HYENGA LAKE
FINAL ENVIRONMENTAL IMPACT STATEMENT

TOWN OF CLARKSTOWN, ROCKLAND COUNTY, NEW YORK
Tax Map Numbers:
Section 57.14, Block 3, Lot 2

Project Applicant: HYENGA LAKE DEVELOPMENT, LLC.
100 Snake Hill Road, West Nyack, NY 10994
Attention: Howard Hellman
(845) 358-1200

Lead Agency*:* TOWN OF CLARKSTOWN PLANNING BOARD
Clarkstown Town Hall
10 Maple Avenue
New City, NY 10856-5099
Attention: Dennis Letson, Deputy Director of the Town of Clarkstown
Department of Environmental Control
(845) 639-2111

Prepared By*:* TIM MILLER ASSOCIATES, INC.
10 North Street
Cold Spring, NY 10516
Attention: Ann Cutignola
(845) 265-4400

Land Surveyor*:* ATZL, SCATASSA & ZIGLER, PC
234 North Main Street, New City, NY 10956
Attention: Andy Atzl, P.L.S.
(845) 634-4694

Cultural Resources**:** CITY SCAPE:CULTURAL RESOURCE CONSULTANTS
166 Hillaire Circle, White Plains, NY 10603
Attention: Gail Guillet, RPA
(914) 328-3032

COLUMBIA HERITAGE, LTD
56 North Plank Road, Suite 287, Newburgh NY 12550
Attention: Steve Oberon
(888) 294-4615

Stormwater Management: LEONARD JACKSON ASSOCIATES
26 Firemans Memorial Drive
Pomona, New York 10970
(845) 354-4382

September 9, 2009

HYENGA LAKE
Final Environmental Impact Statement

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0.0 INTRODUCTION

This Final Environmental Impact Statement (FEIS) has been prepared in accordance with the New York State Environmental Quality Review Act (SEQRA) and its implementing regulations, 6 NYCRR Part 617. The FEIS provides responses to public comments received by the lead agency on the Draft Environmental Impact Statement (DEIS). The lead agency for this action pursuant to SEQRA is the Town of Clarkstown Planning Board, to which the application described below has been made. SEQRA prescribes that the lead agency is responsible for the adequacy and accuracy of this FEIS.

The FEIS consists of this volume -- and its appendices, accompanying site plan, and referenced technical data -- and the DEIS, which is hereby incorporated by reference into this FEIS.

SEQRA Background

Pursuant to SEQRA regulations an applicant may, at their discretion submit a DEIS for consideration. The Preliminary DEIS (PDEIS, or Draft DEIS prior to adoption) was submitted to the Town of Clarkstown on October 31, 2006 and deemed complete for public review on June 4, 2007. The Planning Board issued a Notice of Completion of the DEIS and a Notice of SEQRA Hearing on July 25, 2007. All property owners within 300 feet received notice by mail. In order to provide adequate public review of the DEIS, the hearing was continued until September 26, 2007, and further held open until closing of the hearing on the DEIS on November 7, 2007. Written comments were received until November 21, 2007.

The full Draft Environmental Impact Statement was prepared, dated June 4, 2007, in accordance with the New York State Environmental Quality Review Act (SEQRA) and its implementing regulations, 6 NYCRR Part 617 for a project of 80 townhouse units to be constructed as-of-right in the existing MF-2 zoning district.

The Final EIS is prepared as an addendum to the Draft EIS. Often the final details of project review and negotiated mitigation measures are presented in the Final EIS and become the basis for the SEQRA findings. In this case, the impacts of the 107 Unit Senior Citizen Affordable Housing, herein referred to as Preferred Senior Housing Alternative, will be discussed as an alternative. An evaluation of the impacts of this alternative compared to as of right development have been assessed and added to the Final EIS. An analysis of a potential Payment in Lieu of Tax (PILOT) tax abatement to provide affordable housing has been included.

Summary of the Prior Action - 80 Townhouse Units

The project site as identified on the Town of Clarkstown tax maps, Section 57.14, Block 3, Lot 2, is approximately 12.4 acres in size. The Project Sponsor, Hyenga Lake Development LLC., intended to remove all existing structures on the site, install the required infrastructure, and develop 80 units of multifamily housing in eleven, two story buildings in response to a continued demand for multifamily housing in the Town of Clarkstown and Rockland County. This project could be developed as-of-right under the existing MF-2 zoning. The project included construction of a new access from Pipetown Hill Road to the project site via construction of a culvert over the Pascack Creek. A secondary access to provide emergency access would be available from NYS Route 59. This secondary access would be provided via a driveway constructed over a deeded easement granted to the Hyenga Lake Development LLC by Wide World Realty, the adjacent property owner to the north.

The units were to have been connected to existing public water and public sewer service. The Project Sponsor estimated that the selling price would be $250,000 for each one bedroom unit and $285,000 for each two bedroom unit.

The previous Hyenga Lake site plan design included an infiltration basin to be located in the northeast portion of the site to handle any increase in the rate of stormwater runoff emanating from the post-development project site. A drainage easement to allow the runoff from Pipetown Hill Road to drain into the Pascack Brook had previously been granted by the property owner to the Town of Clarkstown. An additional 75 foot wide drainage easement in the vicinity of the stream channel, granted by the property owner to the Rockland County Drainage Agency allows access along the length of Pascack Brook for the purpose of maintaining drainage.

Approximately 5.2 acres of the 12.4 acre site would have been graded to accommodate the 80 multi-family residences, proposed driveways and parking facilities and lawns and landscaped areas.

Summary of the Proposed Action - *107 units of Senior Housing*

The Project Sponsor, Hyenga Lake Development LLC., now proposes to remove all existing structures on the site, install the required infrastructure, and develop 107 units of affordable Senior Housing in two, three story buildings in response to a continued demand for affordable Senior Housing in the Town of Clarkstown and Rockland County. The applicant intends to partner with the Rockland Housing Action Coalition (RHAC) in a not-for-profit endeavor. This action is consistent with the existing MF-2 zoning, under a Special Use Permit, which allows Senior Housing. The newly proposed project continues to include construction of a new access from Pipetown Hill Road to the project site via construction of a culvert over the Pascack Creek. A secondary access to provide emergency access would still be available from NYS Route 59. via a driveway constructed over a deeded easement granted to the Hyenga Lake Development LLC by Wide World Realty, the adjacent property owner to the north.

The units would be connected to existing public water and public sewer service. The proposed project is for 106 one bedroom units and a two bedroom superintendents apartment. The project is to be constructed in two buildings. The first building will contain 66 units of affordable senior apartments and the superintendents apartment. The second building will contain an additional 41 units of affordable senior apartments. The units will be available for rent to qualified senior citizens of the Rockland County with preference being given to Town of Clarkstown residents. The completed project will be managed by the Rockland Housing Action Coalition, which currently has a waiting list of more than 500 qualified applicants for this type of housing, which represents only a portion of the identified need in the Town.

Similar to the previously proposed project, the current Hyenga Lake site plan design includes an infiltration basin to be located in the northeast portion of the site to handle any increase in the rate of stormwater runoff emanating from the post-development project site. A drainage easement to allow the runoff from Pipetown Hill Road to drain into the Pascack Brook had previously been granted by the property owner to the Town of Clarkstown. An additional 75 foot wide drainage easement in the vicinity of the stