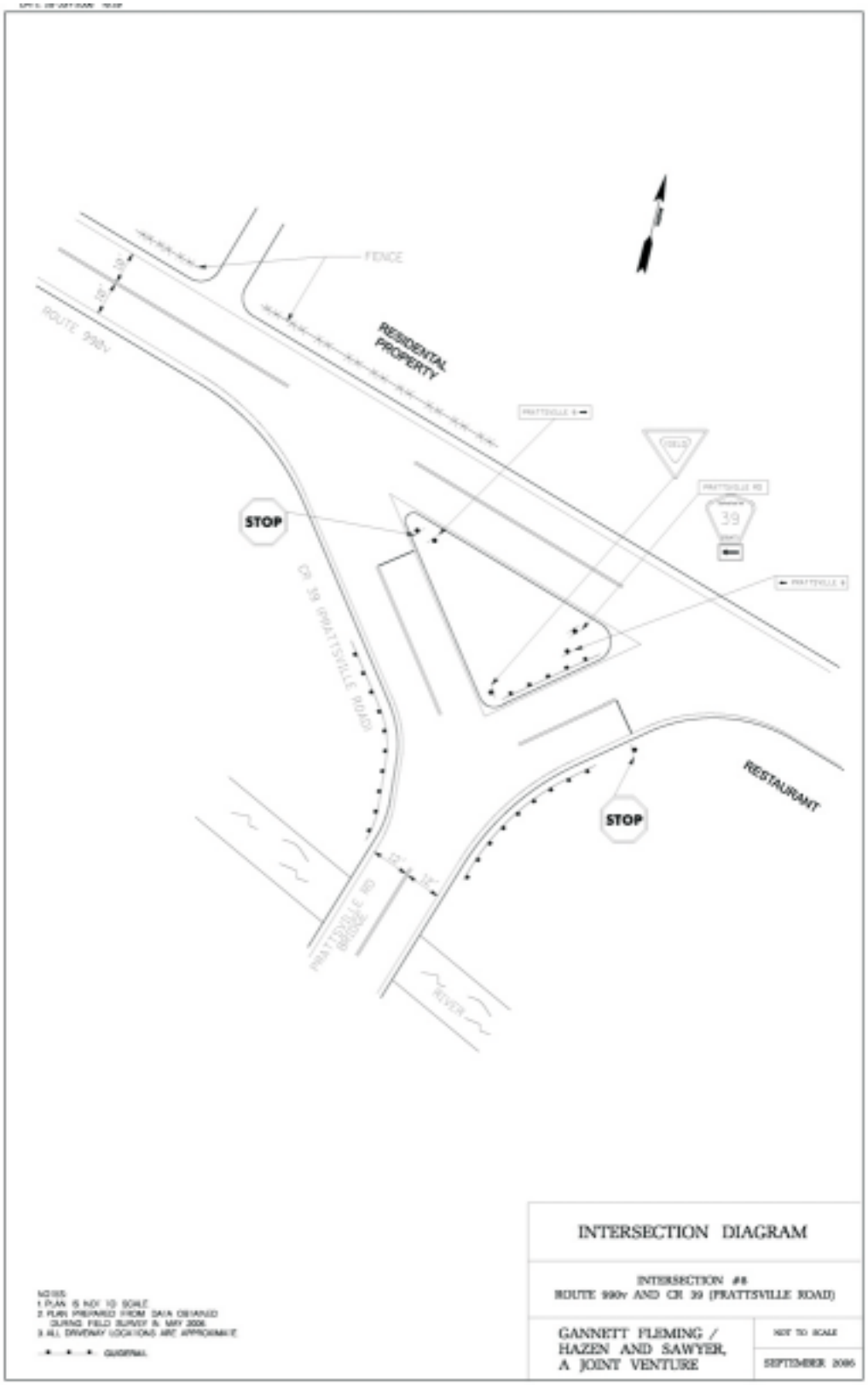
Figure 2.10-12

NYS Route 990V and CR 39 (Prattsville Road) (INTERSECTION #8)

Control:	∉ *Unsignalized; STOP control on CR 39 approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 990V as the major road. CR 39 left and right turning movements separated by traffic island*
Speed Limit:	∉ *35 mph on NYS Route 990V* ∉ *Not Specified on CR 39 (Assumed 30 mph)*
Roadway Configuration:	∉ *Both NYS Route 990V and CR 39 approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways*
Peak Hour Traffic:	*AM Peak Hour - Entering Traffic Volume – 115 vehicles*
	PM Peak Hour - Entering Traffic Volume - 120 vehicles

Peak Hour Traffic Volumes





INTERSECTION #8
NYS ROUTE 990V and CR39
PRATSVILLE RD

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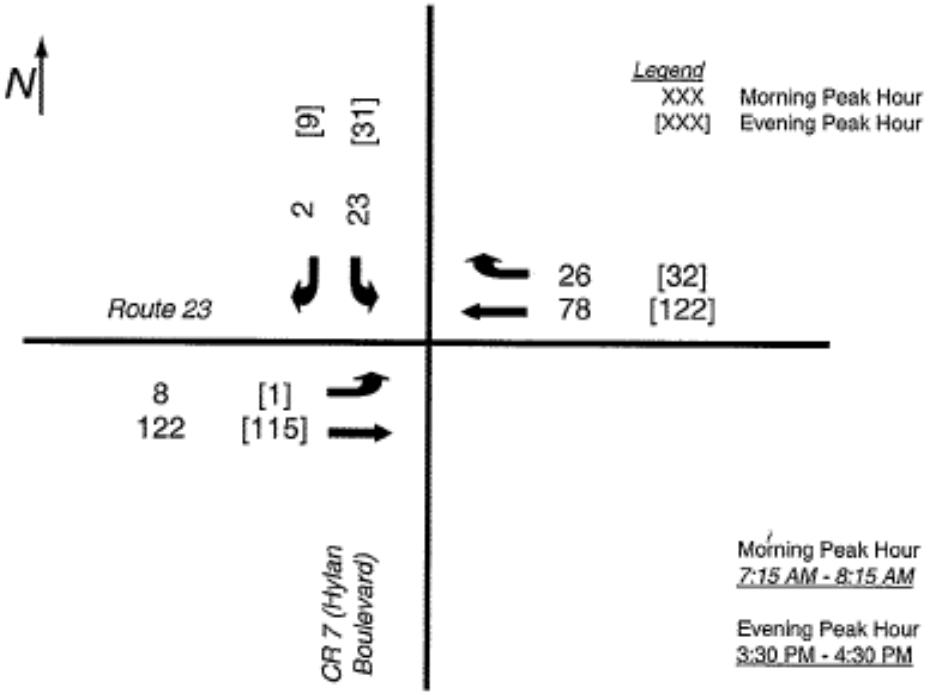
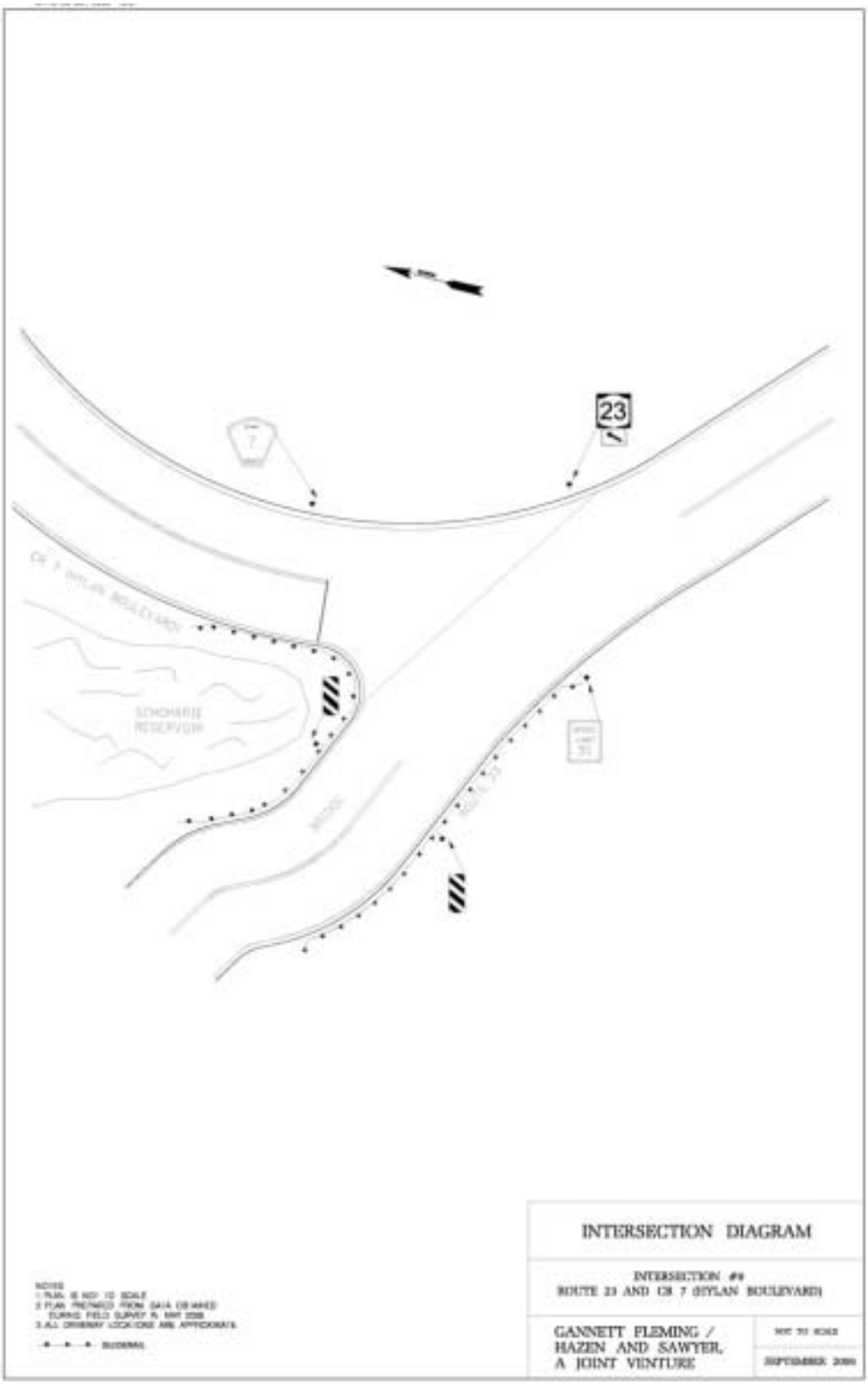
Figure 2.10-13

NYS Route 23 and County Road 7 (Hylan Boulevard) (INTERSECTION #9)

Control:	∉ *Unsignalized; STOP control on CR 7 approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 23 as the major road.*
Speed Limit:	∉ *35 mph on NYS Route 23* ∉ *Not Specified on CR 7 (Assumed to be 30 mph)*
Roadway Configuration:	∉ *Both NYS Route 23 and CR 7 approaches are single lane*
Intersection Lighting:	*Utility pole-mounted light on northeast corner.*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 259 vehicles*
	PM Peak - Entering Traffic Volume - 310 vehicles

Peak Hour Traffic Volumes





INTERSECTION #9
NYS ROUTE 23 and CR7
HYLAN BLVD

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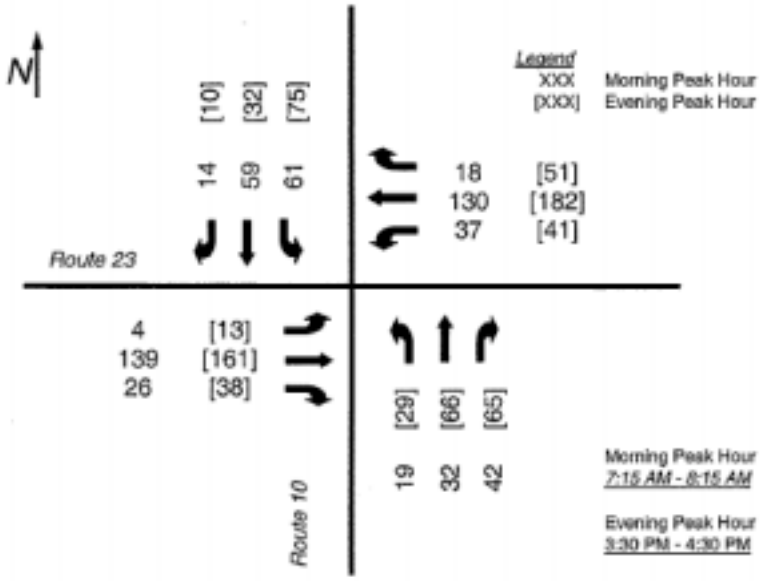
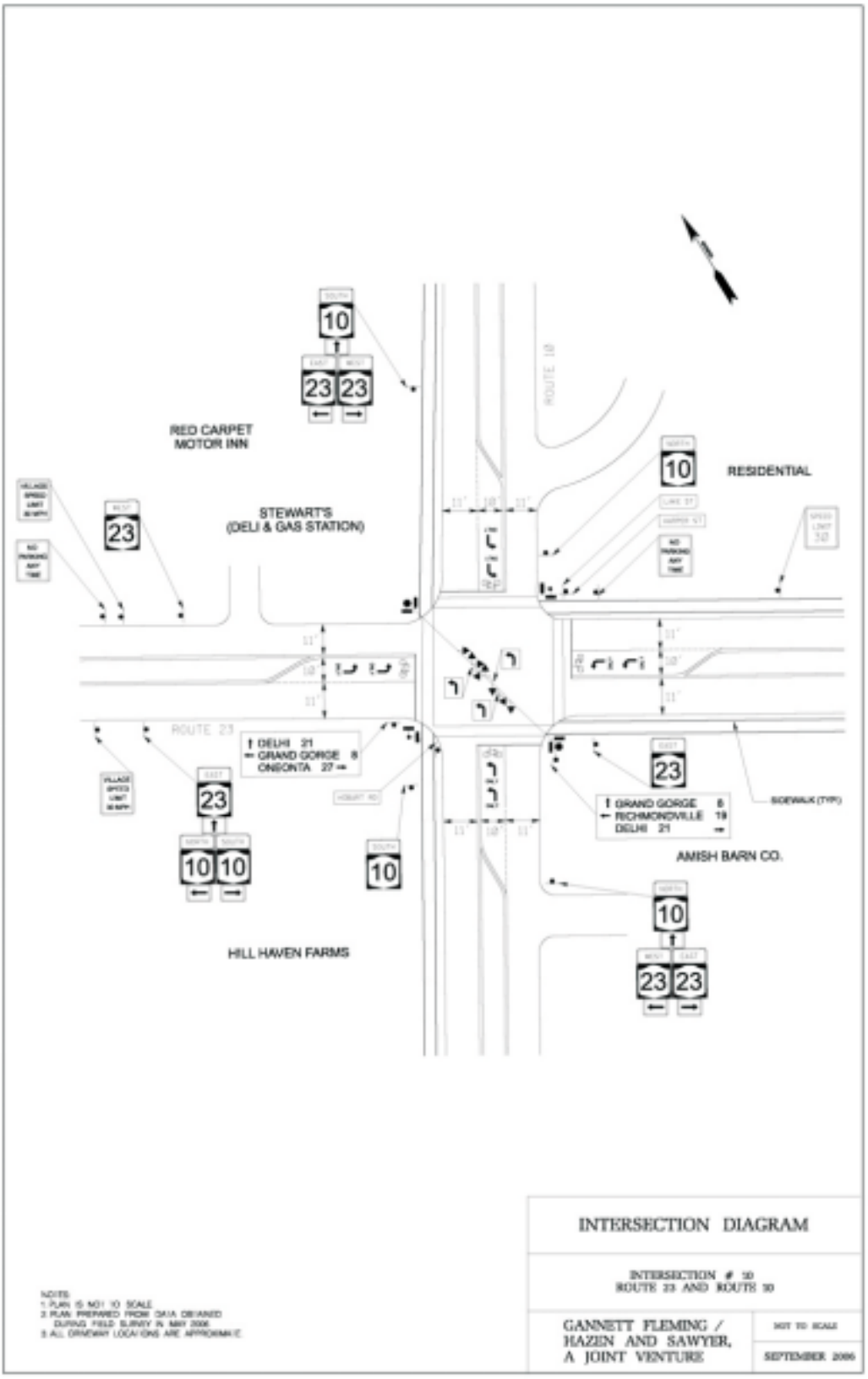
Figure 2.10-14

NYS Route 23 and NYS Route 10 (INTERSECTION #10)

Control:	*Three-phase fully actuated traffic signal control* *NYS Route 23 Exclusive Left-Turn* *-NYS Route 23 Left-Thru-Right* *-NYS Route 10 Left-Thru-Right*
Geometry:	*Four-leg intersection*
Speed Limit:	∉ *30 mph on Route 23* ∉ *30 mph on Route 10*
Roadway Configuration:	∉ *Both NYS Route 23 and NYS Route 10 approaches consists of two lanes - a shared thru/right and an exclusive left turn lane*
Intersection Lighting:	*Utility pole-mounted lights on all approaches*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 581 vehicles*
	PM Peak - Entering Traffic Volume - 763 vehicles

Peak Hour Traffic Volumes





INTERSECTION #10
NYS ROUTE 23 and
NYS ROUTE 10

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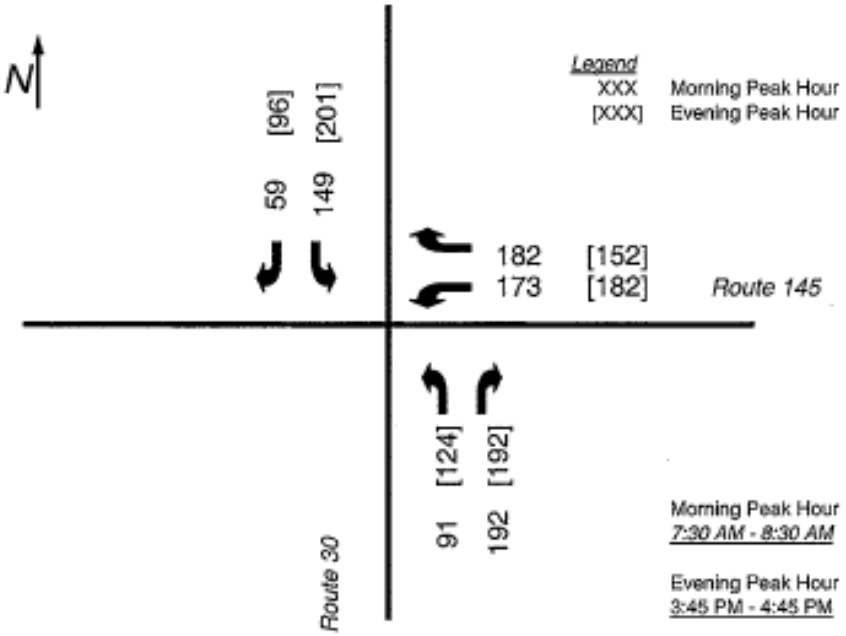
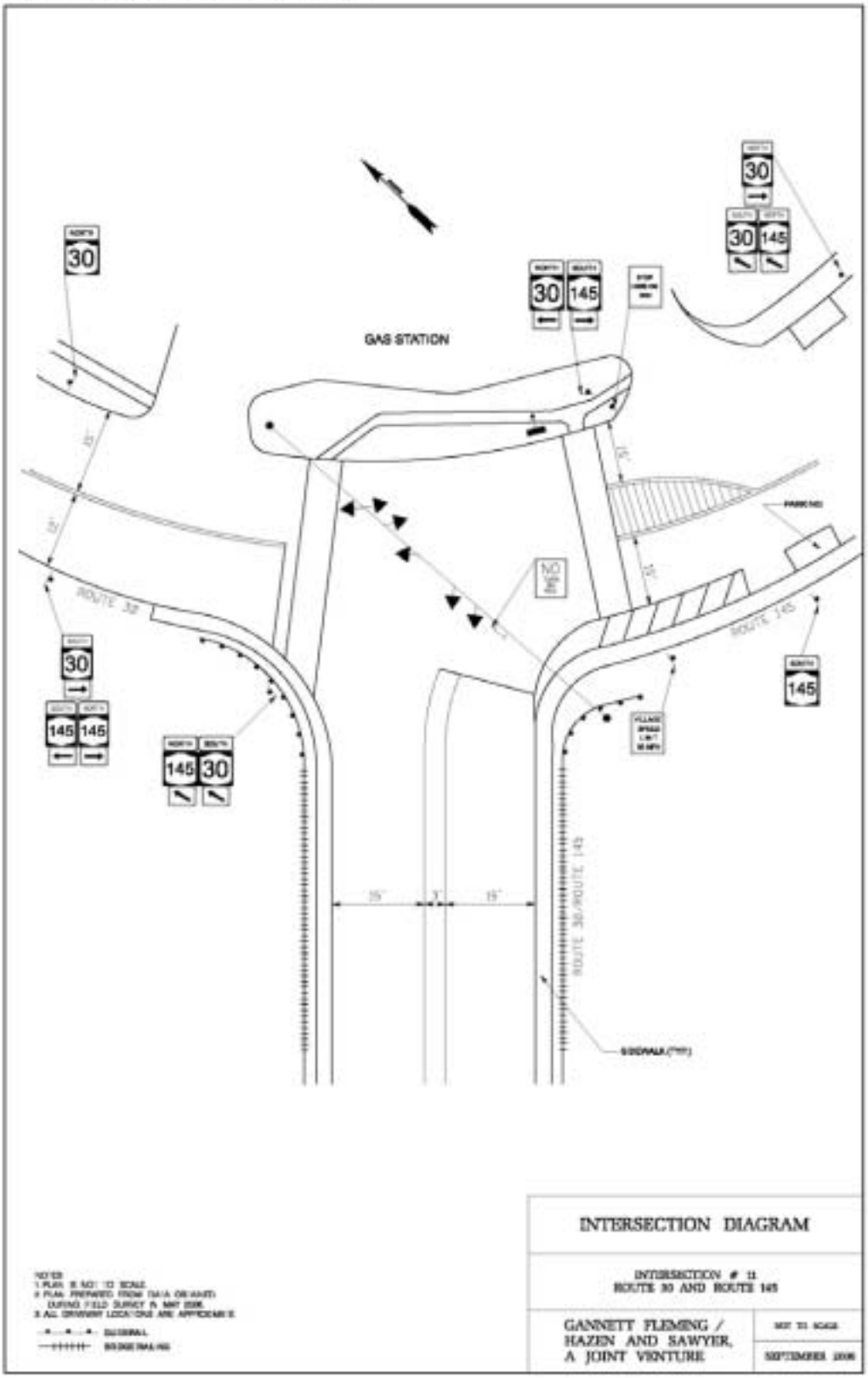
Figure 2.10-15

NYS Route 30 and NYS Route 145 (INTERSECTION #11)

Control:	∉ *Three-phase fully actuated traffic signal control* *-NYS Route 145 NB and SB/NYS Route 30 NB* *-NYS Route 145 SB/NYS Route 30 NB (with Exclusive Lag Left-Turn)* *-NYS Route 30 SB*
Geometry:	*Three-leg intersection*
Speed Limit:	∉ *30 mph on Route 30* ∉ *30 mph on Route 145*
Roadway Configuration:	∉ *Both NYS Route 30 and NYS Route 145 approaches consists of one lane - a shared left/right lane*
Intersection Lighting:	*Utility pole-mounted lights on all approaches. Decorative pedestals for sidewalk lighting on all approaches.*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 846 vehicles*
	PM Peak - Entering Traffic Volume - 947 vehicles

Peak Hour Traffic Volumes





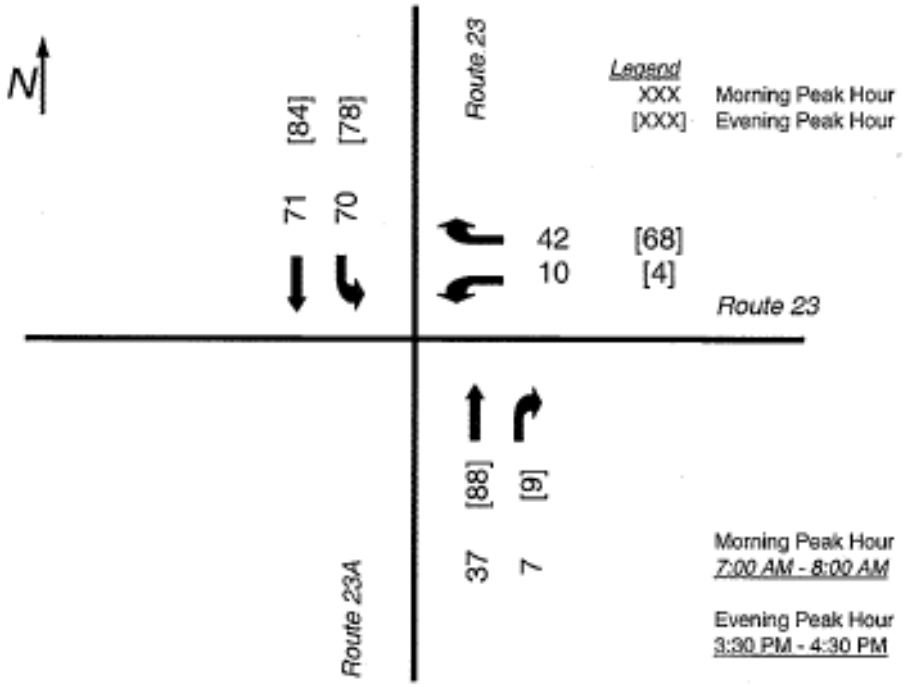
INTERSECTION #11
NYS ROUTE 30 and NYS ROUTE 145

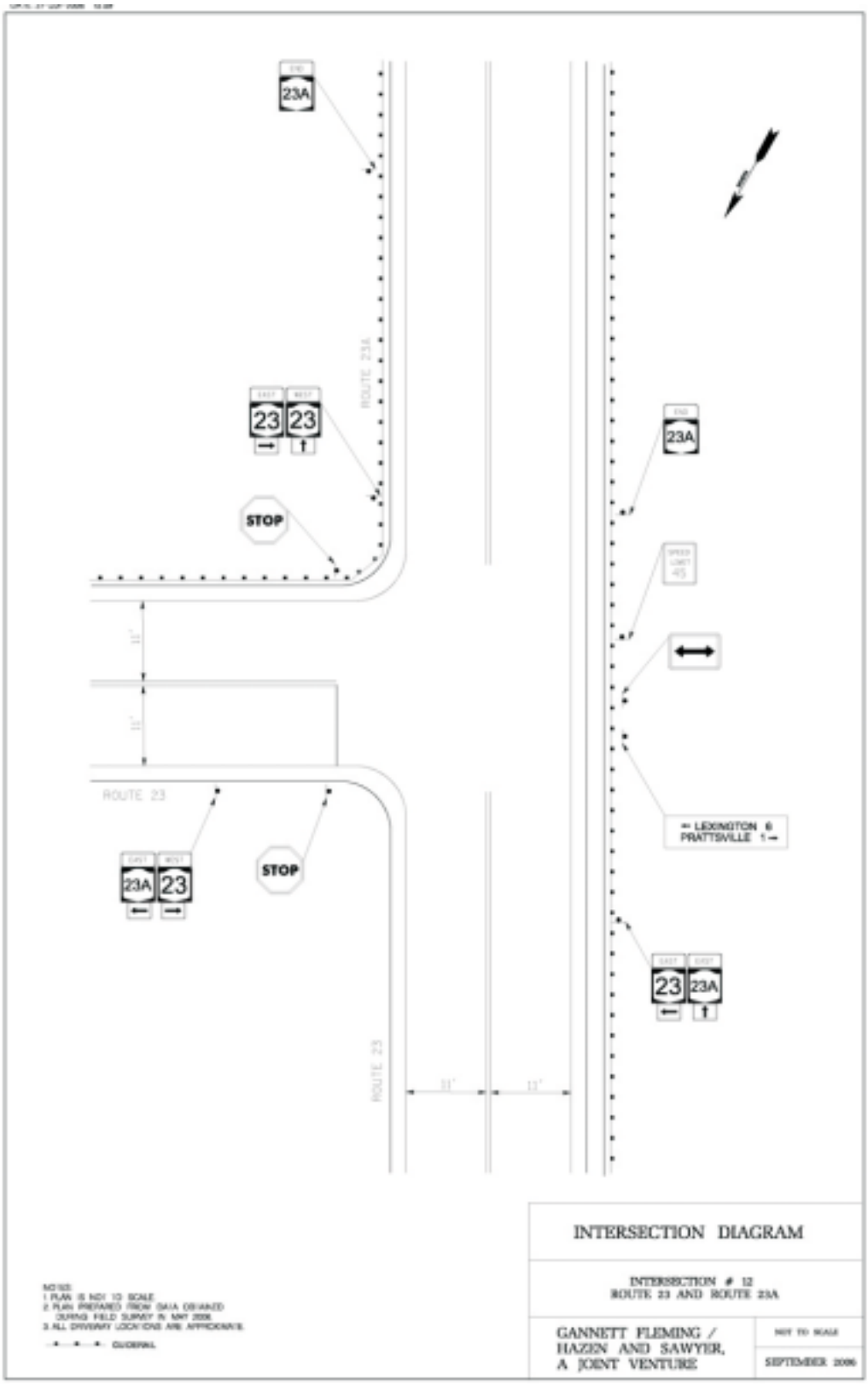
Figure 2.10-16

NYS Route 23 and NYS Route 23A (INTERSECTION #12)

Control:	∉ *Unsignalized; STOP control on NYS Route 23 Westbound approach*
Geometry:	*Three-leg "T" intersection, with NYS Route 23 southbound/ Route 23A northbound as the major roads.*
Speed Limit:	∉ *45 mph on NYS Route 23* ∉ *45 mph on NYS Route 23A*
Roadway Configuration:	∉ *Both NYS Route 23 and NYS Route 23A approaches are single lane*
Intersection Lighting:	*There is no lighting at intersection corners and along the roadways.*
Peak Hour Traffic:	*AM Peak - Entering Traffic Volume – 237 vehicles*
	PM Peak - Entering Traffic Volume – 331 vehicles

Peak Hour Traffic Volumes





INTERSECTION #12
NYS ROUTE 23 and
NYS ROUTE 23A

Figure 2.10-17

2.10.2.6. Capacity and Level of Service Analysis

The existing capacity analysis results indicate that intersections #4 (NYS Route 990V and CR 13), #5 (NYS Route 990V and Gate 16), #6 (NYS Route 990V and Gate 16), #8 (NYS Route 990V and CR 39) and #12 (NYS Route 23 and NYS Route 23A) approaches operate at Level of Service "A" throughout morning and evening peak periods. Level of Service (LOS) is a qualitative measure of the effect of speed and travel time, traffic interruptions, freedom to maneuver, driver control and conveniences, safety, and vehicle operating costs. The LOS ranges from "A" (best condition) through "D".

The following is a summary of the existing capacity analysis results:

- Intersections #1 (NYS Route 30 and NYS Route 23), #3 (NYS Route 30 and NYS Route 990V), #7 (NYS Route 990V and Wyckoff Road), and #9 (NYS Route 23 and CR 7) approaches operate at Level of Service "B" or better throughout morning and evening peak periods.

- Intersection #2 (NYS Route 30 and CR 14) approach operated at Level of Service "A" or "B" throughout morning and evening peak periods.

- Intersection #10 (NYS Route 23 and NYS Route 10-signalized) approach operates at Level of Service "C" or better throughout the morning and evening peak periods.

- Intersection #11 (NYS Route 30 and NYS Route 145 signalized) approach operates at Level of Service "C" during analyzed peak periods except approach NYS Route 30 southbound at Level of Service "D" in the evening peak period.

Table 2.10-11 presents summaries of the results of the existing operational conditions at the study area intersections.

TABLE 2.10-11
EXISTING YEAR EXISTING WEEKDAY AM AND PM PEAK HOUR LEVEL OF SERVICE SUMMARY OF INTERSECTIONS #1-12

INTERSECTION APPROACH		AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
INTERSECTION #1	**NYS ROUTE 30 AND NYS ROUTE 23 UNSIGNALIZED INTERSECTION**						
NYS Route 30 NB	LTR	B	0.30	14.5	C	0.55	21.7
NYS Route 30 SB	LTR	B	0.30	14.2	B	0.19	13.7
NYS Route 23 EB	LTR	A	0.02	7.5	A	0.04	7.6
NYS Route 23 WB	LTR	A	0.04	7.6	A	0.04	7.7
INTERSECTION #2	**NYS ROUTE 30 AND CR 14 (SOUTH GILBOA ROAD) UNSIGNALIZED INTERSECTION**						
NYS Route 30 NB	LT	A	0.01	7.6	A	0.01	7.4
NYS Route 30 SB	Major Street Thru and Right Turns Unimpeded						
CR 14 EB	LR	B	0.03	10.0	A	0.05	9.8
INTERSECTION #3	**NYS ROUTE 30 AND NYS ROUTE 990V UNSIGNALIZED INTERSECTION**						
NYS Route 30 NB	Major Street Thru and Right Turns Unimpeded						
NYS Route 30 SB	LT	A	0.03	7.5	A	0.02	7.6
NYS Route 990V WB	LR	B	0.13	10.6	B	0.17	10.5
INTERSECTION #4	**NYS ROUTE 990V AND CR 13 (STRYKER ROAD) UNSIGNALIZED INTERSECTION**						
NYS Route 990V NB	LT	A	0.01	7.4	A	0.01	7.5
NYS Route 990V SB	Major Street Thru and Right Turns Unimpeded						
CR 13 EB	LR	A	0.06	9.6	A	0.03	9.3
INTERSECTION #5	**NYS ROUTE 990V AND GATE 16 UNSIGNALIZED INTERSECTION**						
NYS Route 990V NB	Major Street Thru and Right Turns Unimpeded						
NYS Route 990V SB	LT	A	0.00	7.4	A	0.00	7.4
Gate 16 WB	LR	A	0.01	9.7	A	0.02	9.1
INTERSECTION #6	**NYS ROUTE 990V AND CR 17(FLAT CREEK ROAD) UNSIGNALIZED INTERSECTION**						
NYS Route 990V NB	LT	A	0.00	7.4	A	0.00	7.4
NYS Route 990V SB	Major Street Thru and Right Turns Unimpeded						
CR 17 EB	LR	A	0.06	9.2	A	0.07	9.2
INTERSECTION #7	**NYS ROUTE 990V AND WYCKOFF ROAD UNSIGNALIZED INTERSECTION**						
NYS Route 990V NB	LT	A	0.05	7.6	A	0.02	7.4
NYS Route 990V SB	Major Street Thru and Right Turns Unimpeded						
Wyckoff Road EB	LR	A	0.07	9.6	B	0.16	10.1

INTERSECTION #8	**NYS ROUTE 990V AND CR 39 (PRATTSVILLE ROAD) UNSIGNALIZED INTERSECTION**						
NYS Route 990V NB	Major Street Thru and Right Turns Unimpeded						
NYS Route 990V SB	LT	A	0.00	7.3	A	0.01	7.5
CR 39 WB	L	A	0.07	9.6	A	0.06	9.8
	R	A	0.01	8.6	A	0.01	8.8
INTERSECTION #9	**NYS ROUTE 23 AND CR 7 (HYLAN BOULEVARD) UNSIGNALIZED INTERSECTION**						
CR 7 SB	LR	B	0.06	10.4	B	0.12	11.2
NYS Route 23 EB	LT	A	0.01	7.5	A	0.01	7.7
NYS Route 23 WB	Major Street Thru and Right Turns Unimpeded						
INTERSECTION #10	**NYS ROUTE 23 AND NYS ROUTE 10 SIGNALIZED INTERSECTION**						
NYS Route 23 EB	L	A	0.01	8.2	A	0.04	8.8
	TR	C	0.34	20.9	C	0.38	21.3
NYS Route 23 WB	L	A	0.08	8.7	A	0.10	8.9
	TR	C	0.26	20.1	C	0.45	22.1
NYS Route 10 NB	L	C	0.08	21.8	C	0.11	22.1
	TR	C	0.19	22.7	C	0.29	23.7
NYS Route 10 SB	L	C	0.26	23.5	C	0.24	23.3
	TR	C	0.17	22.6	C	0.11	22.0
Intersection Total	**-**	**C**	**-**	**20.6**	**C**	**-**	**21.1**
INTERSECTION #11	**NYS ROUTE 30 AND NYS ROUTE 145 SIGNALIZED INTERSECTION**						
NYS Route 30 EB	LT	A	0.49	9.5	A	0.48	9.4
NYS Route 145 WB	TR	C	0.53	24.2	C	0.52	23.9
NYS Route 30 SB	L	C	0.40	32.5	D	0.57	35.3
	R	B	0.10	14.1	B	0.14	14.4
Intersection Total	**-**	**B**	**-**	**19.1**	**C**	**-**	**20.5**
INTERSECTION #12	**NYS ROUTE 23 AND NYS ROUTE 23A UNSIGNALIZED INTERSECTION**						
NYS Route 23A NB	Major Street Thru and Right Turns Unimpeded						
NYS Route 23 SB	LT	A	0.05	7.5	A	0.07	7.6
NYS Route 23 WB	LR	A	0.09	9.4	A	0.12	9.5

Notes: The volume to capacity ratio (v/c) is the ratio of total traffic volume in passenger car equivalents (PCE) to the modeled capacity. A v/c of 1.0 means that the intersection is handling its capacity. A v/c of 0.9 is considered 'congested.' The v/c is used to predict the delay a vehicle experiences passing through the intersection.

2.10.2.7. Alternate Transportation Modes

The Dam and immediate surrounding area are accessible via air and bicycle/pedestrian activity as alternative modes of transportation in addition to vehicular transportation. Currently there are no bus, rail transit, or paratransit services provided in the surrounding Dam area. In addition, the study area does not contain any major or primary commercial waterways, ports or rivers that would be affected by the proposed project.

Air Transportation

There are two airports in the vicinity including Maben Airport and Albany International Airport. Maben Airport is located in Lexington Township (approximately eight miles southeast of the Dam site). It is a small, privately owned airport open to the public. It is not anticipated that either of these airport facilities would be impacted by the proposed project.

Pedestrian/ Bicycle Activity

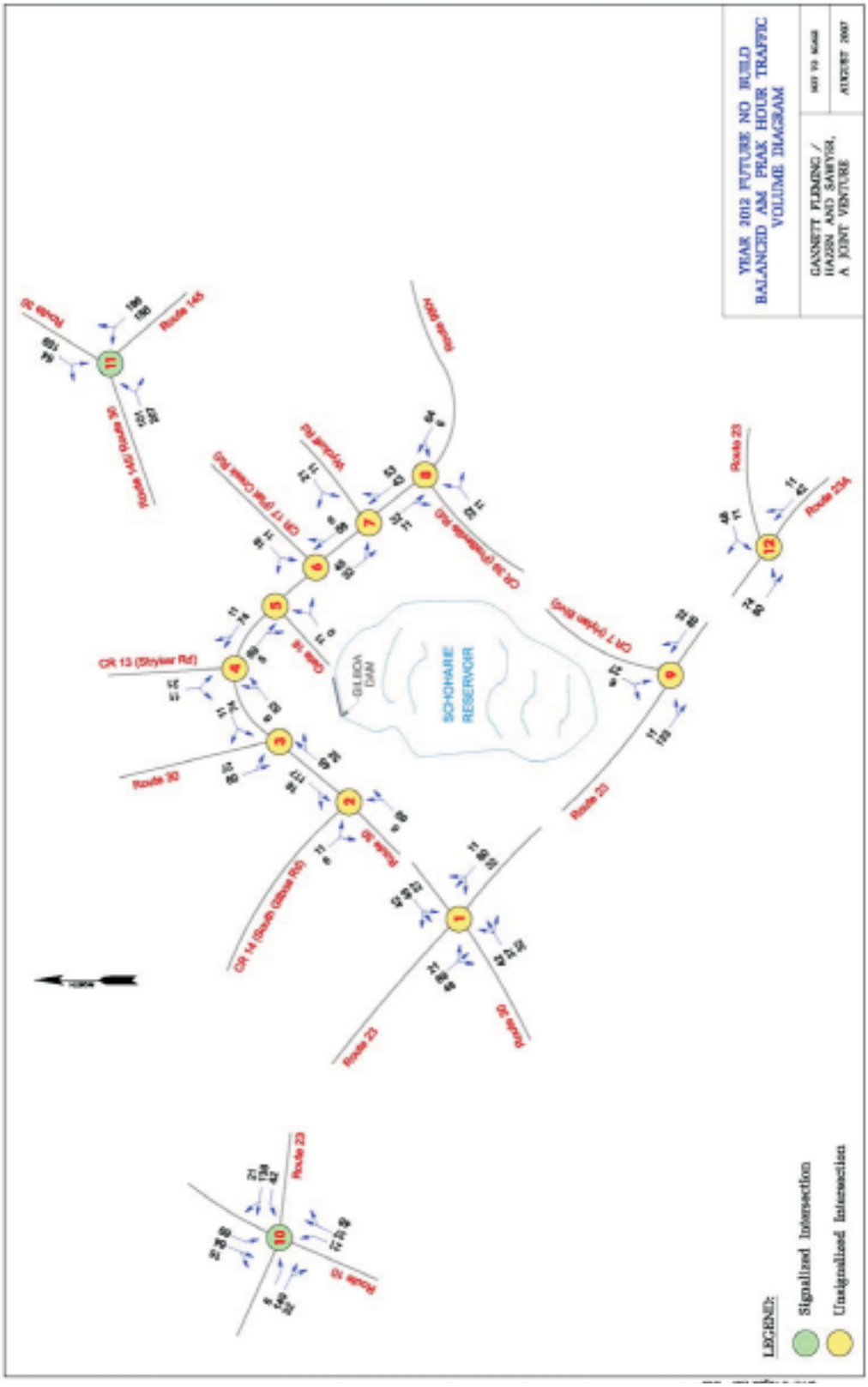
Pedestrian and bicycle activity was observed to be minimal in the immediate vicinity of the Dam site and the surrounding area. Most pedestrian activity that existed was associated with small retail businesses in the central business districts of Prattsville, Grand Gorge, Stamford, and Middleburgh. Pedestrian activity was also observed along Wyckoff Road in the vicinity of the Gilboa-Conesville school.

2.10.3. Future Without the Project

To properly assess future transportation effects, anticipated future traffic growth without the project was considered. The Future Without the Project conditions account for general background traffic growth through the study area, plus trip-making anticipated to be generated by other major proposed projects that are also likely to be in place by the Reconstruction Peak Year.

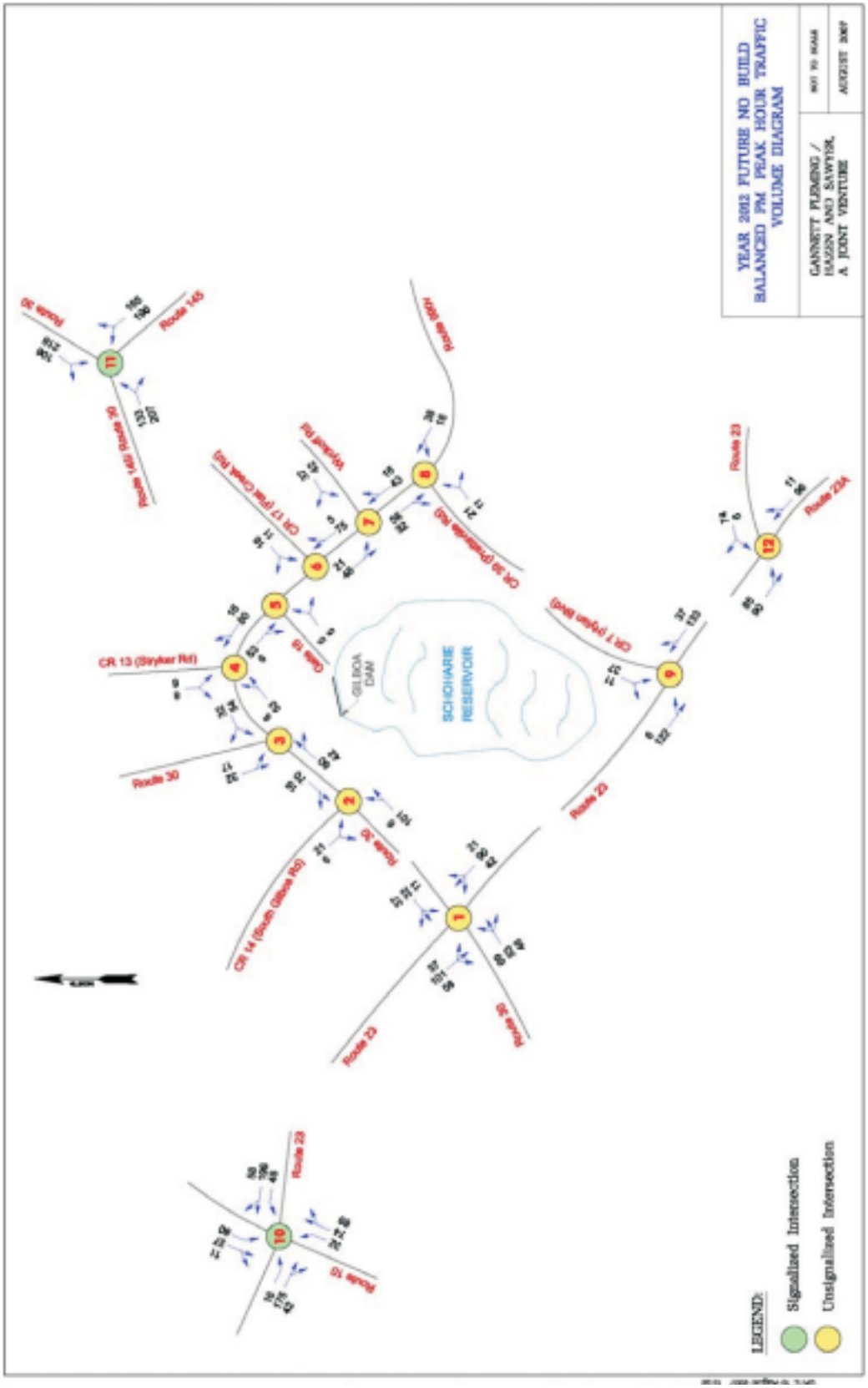
Based on the guidance contained in the CEQR Technical Manual and recommendations by NYSDOT and NYCDEP, the annual background growth rate to be utilized in the project study area is 1%. This growth rate was applied to account for the general growth in the background traffic due to development projects and normal increases in driving trends from the period between the existing conditions and the beginning of anticipated reconstruction at the Dam work sites and reconstruction staging areas. This growth rate was applied to all the intersection movements throughout the study area. The analysis assumed that the 1% growth rate included similar growth in the current proportion of all the types of vehicles - cars, light trucks, heavy trucks and buses. Based upon discussions with NYSDOT planning officials, it was determined that no new major development projects are planned in the study area.

Reconstruction work is currently scheduled to begin in late 2008 and conclude in 2014. Within the proposed project's reconstruction period, it was determined that Reconstruction Peak Year would be the appropriate peak reconstruction year for the traffic analyses. The 1% growth, network-wide, would account for development, land use changes, and increases in auto usage and truck activity between the Existing Year and Reconstruction Peak Year. The growth in background traffic using the recommended 1% growth rate was added to the existing peak hour volume traffic. The volumes were balanced and rounded to create a Future Without the Project peak hour volume scenario for the study area roadway network. These volumes are exhibited in Figure 2.10-18 and Figure 2.10-19.



FUTURE WITHOUT
THE PROJECT
AM PEAK HOUR TRAFFIC VOLUME

Figure 2.10-18



FUTURE WITHOUT THE PROJECT PM PEAK HOUR TRAFFIC VOLUME

Figure 2.10-19

2.10.3.1. Capacity and Level of Service Analysis

Future Without the Project traffic conditions were analyzed in order to assess impacts that the general growth in the background traffic would have on the existing roadway network. The traffic volumes used are those that were provided in Figures 2.10-18 and 2.10-19. Intersection #1 thru #12 were analyzed and presented below in a summary table of all intersections Table 2.10-12.

The capacity analyses results indicate that unsignalized intersection approaches #4, #5, #6, #8, and #12 operate at Level of Service "A" throughout morning and evening peak periods.

The capacity analyses results indicate that intersection approaches #1 (except NYS Route 30 northbound approach that operates at LOS "C" in evening peak period), #2, #3, #7 and #9 continue to operate at Level of Service "B" or better throughout morning and evening peak periods.

Signalized intersection approach #10 was analyzed by using the existing signal timing schedule provided by NYSDOT with a 38.6 to 92.6 seconds cycle length range operates well at Level of Service "C" during analyzed peak periods. The capacity analyses results indicate that intersection approach #10 operates at Level of Service "C" or better throughout morning and evening peak periods.

Signalized intersection approach #11 was analyzed by using the existing signal timing schedule provided by NYSDOT with a 42.2 to 101.2 seconds cycle length range continues to operates at Level of Service "C" or better during analyzed peak periods. This intersection approach #11 is projected to continue to operate at Level of Service "C" or better throughout morning and evening peak periods. The Route 30 southbound left-turn movement is projected to operate at Level of Service "D" in evening peak period.

TABLE 2.10-12
FUTURE WITHOUT THE PROJECT WEEDAY AM AND PM PEAK HOUR LEVEL OF SERVICE
SUMMARY OF INTERSECTIONS #1-12

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #1 - NYS ROUTE 30 AND NYS ROUTE 23 UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 30 NB	LTR	B	0.30	14.5	C	0.55	21.7	C	0.33	15.3	C	0.61	25.0
NYS Route 30 SB	LTR	B	0.30	14.2	B	0.19	13.7	B	0.33	15.0	B	0.22	14.5
NYS Route 23 EB	LTR	A	0.02	7.5	A	0.04	7.6	A	0.02	7.5	A	0.04	7.6
NYS Route 23 WB	LTR	A	0.04	7.6	A	0.04	7.7	A	0.04	7.6	A	0.04	7.7
		INTERSECTION #2 - NYS ROUTE 30 AND CR 14 (SOUTH GILBOA ROAD) UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 30 NB	LT	A	0.01	7.6	A	0.01	7.4	A	0.01	7.6	A	0.01	7.5
NYS Route 30 SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 14 EB	LR	B	0.03	10.0	A	0.05	9.8	B	0.04	10.2	A	0.06	9.9
		INTERSECTION #3 - NYS ROUTE 30 AND NYS ROUTE 990V UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 30 NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 30 SB	LT	A	0.03	7.5	A	0.02	7.6	A	0.03	7.5	A	0.02	7.7
Route 990V WB	LR	B	0.13	10.6	B	0.17	10.5	B	0.14	10.8	B	0.18	10.7
		INTERSECTION #4 - NYS ROUTE 990V AND CR 13 (STRYKER ROAD) UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 990V NB	LT	A	0.01	7.4	A	0.01	7.5	A	0.02	7.4	A	0.02	7.5
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 13 EB	LR	A	0.06	9.6	A	0.03	9.3	A	0.07	9.7	A	0.03	9.5

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #5 - ROUTE 990V AND GATE 16 UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 990V NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 990V SB	LT	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4
GATE 16 WB	LR	A	0.01	9.7	A	0.02	9.1	A	0.02	9.8	A	0.02	9.1
		INTERSECTION #6 - NYS ROUTE 990V AND CR 17 (FLAT CREEK ROAD) UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 990V NB	LT	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 17 EB	LR	A	0.06	9.2	A	0.07	9.2	A	0.06	9.2	A	0.07	9.3
		INTERSECTION #7 - NYS ROUTE 990V AND WYCKOFF ROAD UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 990V NB	LT	A	0.05	7.6	A	0.02	7.4	A	0.05	7.6	A	0.03	7.4
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
Wyckoff Road EB	LR	A	0.07	9.6	B	0.16	10.1	A	0.07	9.8	B	0.17	10.2
		INTERSECTION #8 - NYS ROUTE 990V AND CR 39 (PRATTSVILLE ROAD) UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 990V NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 990V SB	LT	A	0.00	7.3	A	0.01	7.5	A	0.00	7.3	A	0.01	7.5
CR 39 WB	L	A	0.07	9.6	A	0.06	9.8	A	0.07	9.7	A	0.06	9.9
	R	A	0.01	8.6	A	0.01	8.8	AF	0.01	8.6	A	0.01	8.8
		INTERSECTION #9 - NYS ROUTE 23 AND CR 7 (HYLAN BOULEVARD) UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
CR 7 SB	LR	B	0.06	10.4	B	0.12	11.2	B	0.07	10.6	B	0.13	11.6
NYS Route 23 EB	LT	A	0.01	7.5	A	0.01	7.7	A	0.01	7.6	A	0.02	7.7
NYS Route 23 WB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #10 - NYS ROUTE 23 AND NYS ROUTE 10 SIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 23 EB	L	A	0.01	8.2	A	0.04	8.8	A	0.02	8.3	A	0.04	9.0
	TR	C	0.34	20.9	C	0.38	21.3	C	0.36	21.1	C	0.40	21.5
NYS Route 23 WB	L	A	0.08	8.7	A	0.10	8.9	A	0.09	8.8	A	0.11	9.0
	TR	C	0.26	20.1	C	0.45	22.1	C	0.27	20.2	C	0.48	22.4
NYS Route 10 NB	L	C	0.08	21.8	C	0.11	22.1	C	0.08	21.8	C	0.12	22.2
	TR	C	0.19	22.7	C	0.29	23.7	C	0.20	22.8	C	0.31	23.8
NYS Route 10 SB	L	C	0.26	23.5	C	0.24	23.3	C	0.28	23.6	C	0.26	23.5
	TR	C	0.17	22.6	C	0.11	22.0	C	0.19	22.7	C	0.11	22.0
Intersection Total		**C**	**-**	**20.6**	**C**	**-**	**21.1**	**C**	**-**	**20.7**	**C**	**-**	**21.3**
		INTERSECTION #11 - NYS ROUTE 30 AND NYS ROUTE 145 SIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 30 EB	LT	A	0.49	9.5	A	0.48	9.4	B	0.53	10.1	A	0.53	10.0
NYS Route 145 WB	TR	C	0.53	24.2	C	0.52	23.9	C	0.57	24.8	C	0.55	24.6
NYS Route 30 SB	L	C	0.40	32.5	D	0.57	35.3	C	0.43	32.8	D	0.61	36.3
	R	B	0.10	14.1	B	0.14	14.4	B	0.11	14.2	B	0.14	14.5
Intersection Total		**B**	**-**	**19.1**	**C**	**-**	**20.5**	**B**	**-**	**19.6**	**C**	**-**	**21.1**
		INTERSECTION #12 - NYS ROUTE 23 AND NYS ROUTE 23A UNSIGNALIZED INTERSECTION											
		Existing Year						**Future Without Reconstruction**					
NYS Route 23A NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 23 SB	LT	A	0.05	7.5	A	0.07	7.6	A	0.06	7.5	A	0.07	7.6
NYS Route 23 WB	LR	A	0.09	9.4	A	0.12	9.5	A	0.10	9.5	A	0.13	9.6

2.10.4. Temporary Reconstruction Impacts

The main objective of this traffic analysis is to determine projected traffic conditions during the Reconstruction Peak Year of the study area intersections that would process the truck and workforce traffic increases resulting from the proposed Dam reconstruction project. The peak year of reconstruction conditions are compared with the Future Without the Project scenario to determine the potential for impact on the study area intersections and need for any offset measures.

The traffic volume of trips generated by proposed reconstruction activities at the Dam site was determined from projected truck traffic activities and workforce involved in reconstruction activities. The workforce is estimated to be a maximum eighty (80) workers during the first shift and forty (40) workers during the second shift, two (2) shifts a day for a six (6) day work-week (Monday to Saturday). Construction workers often carpool; however, to provide a more conservative analysis, no carpooling was assumed.

A maximum of twenty (20) truck round-trips are projected to occur during the normal eight-hour daytime shift. For the purpose of this analysis no nighttime (second shift) truck traffic is anticipated to occur. For the reasonable worst case scenario analysis, it is assumed that twenty (20) inbound truck trips would occur during the morning peak hour and twenty (20) outbound truck trips would occur during evening peak hour.

In addition to the delivery trucks, a maximum of twelve (12) hauling truck round trips could potentially travel on NYS Route 990V between Gate 16 and Gate 18 to transport construction-generated spoils. The hauling trucks would be required to travel on NYS Route 990V if a temporary internal bridge is not built within the Dam project site to cross the Schoharie Creek. The hauling trucks are anticipated to operate during the first and second shift. It is important to note that the hauling trucks would only travel through the NYS Route 990V -Gate 16 study intersection. A separate analysis was performed for the NYS Route 990V -Gate 16 intersection that included the hauling trucks.

The traffic data indicates that two distinct traffic peak hours occur during the morning and evening peak periods: a “street peak hour” and a “site peak hour.” The street peak hour represents the hour when traffic volumes on the overall roadway network are at their highest levels. The site peak hour represents the highest traveled hour when construction vehicles and workforce travel to and from the Dam reconstruction site. In order to provide the worst reasonable case scenario analysis the operating conditions for the study intersections were analyzed by superimposing the site peak hour volumes onto the street peak hour volumes.

The following sections describe the temporary reconstruction-related trip-generation characteristics of the proposed reconstruction project.

Table 2.10-13 shows the overall and peak travel hour's truck traffic activity and workforce activity for the reconstruction site.

TABLE 2.10-13
TRIP GENERATION
(RECONSTRUCTION PEAK YEAR)

TRIP GENERATION	2-Shifts				AM PEAK				PM PEAK			
	Trucks		SUV's and Autos		Trucks		SUV's and Autos		Trucks		SUV's and Autos	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Truck Traffic	20	20	-	-	20	-	-	-	-	20	-	-
Workforce	-		120	120	-	-	80	-	-		40	80
Total Vehicle Trips	280				100				140			

Since the Dam reconstruction site would be operational for 2-shifts a day, the total generated trips during the morning peak period is projected to be 100 vehicles per hour and the total generated trips during evening peak travel period is projected to be 140 vehicles per hour.

2.10.4.1. Trip Origins and Distributions

Construction trucks arrival and departure patterns were determined based on active sand and gravel operations in close proximity to the site (obtained from GIS data of active mines in Year 1998 with production greater than 30,000 tons and surveyed by the Minerals Information Team of the US Geological Survey) and review of the existing roadway network. Based on field verification, the truck routes were assumed to be major state roads within the study area. Workforce arrival and departure patterns were developed from anticipated workforce origin locations, lodgings locations, population density information in the area and their anticipated travel routes.

Construction trucks would enter the reconstruction project site via NYS Route 990V. The predominant routes that are identified to be used by truck traffic are NYS Route 30A, NYS Route 30, NYS Route 145 for trips that originate north of the Dam and/or utilize I-88. NYS Route 23, NYS Route 23A and NYS Route 30 would be used for trips that originate southeast of the Dam and/or utilize I-87. NYS Route 10, NYS Route 23 and NYS Route 30 would most likely be used for trips that originate west of the Dam and/or utilize I-88. It should be noted that no construction truck traffic is projected to travel adjacent to the Gilboa/Conesville School.

Table 2.10-14 and Table 2.10-15 and Figure 2.10-20 and Figure 2.10-21 show projected truck and workforce traffic origin locations.

TABLE 2.10-14
TRUCK TRAFFIC ORIGIN LOCATION
(RECONSTRUCTION PEAK YEAR)

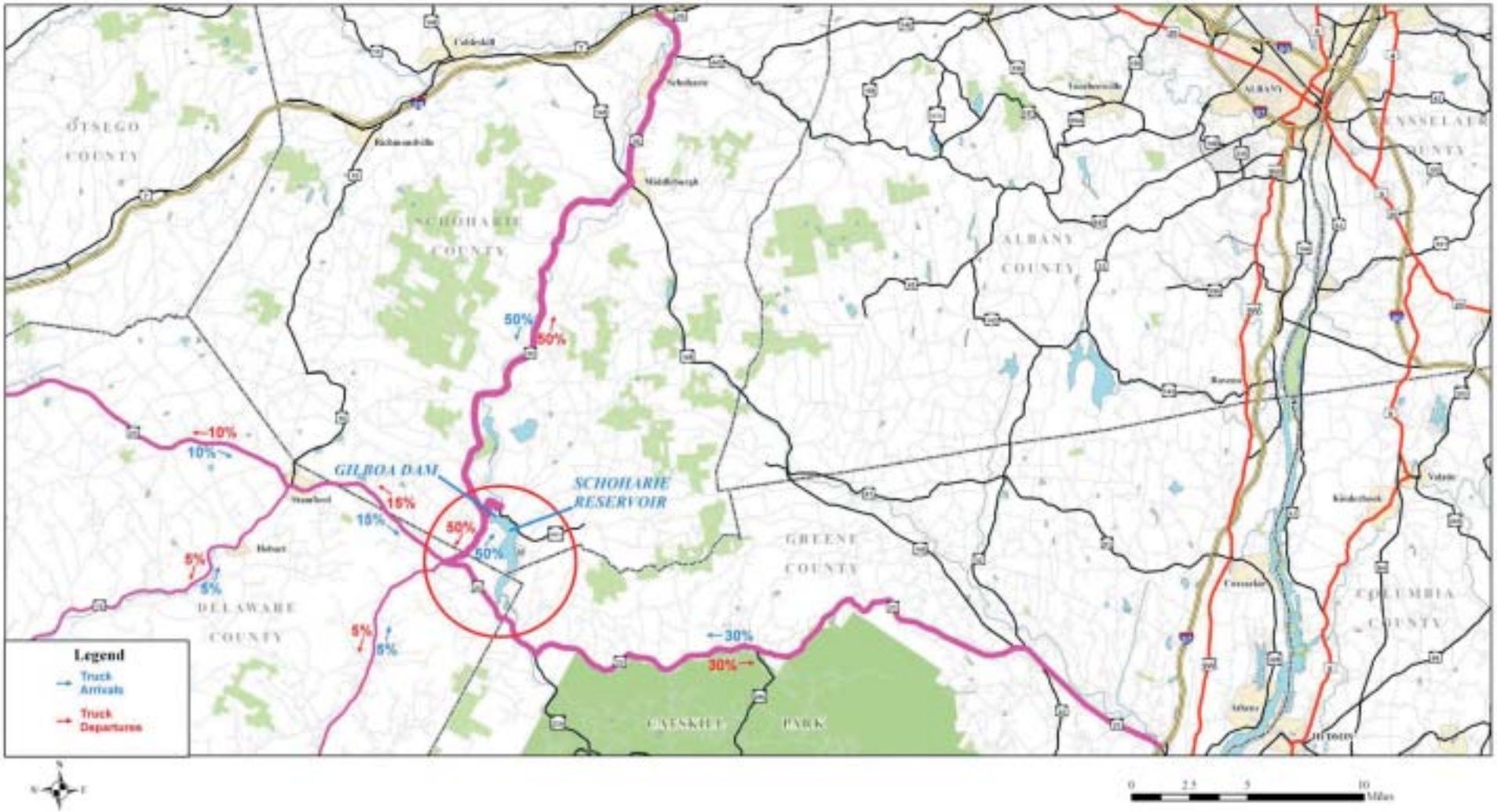
ORIGIN LOCATION	Percent
North of Gilboa Dam	50 %
Southeast of Gilboa Dam	30 %
West of Gilboa Dam	20 %
Total	**100 %**

TABLE 2.10-15
WORKFORCE TRAFFIC ORIGIN LOCATION
(RECONSTRUCTION PEAK YEAR)

ORIGIN LOCATION	Percent
North of Gilboa Dam	45 %
Southeast of Gilboa Dam	40%
West of Gilboa Dam	15 %
Total	**100 %**

2.10.4.2. Study Area Traffic Assignments

The site-generated traffic volumes were distributed throughout the study area using the most logical routes. As stated previously, all construction truck traffic was assigned to state routes. Generated traffic assignments are exhibited in Figure 2.10-22 through Figure 2.10-27. (Figures 2.10.22B, 2.10-23B, 2.10-26B and 2.10-27B exhibit the generated traffic assignments without the temporary internal bridge in place and includes the hauling trucks). The assigned site-generated volumes were then added to the Future Without the Project peak hour volumes to create a peak year of reconstruction/peak hour volume scenario for the study area roadway network. The Future Without the Project peak hour volumes are exhibited in Figure 2.10-18 and Figure 2.10-19. It should be noted that the reconstruction project site would have adequate parking onsite and street parking would not be required.



H&S File: 94809310\7-08-08\Mp1-Workforce & Construction_21.cdr

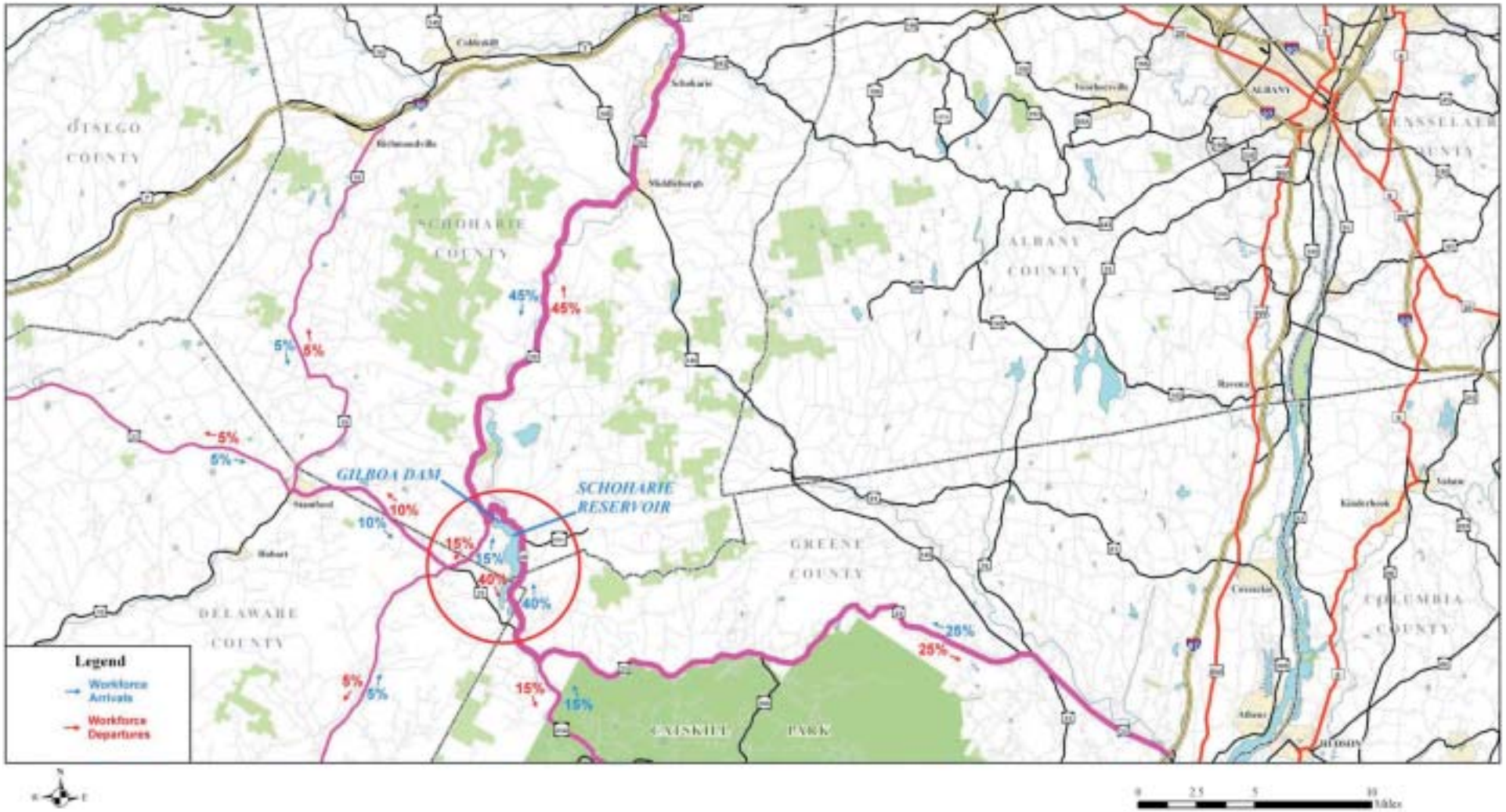
Construction Trucks Arrival and Departure Patterns and Projected Trip Generation Percentage Distribution

CAT 211 Engineering Design Services and Design During Construction for the Reconstruction of Catskill Watershed Dams and Associated Facilities

Gannett Fleming HAZEN AND SAWYER Environmental Engineers & Scientists

A Joint Venture

Figure 2.10-20



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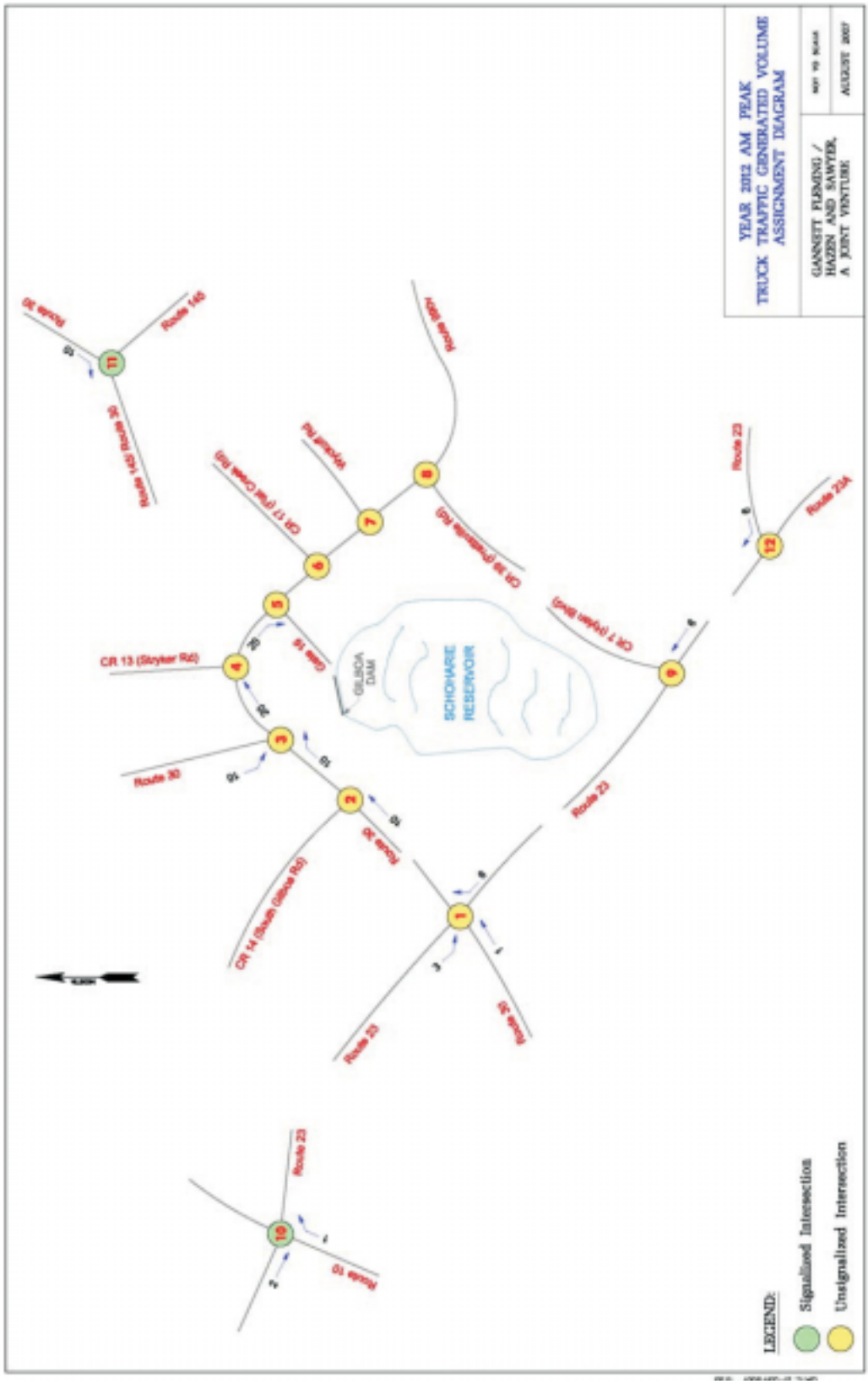
Workforce Arrival and Departure Patterns and Projected Trip Generation Percentage Distribution

CAT 211 Engineering Design Services and Design During Construction for the Reconstruction of Catskill Watershed Dams and Associated Facilities

Cornell Fleming HAZEN AND SAWYER Environmental Engineers & Scientists

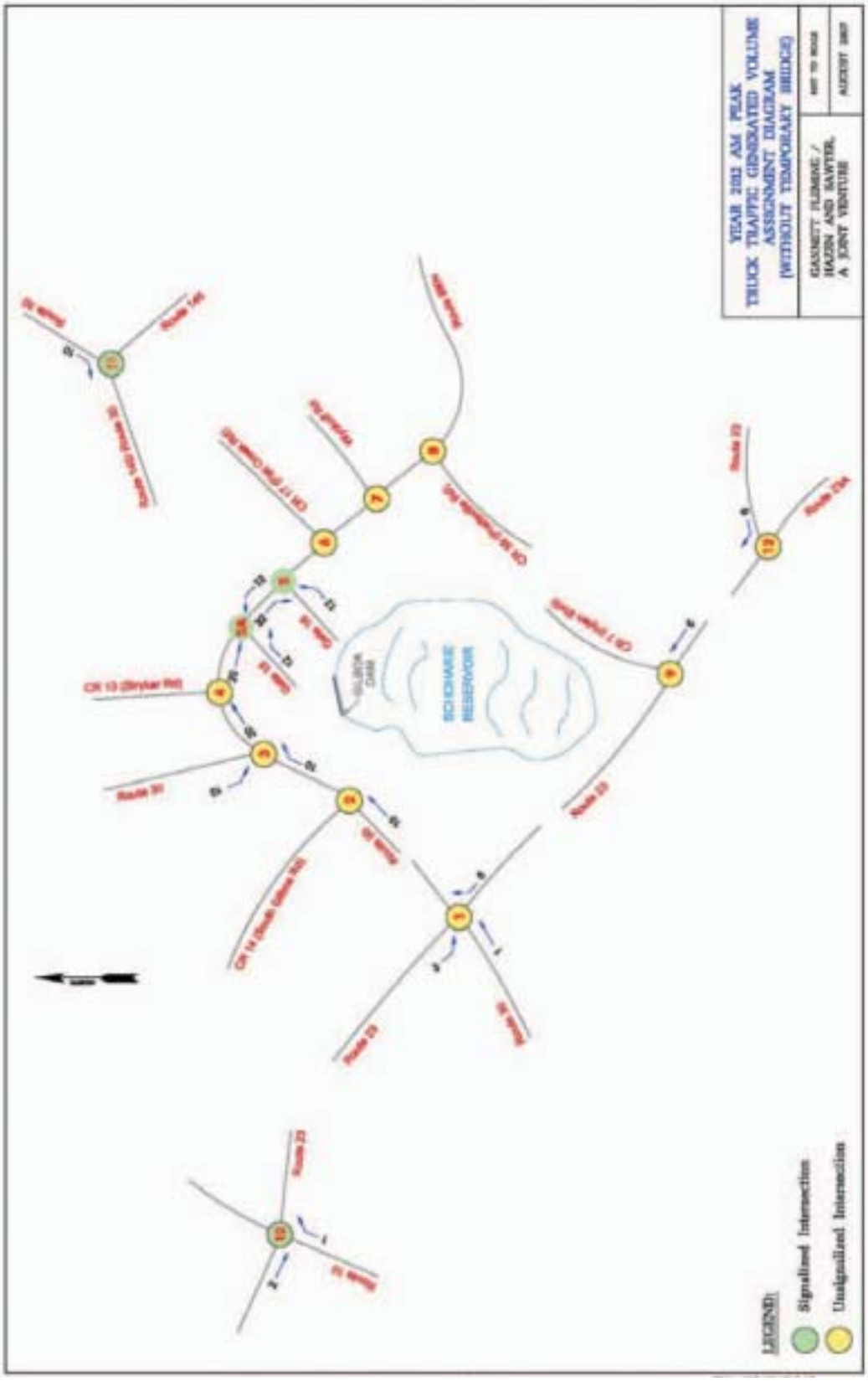
A Joint Venture

Figure 2.10-21



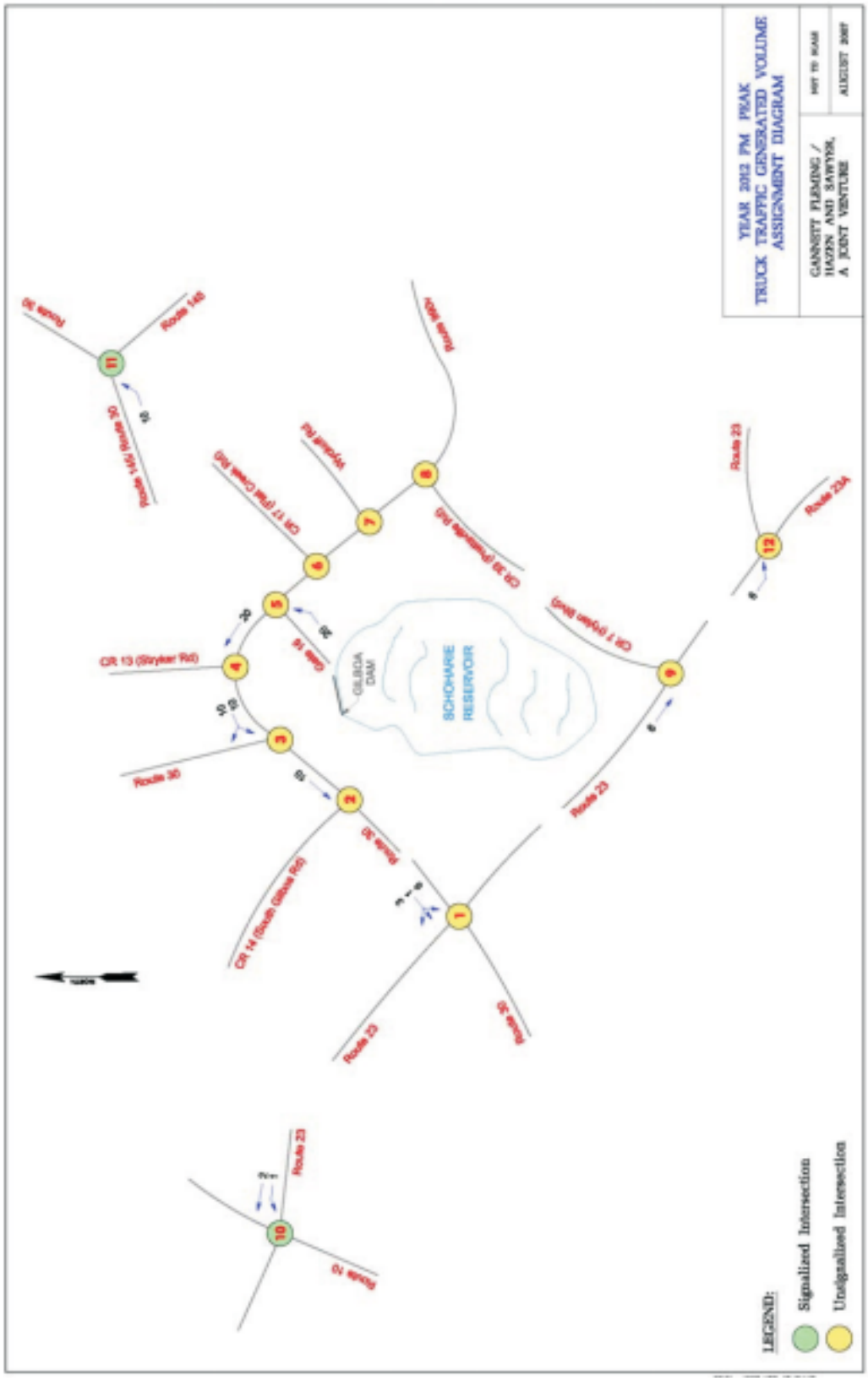
RECONSTRUCTION PEAK YEAR AM GENERATED TRUCK TRAFFIC ASSIGNMENT

Figure 2.10-22



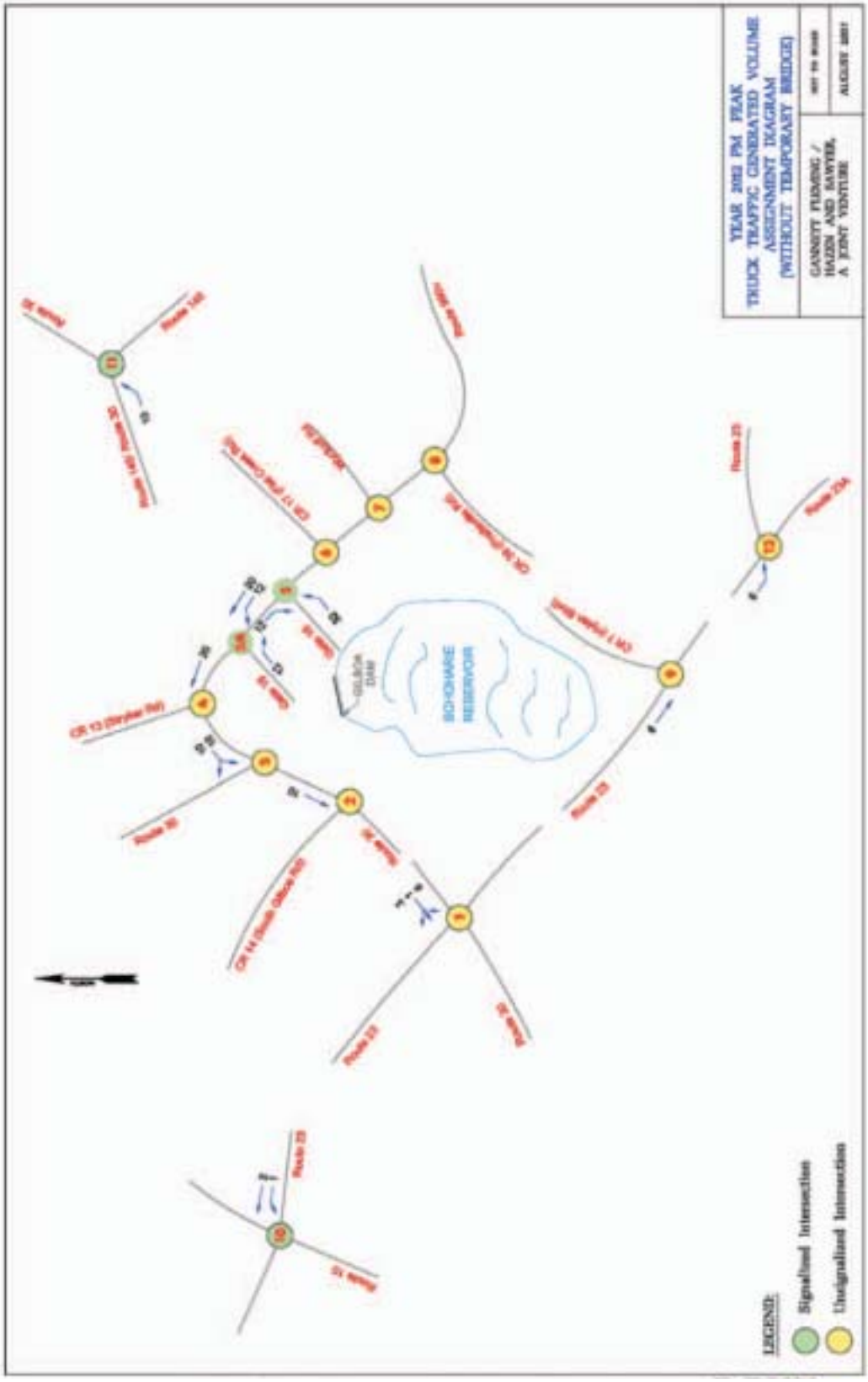
RECONSTRUCTION PEAK YEAR AM PEAK GENERATED TRUCK TRAFFIC ASSIGNMENT (WITHOUT TEMPORARY INTERNAL BRIDGE)

Figure 2.10-22B



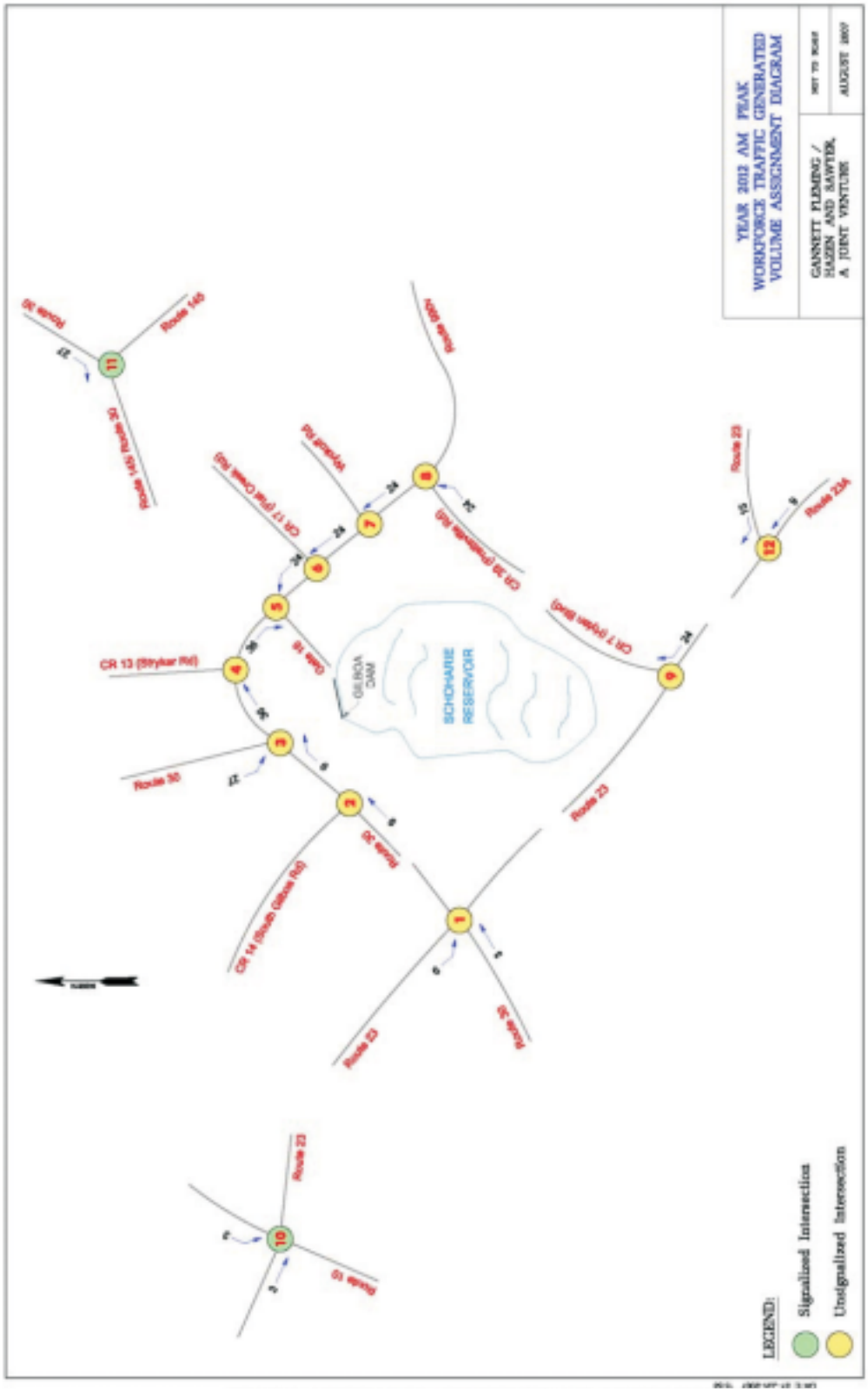
RECONSTRUCTION PEAK YEAR PM PEAK GENERATED TRUCK TRAFFIC ASSIGNMENT

Figure 2.10-23



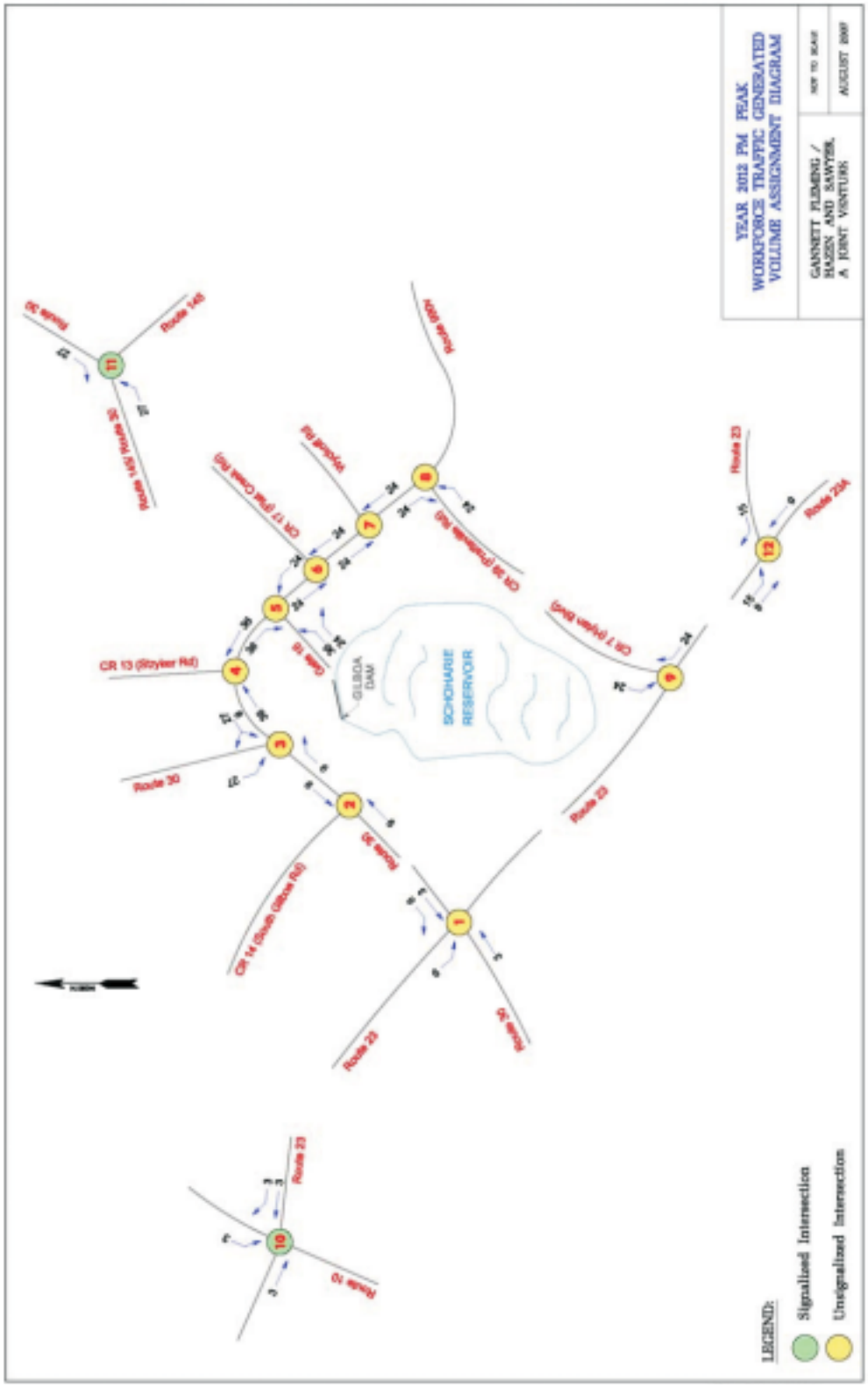
RECONSTRUCTION PEAK YEAR PM PEAK GENERATED TRUCK TRAFFIC ASSIGNMENT (WITHOUT TEMPORARY INTERNAL BRIDGE)

Figure 2.10-23B



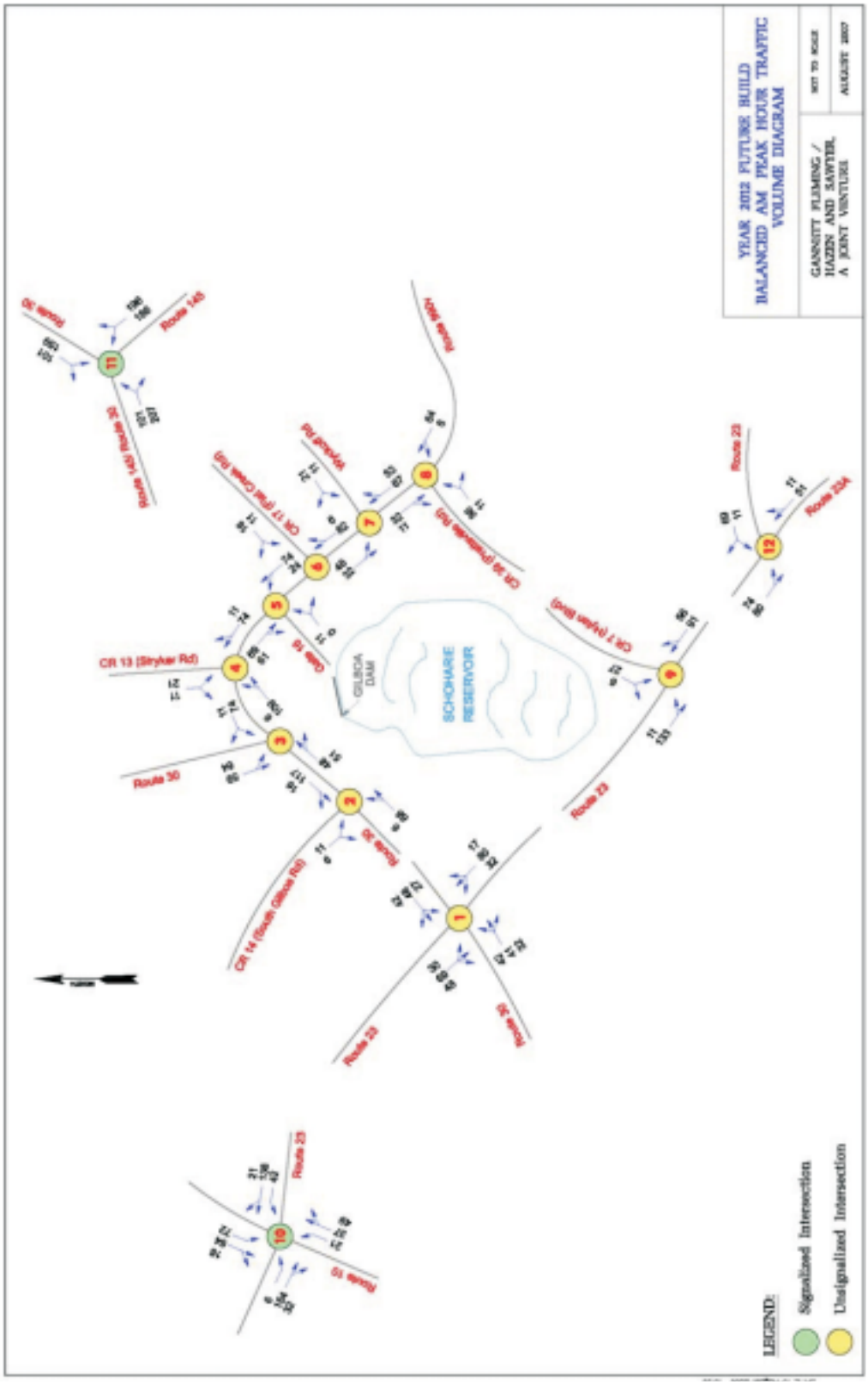
RECONSTRUCTION PEAK YEAR AM PEAK GENERATED WORKFORCE TRAFFIC ASSIGNMENT

Figure 2.10-24



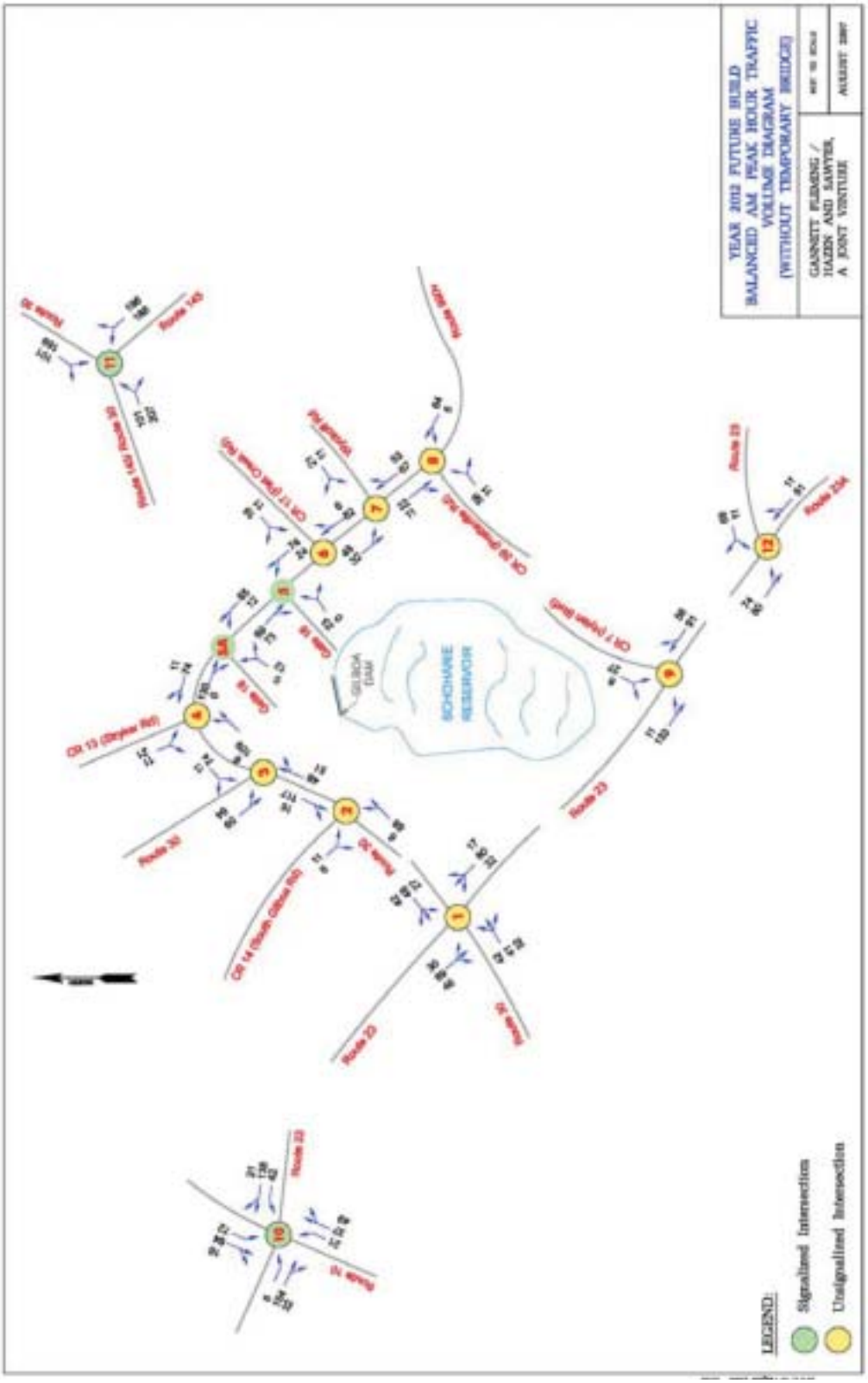
RECONSTRUCTION PEAK YEAR PM PEAK GENERATED WORKFORCE TRAFFIC ASSIGNMENT

Figure 2.10-25



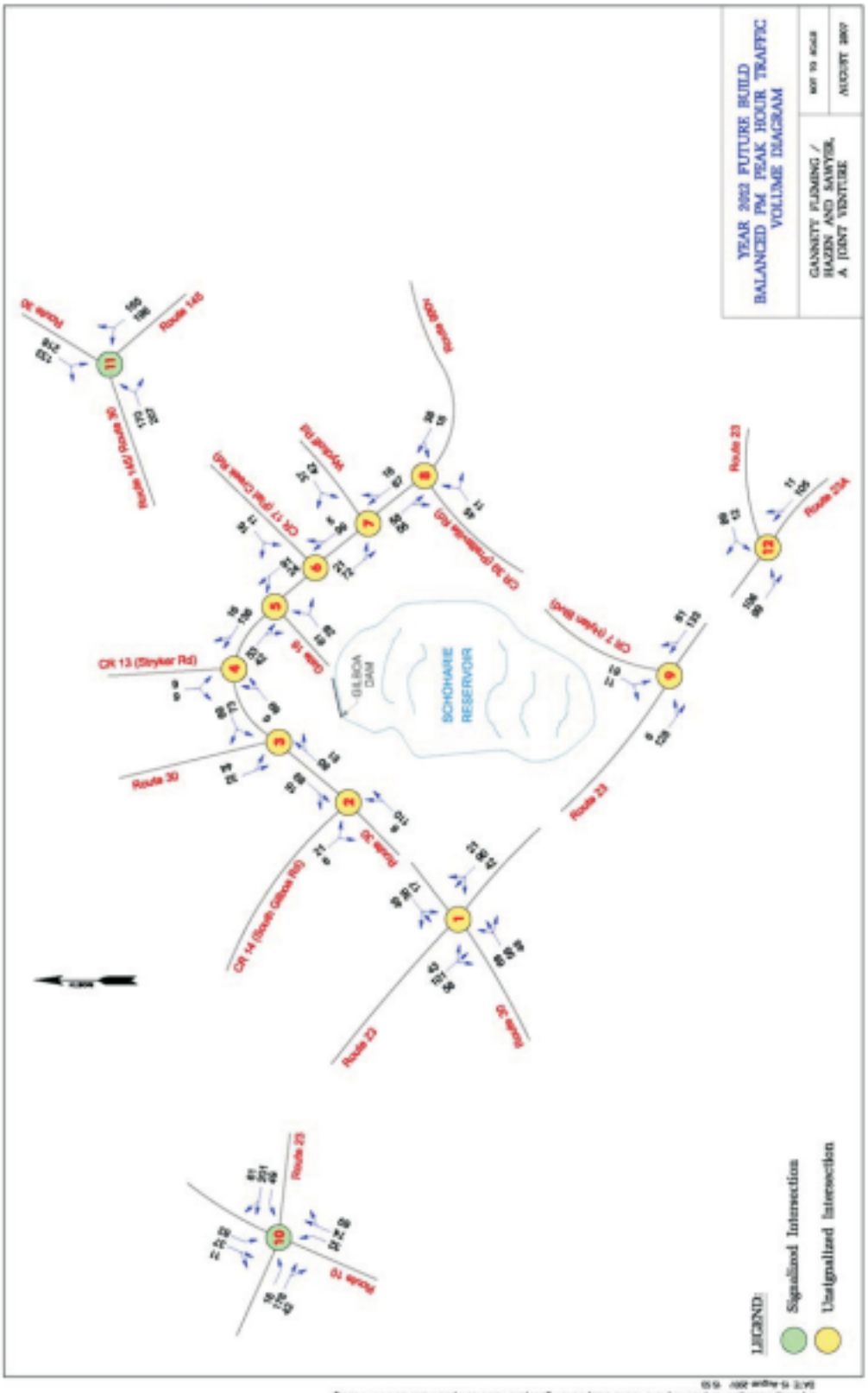
FUTURE BUILD AM PEAK HOUR TRAFFIC VOLUME

Figure 2.10-26

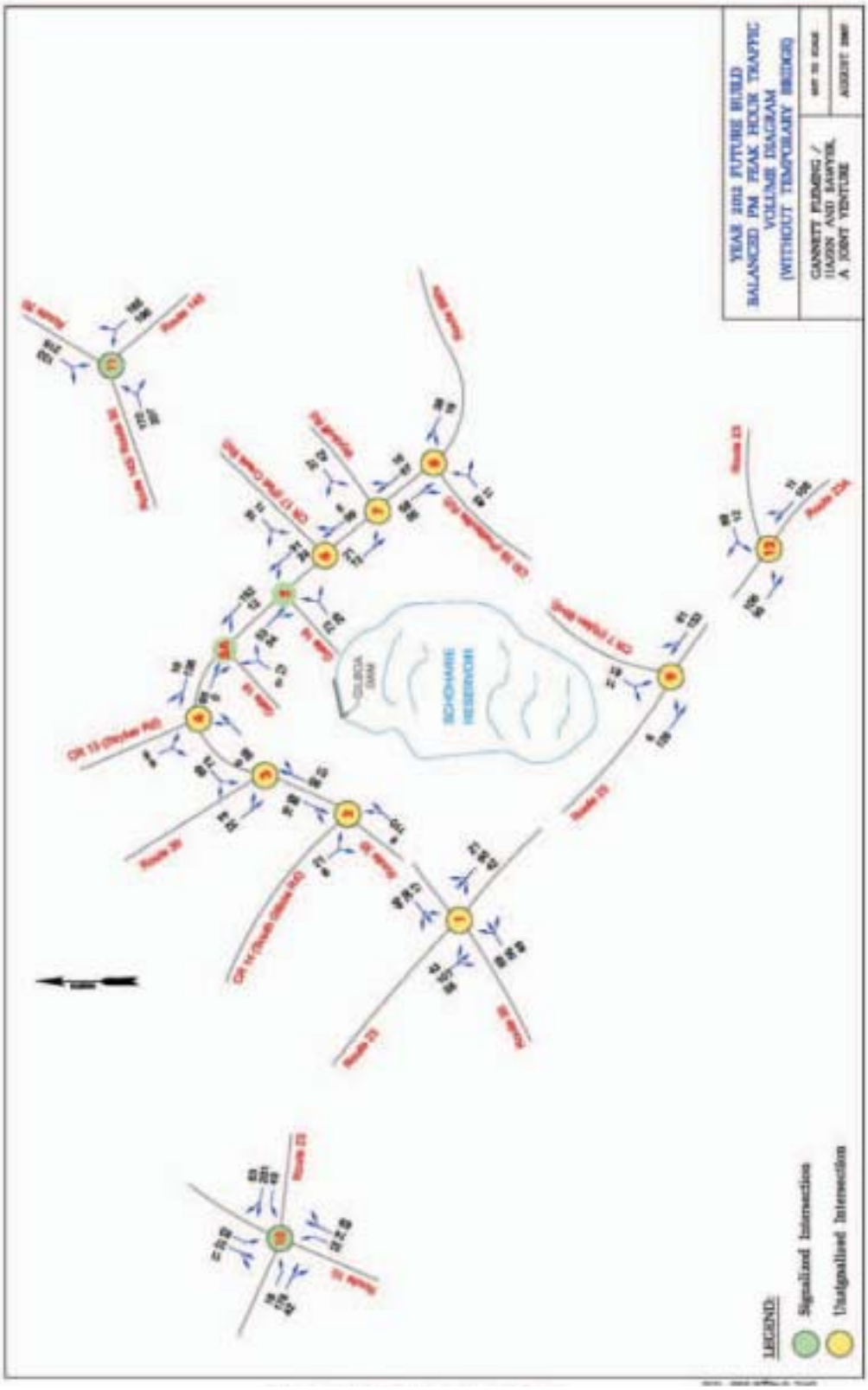


FUTURE BUILD AM PEAK HOUR TRAFFIC VOLUME (WITHOUT TEMPORARY INTERNAL BRIDGE)

Figure 2.10-26B



FUTURE BUILD
PM PEAK HOUR TRAFFIC
VOLUME



FUTURE BUILD PM PEAK HOUR TRAFFIC VOLUME (WITHOUT TEMPORARY INTERNAL BRIDGE)

2.10.4.3. Determination of Reconstruction Peak Year Traffic Impacts

The Reconstruction Peak Year condition at 12 intersections in the study area were compared to the Future Without the Project and evaluated for potential significant impacts. The CEQR Technical Manual defines significant impacts as "Levels of Service that deteriorate from acceptable LOS "C" or better conditions in the Future Without the Project condition to marginally unacceptable mid-LOS "D" or unacceptable LOS "E" or LOS "F" conditions in the peak construction condition." Table 2.10-16 through Table 2.10-27 exhibit side by side comparisons of the Reconstruction Peak Year and Future Without the Project conditions analysis of each of the study area intersections.

NYS Route 30 and NYS Route 23 (INTERSECTION #1)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly declined when compared to Future Without the Project operations. It is noted that the northbound and southbound NYS Route 30 approaches slightly increase in delay, but still operate at LOS "C" during the morning peak hour. Evening peak hour operations at this intersection for NYS Route 30 southbound approach also indicate increases in delay to operate at LOS "C" and increases in delay for northbound NYS Route 30 approach to operate at LOS "D." It should be noted that only 3.4 seconds of additional delay is projected for the NYS Route 30 northbound approach. Table2.10-16 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 30 and CR 14 (South Gilboa Road) (INTERSECTION #2)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly increase delay when compared to Future Without the Project operations. It is noted that the delay of the eastbound CR 14 approach slightly increases to LOS "B" during the morning and evening peak hours. Table 2.10-17 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 30 and NYS Route 990V (INTERSECTION #3)

This intersection is anticipated to operate under similar conditions as calculated in the Future Without the Project operational conditions during the morning and evening peak periods. Table 2.10-18 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 990V and CR 13 (Stryker Road) (INTERSECTION #4)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly declined when compared to Future Without the Project operations. It is noted that the eastbound CR 13 approach increases in delay to operate at LOS "B" during the morning and evening peak hours. Table 2.10-19 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 990V and Gate 16 Access Road (INTERSECTION #5) / NYS Route 990V and CR 17 (Flat Creek Road) (INTERSECTION #6)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly declined when compared to Future Without the Project operations. It is noted that the delay of the westbound Gate 16 approach is projected to increase and operate at LOS "B" during the morning and evening peak hours. Tables 2.10-20 and 2.10-21 present the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersections.

As noted previously, two different analyses were performed for the NYS Route 990V and Gate 16 Access Road intersection. The alternative scenario was done in case the temporary internal bridge within the Dam project site is not constructed or cannot be used for any reason. The hauling trucks would then be required to travel via NYS Route 990V over the existing Schoharie Creek Bridge between Gates 16 and 18 at a low speed. In order to provide increased safety of the public, under this alternative, temporary traffic signals would be installed at the NYS Route 990V-Gate 16 and the NYS Route 990V-Gate 18 intersections. Forty-two (42) seconds of a one-hundred-twenty (120) second cycle length was provided to the Gate 16 and Gate 18 approaches of these two intersections.

The two signalized intersections are projected to operate well at an overall LOS "B" during the morning and evening peak hours. The Gate 16 and Gate 18 approaches are projected to operate at LOS "C" conditions as shown in Table 2.10-20A and Table 2.10-20B.

It should be noted that unsignalized and signalized capacity analysis methodologies are different, and the delay thresholds between different service levels vary when comparing unsignalized and signalized capacity results.

NYS Route 990V and Wyckoff Road (INTERSECTION #7)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly declined when compared to Future Without the Project operations. It is noted that the eastbound Wyckoff Road approach would increase in delay and still operate at LOS "A" during the morning peak hour and LOS "B" during the evening peak period. Table 2.10-22 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 990V and CR 39 (Prattsville Road) (INTERSECTION #8)

Reconstruction Peak Year operations at this intersection are anticipated to be similar when compared to Future Without the Project operations. It is noted that the westbound CR 39 left-turn movement slightly increases in delay to operate at LOS "B" during the evening peak hour. Table 2.10-23 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 23 and CR 7 (Hylan Boulevard) (INTERSECTION #9)

This intersection is anticipated to operate under similar conditions as calculated in the Future Without the Project operational conditions during the morning and evening peak periods. Table 2.10-24 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 23 and NYS Route 10 (INTERSECTION #10)

This intersection is anticipated to operate under similar conditions as calculated in the Future Without the Project operational conditions during the morning and evening peak periods. Table 2.10-25 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 30 and NYS Route 145 (INTERSECTION #11)

Reconstruction Peak Year operations at this intersection are anticipated to be similar or slightly declined when compared to Future Without the Project operations. It is noted that the eastbound NYS Route 30 approach is projected to slightly increase in delay to operate at LOS "B" during the evening peak hour . It is also noted that the NYS Route 145 southbound left-turn lane is projected to operate the same when comparing Future Without the Project and Reconstruction Peak Year. Table 2.10-26 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

NYS Route 23 and NYS Route 23A (INTERSECTION #12)

Reconstruction Peak Year operations at this intersection are anticipated to be similar when compared to Future Without the Project operations. Table 2.10-27 presents the results of the Future Without the Project versus Reconstruction Peak Year operational conditions at the noted intersection.

TABLE 2.10-16
FUTURE WITHOUT THE PROJECT \ PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE COMPARISON
INTERSECTION #1 – NYS ROUTE 30 AND NYS ROUTE 23 UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #1 - NYS ROUTE 30 AND NYS ROUTE 23 UNSIGNALIZED INTERSECTION																	
		Existing Year						Future Without Reconstruction						Reconstruction Peak Year					
NYS Route 30 NB	LTR	B	0.30	14.5	C	0.55	21.7	C	0.33	15.3	C	0.61	25.0	C	0.37	16.9	D	0.66	28.4
NYS Route 30 SB	LTR	B	0.30	14.2	B	0.19	13.7	B	0.33	15.0	B	0.22	14.5	C	0.35	16.2	C	0.33	17.1
NYS Route 23 EB	LTR	A	0.02	7.5	A	0.04	7.6	A	0.02	7.5	A	0.04	7.6	A	0.04	7.6	A	0.05	7.7
NYS Route 23 WB	LTR	A	0.04	7.6	A	0.04	7.7	A	0.04	7.6	A	0.04	7.7	A	0.04	7.6	A	0.04	7.7

TABLE 2.10-17
FUTURE WITHOUT THE PROJECT \ PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #2 – NYS ROUTE 30 AND CR 14 (SOUTH GILBOA ROAD) UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #2 - NYS ROUTE 30 AND CR 14 (SOUTH GILBOA ROAD) UNSIGNALIZED INTERSECTION																	
		Existing Year						Future Without Reconstruction						Reconstruction Peak Year					
NYS Route 30 NB	LT	A	0.01	7.6	A	0.01	7.4	A	0.01	7.6	A	0.01	7.5	A	0.01	7.6	A	0.01	7.5
NYS Route 30 SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 14 EB	LR	B	0.03	10.0	A	0.05	9.8	B	0.04	10.2	A	0.06	9.9	B	0.04	10.4	B	0.06	10.2

TABLE 2.10-18
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #3 – NYS ROUTE 30 AND NYS ROUTE 990V UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #3 - NYS ROUTE 30 AND NYS ROUTE 990V UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 30 NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 30 SB	LT	A	0.03	7.5	A	0.02	7.6	A	0.03	7.5	A	0.02	7.7	A	0.08	7.7	A	0.05	7.8
Route 990V WB	LR	B	0.13	10.6	B	0.17	10.5	B	0.14	10.8	B	0.18	10.7	B	0.18	12.8	B	0.37	12.9

TABLE 2.10-19
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #4 – NYS ROUTE 990V AND CR 13 (STRYKER ROAD) UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #4 - NYS ROUTE 990V AND CR 13 (STRYKER ROAD) UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 990V NB	LT	A	0.01	7.4	A	0.01	7.5	A	0.02	7.4	A	0.02	7.5	A	0.02	7.4	A	0.02	7.7
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 13 EB	LR	A	0.06	9.6	A	0.03	9.3	A	0.07	9.7	A	0.03	9.5	A	0.08	10.4	B	0.04	10.3

TABLE 2.10-20
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #5 – NYS ROUTE 990V AND GATE 16 UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #5 – NYS ROUTE 990V AND GATE 16 UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Construction**						**Reconstruction Peak Year**					
NYS Route 990V NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 990V SB	LT	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.02	7.8	A	0.02	7.6
GATE 16 WB	LR	A	0.01	9.7	A	0.02	9.1	A	0.02	9.8	A	0.02	9.1	B	0.02	10.7	B	0.29	11.7

Unsignalized Intersection
LOS A ≤ 10 seconds of delay per vehicle
LOS B >10 and <_ 15 seconds of delay per vehicle
LOS C >15 and <_ 25 seconds of delay per vehicle
LOS D >25 and <_ 35 seconds of delay per vehicle
LOS E >35 and <_ 50 seconds of delay per vehicle
LOS F >50 seconds of delay per vehicle

TABLE 2.10.20A
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION WEEKDAY AM AND PM PEAK HOUR
(WITHOUT TEMPORARY INTERNAL BRIDGE) LEVEL OF SERVICE SUMMARY
INTERSECTION #5 – NYS ROUTE 990V AND GATE 16 SIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK		
		LOS	V/C	DELAY (sec/veh)	LOS	V/C	DELAY (sec/veh)
		INTERSECTION #5 – NYS ROUTE 990V AND GATE 16 SIGNALIZED INTERSECTION					
		Reconstruction Peak Year					
NYS Route 990V NB	TR	B	0.16	11.0	B	0.13	10.6
NYS Route 990V SB	LT	B	0.11	10.4	B	0.12	10.6
GATE 16 WB	LR	C	0.06	26.1	C	0.20	28.0
Intersection Total		**B**	**-**	**12.6**	**B**	**-**	**16.3**

TABLE 2.10.20B
FUTURE WITHOUT THE PROJECT / PEAK CONSTRUCTION WEEKDAY AM AND PM PEAK HOUR
(WITHOUT TEMPORARY INTERNAL BRIDGE) LEVEL OF SERVICE SUMMARY
INTERSECTION #5A – NYS ROUTE 990V AND GATE 18 SIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK		
		LOS	V/C	DELAY (sec/veh)	LOS	V/C	DELAY (sec/veh)
		INTERSECTION #5A – NYS ROUTE 990V AND GATE 18 SIGNALIZED INTERSECTION					
		Reconstruction Peak Year					
NYS Route 990V NB	TR	B	0.13	10.6	B	0.09	10.3
NYS Route 990V SB	LT	B	0.11	10.5	B	0.18	11.1
GATE 16 WB	LR	C	0.05	25.9	C	0.05	25.9
Intersection Total		**B**	**-**	**12.0**	**B**	**-**	**12.1**

Signalized Intersection
LOS A ≤ 10 seconds of delay per vehicle
LOS B >10 and <_ 20 seconds of delay per vehicle
LOS C >20 and <_ 35 seconds of delay per vehicle
LOS D >35 and <_ 55 seconds of delay per vehicle
LOS E >55 and <_ 80 seconds of delay per vehicle
LOS F >80 seconds of delay per vehicle

TABLE 2.10-21
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #6 – NYS ROUTE 990V AND CR 17 (FLAT CREEK ROAD) UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #6 - NYS ROUTE 990V AND CR 17 (FLAT CREEK ROAD) UNSIGNALIZED INTERSECTION																	
		Existing Year						Future Without Reconstruction						Reconstruction Peak Year					
NYS Route 990V NB	LT	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4	A	0.00	7.4
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
CR 17 EB	LR	A	0.06	9.2	A	0.07	9.2	A	0.06	9.2	A	0.07	9.3	A	0.07	9.4	A	0.08	9.5

TABLE 2.10-22
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #7 – NYS ROUTE 990V AND WYCKOFF ROAD UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #7 - NYS ROUTE 990V AND WYCKOFF ROAD UNSIGNALIZED INTERSECTION																	
		Existing Year						Future Without Reconstruction						Reconstruction Peak Year					
NYS Route 990V NB	LT	A	0.05	7.6	A	0.02	7.4	A	0.05	7.6	A	0.03	7.4	A	0.05	7.7	A	0.03	7.5
NYS Route 990V SB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
Wyckoff Road EB	LR	A	0.07	9.6	B	0.16	10.1	A	0.07	9.8	B	0.17	10.2	A	0.08	10.0	B	0.18	10.7

TABLE2.10-23
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #8 – NYS ROUTE 990V AND CR 39 (PRATTSVILLE ROAD) UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #8 - NYS ROUTE 990V AND CR 39 (PRATTSVILLE ROAD) UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 990V NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 990V SB	LT	A	0.00	7.3	A	0.01	7.5	A	0.00	7.3	A	0.01	7.5	A	0.00	7.3	A	0.01	7.6
CR 39 WB	L	A	0.07	9.6	A	0.06	9.8	A	0.07	9.7	A	0.06	9.9	A	0.12	10.0	B	0.13	10.4
	R	A	0.01	8.6	A	0.01	8.8	A	0.01	8.6	A	0.01	8.8	A	0.01	8.6	A	0.01	8.9

TABLE 2.10-24
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #9 – NYS ROUTE 23 AND CR 7 (HYLAN BOULEVARD) UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #9 - NYS ROUTE 23 AND CR 7 (HYLAN BOULEVARD) UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
CR 7 SB	LR	B	0.06	10.4	B	0.12	11.2	B	0.07	10.6	B	0.13	11.6	B	0.07	10.9	B	0.20	12.7
NYS Route 23 EB	LT	A	0.01	7.5	A	0.01	7.7	A	0.01	7.6	A	0.02	7.7	A	0.01	7.7	A	0.02	7.8
NYS Route 23 WB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					

TABLE 2.10-25
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #10 – NYS ROUTE 23 AND NYS ROUTE 10 SIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #10 - NYS ROUTE 23 AND NYS ROUTE 10 SIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 23 EB	L	A	0.01	8.2	A	0.04	8.8	A	0.02	8.3	A	0.04	9.0	A	0.02	8.3	A	0.05	9.1
	TR	C	0.34	20.9	C	0.38	21.3	C	0.36	21.1	C	0.40	21.5	C	0.38	21.3	C	0.40	21.5
NYS Route 23 WB	L	A	0.08	8.7	A	0.10	8.9	A	0.09	8.8	A	0.11	9.0	A	0.09	8.8	A	0.11	9.0
	TR	C	0.26	20.1	C	0.45	22.1	C	0.27	20.2	C	0.48	22.4	C	0.27	20.2	C	0.50	22.6
NYS Route 10 NB	L	C	0.08	21.8	C	0.11	22.1	C	0.08	21.8	C	0.12	22.2	C	0.08	21.8	C	0.12	22.2
	TR	C	0.19	22.7	C	0.29	23.7	C	0.20	22.8	C	0.31	23.8	C	0.21	22.9	C	0.31	23.8
NYS Route 10 SB	L	C	0.26	23.5	C	0.24	23.3	C	0.28	23.6	C	0.26	23.5	C	0.29	23.8	C	0.27	23.6
	TR	C	0.17	22.6	C	0.11	22.0	C	0.19	22.7	C	0.11	22.0	C	0.19	22.7	C	0.11	22.0
Intersection Total		**C**	**-**	**20.6**	**C**	**-**	**21.1**	**C**	**-**	**20.7**	**C**	**-**	**21.3**	**C**	**-**	**20.8**	**C**	**-**	**21.4**

TABLE 2.10-26
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #11 – NYS ROUTE 30 AND NYS ROUTE 145 SIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #11 - NYS ROUTE 30 AND NYS ROUTE 145 SIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 30 EB	LT	A	0.49	9.5	A	0.48	9.4	B	0.53	10.1	A	0.53	10.0	B	0.53	10.1	B	0.61	11.6
NYS Route 145 WB	TR	C	0.53	24.2	C	0.52	23.9	C	0.57	24.8	C	0.55	24.6	C	0.57	24.8	C	0.55	24.6
NYS Route 30 SB	L	C	0.40	32.5	D	0.57	35.3	C	0.43	32.8	D	0.61	36.3	C	0.43	32.8	D	0.61	36.3
	R	B	0.10	14.1	B	0.14	14.4	B	0.11	14.2	B	0.14	14.5	B	0.19	14.9	B	0.18	14.8
Intersection Total		**B**	**-**	**19.1**	**C**	**-**	**20.5**	**B**	**-**	**19.6**	**C**	**-**	**21.1**	**B**	**-**	**19.4**	**C**	**-**	**21.1**

TABLE 2.10-27
FUTURE WITHOUT THE PROJECT / PEAK RECONSTRUCTION
WEEKDAY AM AND PM PEAK HOUR
LEVEL OF SERVICE SUMMARY
INTERSECTION #12 – NYS ROUTE 23 AND NYS ROUTE 23A UNSIGNALIZED INTERSECTION

INTERSECTION APPROACH		AM PEAK			PM PEAK			AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)	LOS	V/C	Delay (sec/veh)
		INTERSECTION #12 - NYS ROUTE 23 AND NYS ROUTE 23A UNSIGNALIZED INTERSECTION																	
		Existing Year						**Future Without Reconstruction**						**Reconstruction Peak Year**					
NYS Route 23A NB		Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded						Major Street Thru and Right Turns Unimpeded					
NYS Route 23 SB	LT	A	0.05	7.5	A	0.07	7.6	A	0.06	7.5	A	0.07	7.6	A	0.06	7.5	A	0.09	7.7
NYS Route 23 WB	LR	A	0.09	9.4	A	0.12	9.5	A	0.10	9.5	A	0.13	9.6	A	0.14	9.6	A	0.15	9.8

2.10.5. Potential Project Impacts

There are no anticipated significant adverse impacts to traffic and transportation that would occur once reconstruction activities are completed. During reconstruction the project would have a temporary effect on traffic and transportation.

Following reconstruction all temporarily impacted areas due to reconstruction-related activities would be restored. Upon completion of the proposed project the traffic generated as part of the reconstruction project would not remain on the roadway network and pre-reconstruction traffic conditions would be restored. Traffic conditions would then return to the levels prior to the proposed project. The proposed project is not anticipated to have any significant adverse impacts on the permanent traffic and transportation system of the area.

2.10.6. Conclusion

Based on the results of the analysis, the proposed Dam reconstruction project would not have a significant adverse impact to the traffic operations of the study area intersections and would not adversely impact the existing travel patterns in the area. No additional offset measures are required or recommended, unless the proposed temporary internal bridge cannot be constructed. The capacity analyses indicate that through the Peak Reconstruction Year, although a slight increase in delay may occur as a result of proposed reconstruction truck and workforce traffic activity, Level of Service conditions will remain acceptable and reserve capacity would be available on all intersection approaches.

No adverse travel delays, congestion and/or queuing is anticipated. It is not anticipated that proposed reconstruction activities would require prolonged public street or roadway closures. It should be noted that proposed reconstruction-related trucks and workforce vehicles would park onsite without impacting any currently available parking spaces in the study area. The traffic volume generated by the proposed project with or without construction of the temporary internal bridge would not adversely impact the Gilboa/Conesville School along Wyckoff Road or significantly impact the safety of pedestrians within the study area.

2.11. ENERGY AND UTILITIES

2.11.1. Existing Conditions

This section examines the existing and potential demands upon electric systems associated with Dam reconstruction activities.

Electrical power is currently provided to existing NYCDEP facilities at the Dam site and surrounding local residential and commercial users by New York State Electric and Gas (NYSEG). Elements of the Dam site currently served by electrical power include power to the NYCDEP Police Precinct, NYCDEP's construction office trailers located on NYS Route 990V as well as overhead lighting adjacent to the Dam. The existing primary service is 12,450 volts (V) with a three phase, four wire system. The nearest substation is located in Grand Gorge, NY approximately five miles southwest of the Dam project site.

Although the existing project site does not currently have telephone or communications lines, adjacent NYCDEP facilities are equipped with telecom lines. The NYCDEP Police Precinct is served by a telephone line and T-1 communication line; NYCDEP office trailers on the east side of the Dam are also served by telephone and T-1 communications lines.

The existing site does not have a sanitary sewer or water supply. The adjacent NYCDEP police precinct currently discharges sanitary waste to a septic tank and field just south of the precinct building and uses a well for water supply.

2.11.2. Temporary Reconstruction Impacts

As described in further detail in the Section 1.0, Project Description, the proposed project would be implemented in five phases. Phase One of the proposed project would consist of the installation of crest gates in the existing notch. Phase Two work consists of preparation of the project site for heavy reconstruction. The major activities performed in this phase would include clearing and grading of the Contractor staging areas, improvements of site access roads including the West Access Road, preparation of spoils disposal area, and installation of the temporary internal bridge. Phase Three consists of major Dam reconstruction activities to improve Dam and Reservoir safety, as well as the installation of the LLO. The major activities performed in the phase would include reconstruction of the Dam including Spillway, Side Channel and Plunge Pool reconstruction, extension and reinforcement of the West Training Wall, refurbishment of the Upper Gate Chamber, reinforcement of the Earthfill Embankment and the installation of the LLO. Phase Four would consist of the rehabilitation of the Shandaken Tunnel Intake Facility. The Fifth and final phase of work would consist of site restoration activities to address and/or mitigate any lasting environmental effects of the Dam reconstruction.

2.11.2.1. Electrical

Reconstruction staging and activities require power to be supplied at the proposed project site. The Contractor would be responsible for the installation of five electrical service points and all associated appurtenances. The Contractor would bring the power onsite by connecting NYSEG to five service points from the nearest respective utility pole. The applications for which power would be required are as follows:

- Two trailer office complexes: one for NYCDEP and their design and construction management personnel and a separate trailer for the Contractor's use.

- Site lighting along access roads and reconstruction staging areas for nighttime reconstruction activities.

- Pumps to provide water from two to three water supply wells required for onsite concrete production and for sanitary facilities.

- Equipment associated with the inflatable crest gates, including compressors, air dryers, and a heat tracing system.

- A concrete batch plant associated with the Dam reconstruction.

- Equipment associated with the LLO, including powering of a TBM that may be required to facilitate installation.

The first service point from NYS Route 990V near existing NYCDEP office trailers would provide power for the concrete batch plant, and reconstruction staging areas. A 277/480V secondary service would be provided at this point. To facilitate this service point NYSEG would up-size an existing pole mounted lighting service that presently runs from NYS Route 990V, down along the construction fence parallel to the Dam, and would be near the proposed location of the concrete plant. Under the first phase of the proposed project, the electrical contractor would provide 3#1/O underground service from service pole 25-2 to pad-mounted transformer. The largest anticipated motor at this location is 75 horsepower (HP).

A second service point from NYS Route 30 at Gate 19 would provide power via the proposed West Access Road to the crest gates control building, West Access Road lighting, and reconstruction activities along the West Access Road. NYSEG would provide a 277/480V secondary pole service line from NYS Route 30 terminating at the Gate 19. Under the first phase of the project the electrical contractor would provide 3#1/O underground service from the new service pole at Gate 19 to a pad-mounted transformer located outside the proposed crest gates control building, approximately 2100 feet from Gate 19. Electrical pull box would be provided at every 700 feet.

A third secondary 120/208V pole service line originating from service pole No. 18 near Gate 16 would provide power to the office trailers complex and water supply wells, Road 16 lighting, and reconstruction activities in the trailer area. Under Phase One of the

project, the electrical contractor would provide underground service from the new service pole to a pad-mounted transformer that would serve the office complex trailer

A fourth secondary 120/208V pole service originating from nearby utility near the NYS Route 990V bridge near Gate 18 would provide power for West Training Wall Road lighting, and reconstruction activities along the West Training Wall and temporary internal bridge.

A fifth service point would be provided for the LLO Controls. In the event that TBM methods are employed in the installation of the LLO tunnels, power for a TBM would be provided from this fifth service point as well.

The electrical power distribution system for the proposed project would comply with all Federal, State, and Local codes. The design would consider safety, reliability, flexibility, ease of operation and maintenance, life cycle costs, and energy conservation, which would be in accordance with *New York State Energy Conservation Construction Code, 2002*. In addition, consultation with NYSEG has indicated the existing onsite power would be capable of providing the electrical needs for the proposed project. The additional electric connections fully lie within NYSEG's ability to support the additional temporary reconstruction electrical load, so there are no anticipated impacts to the electrical grid.

2.11.2.2. Propane

In addition to electrical power, reconstruction activities would require the use of propane-power generators. Propane would be used as the backup power fuel source wherever a generator's placement would be in proximity to a potable water supply source (e.g., Schoharie Reservoir). One 1,000-gallon propane powered generator would provide back-up power in the event of electrical substation failure for the inflatable crest gates equipment. A second 1,000-gallon propane powered generator would be provided for the office trailer complex. An additional propane powered generator would be used to provide backup power for a TBM in the event that TBM-tunneling methods are employed After completion of the project one 1,000-gallon propane-power generator would remain in the crest gates control building to provide backup power. Fuel storage areas associated with these generators would be equipped with necessary control and containment as required for compliance and safety. All emergency spill control protocols would be in place, as required, and refueling activities would be closely monitored to avoid accidental spillage. In addition, the Contractor would follow all state regulations and procedures for installing, operating, and maintaining the onsite storage and use of propane fuel in accordance with New York State Bulk Storage Regulations (NYCRR Part 599). It is not anticipated the use of propane for these generators will impact the availability of propane for other customers in the area.

2.11.2.3. Telecommunications

During the proposed project, telecommunication lines would be provided to the crest gates control building and to the LLO gate house. NYCDEP consulted with local utility

providers and determined the services required would not impact telecommunication services in the area.

2.11.2.4. Water and Sanitation

As mentioned above, two water supply wells with a maximum capacity of 60 gpm would be installed to provide non-potable water for concrete batch plant operations, sanitary facilities, and for miscellaneous reconstruction activities. Typical ground water consumption for sanitary and miscellaneous activities would be approximately 5,000 gpd. During continuous batch plant operation approximate water usage from the wells could be up to 80,000 gpd. However the batch plant would not be in continuous operation over the period of reconstruction and therefore the maximum usage represents a worst-case scenario. Bottled potable water for consumption would be provided from offsite for NYCDEP personnel, design and construction management personnel, and the Contractor's personnel. Impacts from well operations are anticipated to be limited to temporary, localized depression of the groundwater level. These localized depressions should be limited in size to a zone of influence around the specific locations. Normal groundwater levels at these locations are anticipated to be restored when reconstruction operations cease.

The proposed project would also provide a sanitary holding tank for sanitary waste from the office trailer complex. Waste from these holding tanks would be pumped out and moved offsite on a bi-weekly basis to a facility capable of handling the additional load. A sanitary holding tank or septic field would also be provided at the LLO Gate House. Discharges to groundwater from the septic field, if installed, would be localized and minimal. Therefore, no temporary impacts are anticipated.

2.11.3. Potential Project Impacts

Following the reconstruction period, power from the project site that would remain would be limited to power that is required for crest gates controls and the LLO Gate House and Gate Controls. The function and operation of the Dam, as a passive facility, would continue as under existing conditions.

2.11.3.1. Electrical

The proposed project would require a minimal increase in overall power demand; therefore, no adverse impact would be anticipated as the result of the proposed Dam reconstruction. The Contractor would be responsible for removing all reconstruction-related equipment used for onsite energy demands during the reconstruction period and trailers as well as proper removal and disposal of fuel brought onto the proposed project site for reconstruction equipment.

2.11.3.2. Propane

There is no anticipated adverse impact from the storage, use and handling of propane and fuel onsite for use as a back-up power source at the crest gates control building. All propane and fuel storage shall be secured and equipped with security measures that follow all State regulations and procedures.

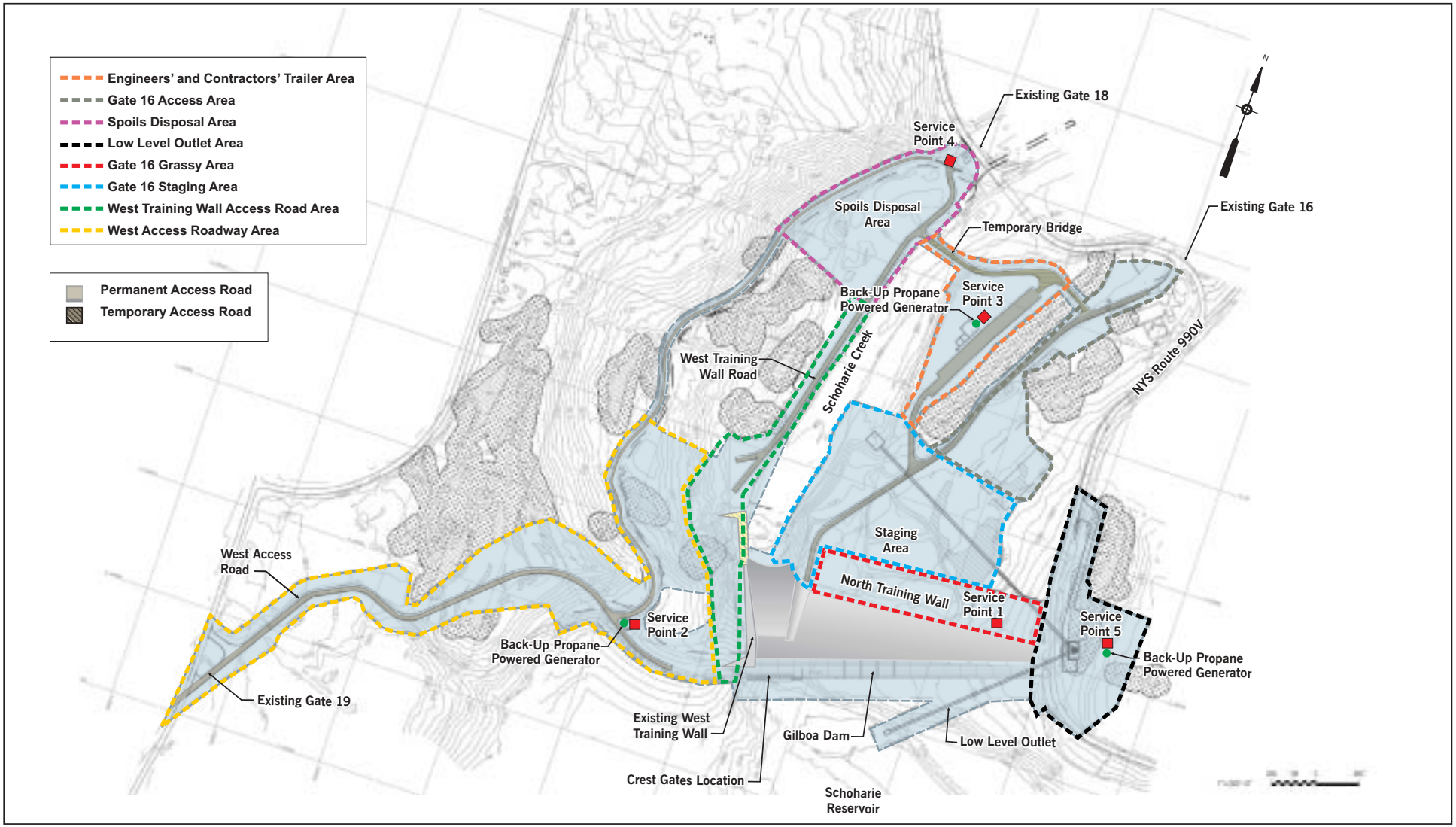
2.11.3.3. Telecommunications

After reconstruction is complete, telecommunication lines to the crest gates and LLO Gate House would remain in place.

2.11.3.4. Water and Sanitation

After reconstruction is complete, all water wells used during the reconstruction period except one would be filled and abandoned. A water supply well at the LLO Gate House would remain in place but impacts from localized withdrawals are not anticipated.

Sanitary facilities and the holding tank from the office trailers would be removed after reconstruction. Sanitary facilities at the LLO Gate House would remain in place but discharges to groundwater from the sanitary holding or septic tank would be minimal and therefore impacts are not anticipated.



H&S File: 9480\310\Mp1-Gilboa Dam Electrical Service.cdr 7-09-08

CAT 211 Engineering Design Services and Design During Construction for the Reconstruction of Catskill Watershed Dams and Associated Facilities

Cornell Fleming HAZEN AND SAWYER Environmental Engineers & Scientists
A Joint Venture

Gilboa Dam Reconstruction Electrical Service Point and Back-Up Propane Powered Generator Locations

Figure 2.11-1

2.12. PUBLIC SAFETY AND HEALTH

The delivery of clean, safe, high quality drinking water is considered by NYCDEP to be one of its most vital functions. The City of New York has a fundamental obligation to provide a reliable potable water supply that meets all public health and regulatory requirements, and is mandated under the SDWA and New York Sanitary Code to do so. The Catskill System has provided high quality water to consumers for many years, and with the 1997 Watershed Memorandum of Agreement in place, it is anticipated to continue to supply the same level of water quality into the foreseeable future. The valued importance of the Catskill System to the upstate communities and entire New York City Water Supply System means that continual maintenance of the dams and reservoirs of the water supply system is necessary.

2.12.1. Introduction

Public health is defined by the New York City's *CEQR Technical Manual* as "the activities that society undertakes to create and maintain conditions in which people can be healthy." The potential effects of the Dam reconstruction work on public health is being considered with regard to direct effects on the proposed project site and the study area, and the indirect effects pertaining to the water users and the quality of the water provided by the Catskill water supply system.

These potential effects could be influenced by air quality, noise, traffic and transportation, and hazardous materials within the proposed project site or study area. Direct effects result from proximity to the proposed project site. Water users and the quality of water provided could be indirectly affected by the proposed Dam reconstruction. The associated analyses pertaining to the overall public health of the proposed project site and study area are summarized below along with an evaluation of the potential for adverse impacts.

2.12.2. Temporary Reconstruction Impacts

2.12.2.1. Air Quality

The proposed reconstruction project is expected to result in a temporary increase in air emissions (refer to Section 2.8, Air Quality for further details). The sources of these emissions are reconstruction-related truck traffic, onsite reconstruction-related mobile and stationary sources, and the boilers and turbine generators needed during the reconstruction project. The USEPA has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. To demonstrate compliance with these standards expected project emissions were added to the background conditions. Background air quality data was collected from state ambient air quality monitoring stations in various counties around the area as described in Section 2.8, Air Quality. The temporary reconstruction impacts were added to the background data and showed temporary increases in carbon monoxide, sulfur dioxide, nitrogen oxides and particulate matter. However, the cumulative air quality impacts for each compound of concern were below the NAAQS thresholds for public health and welfare concerns. The air quality modeling results did indicate that there could be some days when the 24-hour

$PM_{2.5}$ concentrations could exceed 2 $\sigma g/m^3$, however the locations this occurs are remote and wooded or along open roadways, where the public would not be expected to have prolonged exposure. Therefore, there is no anticipated public health concern in regards to air quality as the result of the proposed reconstruction activities.

2.12.2.2. Noise

The proposed reconstruction project is expected to result in a temporary increase in noise (refer to Section 2.9, Noise Analysis for further details). The primary sources of this noise are onsite reconstruction-related mobile and stationary sources, and demolition activities. The area surrounding the Dam is rural with very low background noise levels. Although noise levels would increase during both daytime and nighttime reconstruction activities, all noise levels are below the CEQR ambient noise exposure guidelines and would be temporary in nature. Noise levels during peak reconstruction activities would potentially be in the noise "nuisance range". However, many measures would be implemented to minimize the reconstruction noise to the maximum extent possible. Possible noise reductions were investigated for each individual piece of equipment (see Section 2.9, Noise Analysis, Table 2.9-3). The lowest noise emitting equipment in its class would be required onsite, and noise attenuation measures, such as silencers and enclosures, would be required where it could reasonably be implemented. Once the reconstruction project is completed, the Dam would resume its normal operational activities and the ambient noise would return to pre-reconstruction levels. Therefore it is not anticipated that there would be any permanent impacts on noise in the area from a public health perspective due to the proposed project. .

2.12.2.3. Traffic

As indicated in the traffic analyses, there are no adverse impacts anticipated due to the proposed project. For a more detailed explanation please refer to Section 2.10, Traffic and Transportation. Traffic levels anticipated over the course of reconstruction would be well within road and intersection capacities. Adequate maintenance and protection of traffic measures consistent with NYSDOT standards would be implemented during the proposed reconstruction project to provide a safe area of travel for vehicles through and around the project site.

2.12.2.4. Hazardous Materials

A spoils disposal area would be provided onsite to store spoils generated during excavation and grading activities as well as concrete rubble produced during demolition of the existing stone facade (as described in Section 1.5.9, Project Description). Based on review of historic use of the site and soil analytical data, spoils are not anticipated to be classified as hazardous waste. The total quantity of spoils is anticipated to be 200,000 cubic yards. The existing area is capable of accommodating approximately 95 percent of the anticipated volume of spoils produced during the project. The remaining 5 percent of spoils would be disposed or beneficially reused offsite in accordance with the rules and regulations of any disposal facility used. Periodic sampling and analyses of onsite reconstruction spoil materials may be conducted to verify their safety. In addition, interim temporary stabilization would take place during reconstruction. Upon completion of the project, the onsite spoils disposal area would be covered with soil and seeded in accordance with the project's Natural Resources Restoration Plan (for more detail refer to

Section 2.6.6, Natural Resources Restoration Plan, and Section 2.7.4.2 Stormwater Management control During Reconstruction). By incorporating the protective measures noted herein, impacts related to hazardous materials would not be anticipated for this portion of the project.

Fuel storage areas would be equipped with all necessary control and containment as required for compliance and safety. An emergency spill control protocol would be in place as required and refueling activities would be closely monitored to avoid and minimize accidental spillage and all handling of fuel would be in accordance with New York State Bulk Storage Regulations (NYCRR Part 599). Therefore, no impacts to public health associated with propane storage are anticipated.

2.12.2.5. Water Supply Users

Under the proposed Dam reconstruction, the City of New York would continue to provide water to its upstate and in-City consumers with reliable, safe drinking water without removing components (e.g., reservoirs or aqueducts) from its operational procedures. NYCDEP has and would continue periodically treating the Catskill water supply between Ashokan Reservoir and Kensico Reservoir with alum to reduce turbidity as needed.

As is already implemented, an advisory would be issued before alum treatment is commenced and the water quality would be monitored during alum treatment procedures. Turbidity, alkalinity, pH, total and dissolved aluminum concentrations along with flow would be measured at the Catskill Alum Plant, upstream of the alum addition, to maximize alum effectiveness, and reduce the possibility of increasing dissolved aluminum concentrations in Kensico Reservoir from over-dosing of alum. During treatment, on a daily basis, a series of jar tests would be conducted at the Catskill Alum Plant to provide specific information on the optimum dosage of alum and sodium hydroxide needed to maximize flocculation. NYCDEP currently monitors and would continue to monitor where the Catskill Aqueduct discharges to Kensico Reservoir. This information would continue to be submitted to various government agencies including NYSDOH, NYSDEC, and USEPA to ensure compliance with existing permits and state and federal regulations, therefore no impacts are anticipated.

Reconstruction-related activities would require access to the Reservoir. Stormwater collection, treatment, and disposal from reconstruction staging areas would be conducted as per accepted stormwater BMPs to avoid contamination of the Reservoir and Schoharie Creek waters (for more detail refer to Section 2.7.4.2 Stormwater Management Control During Reconstruction). Sanitary wastes would be properly handled and disposed of offsite and thus would not cause any temporary impacts to water supply users

2.12.2.6. Quality of Life

The City regards the preservation of "Quality of Life" as a high priority for any community near a NYCDEP construction project. Therefore, the project would adhere to all applicable ordinances, rules, and regulations that relate to "Quality of Life". These would include noise control, dust control, particulate control, cleanliness and maintenance of the site and surrounding area, adherence to traffic and parking

stipulations, emissions control for non-road vehicles, and emissions control for on-road vehicles. The cumulative air quality impacts for each compound of concern would be below the NAAQS thresholds for public health and welfare concerns and would be temporary in nature. Although noise levels would increase during both daytime and nighttime reconstruction activities, all noise levels are below the CEQR ambient noise exposure guidelines and would be temporary in nature. In addition, many measures would be implemented to minimize reconstruction noise and air quality impacts to the maximum extent possible (see Sections 1.5.11.1 and 1.5.11.2, Project Description). Finally, specific actions the Contractor would take in regards to work hours, demolition and hauling, concrete production, paving, and code compliance and restoration would help minimize effects on quality of life (see Section 1.5.11, Project Description).

2.12.3. Potential Project Impacts

2.12.3.1. Air Quality, Noise and Traffic

There are no anticipated project related impacts to air quality, noise and traffic that would occur once reconstruction activities are completed and standard Reservoir operations are restored. Upon completion of the proposed Dam reconstruction, the air quality altered during the temporary reconstruction period would be restored due to the removal of all reconstruction related equipment and traffic. The noise generated as part of the reconstruction project would also be dependent on reconstruction related equipment and traffic, which would be removed from the site, thus restoring pre-construction conditions. Although there would be anticipated temporary reconstruction impacts on air quality, noise and traffic due to the temporary reconstruction related activities, the site would be restored and is not anticipated to have any adverse impacts on the permanent air quality, noise, and traffic systems.

2.12.3.2. Hazardous Materials

Following the reconstruction period, reconstruction-related materials would be removed and the function and operation of the Dam, as well as the Catskill System, would continue as under existing conditions. The spoils area would be permanently stabilized and the site restored with vegetative cover as outlined in the Natural Resources Restoration Plan (Section 2.6.6 Natural Resources Restoration Plan, and Section 2.7.4.2 Stormwater Management control During Reconstruction). Fuel associated with the propane powered generator to remain onsite would be stored in accordance with New York State Bulk Storage Regulations (NYCRR Part 599). Therefore, no impacts on public health related to hazardous materials are anticipated.

2.12.3.3. Water Supply Users

As during the reconstruction period, upon completion of the proposed reconstruction the City of New York would continue to provide water to its upstate and in-City consumers without removing components (e.g., reservoirs or aqueducts) from its operational procedures. Therefore there are no anticipated interruptions of service that would take place.

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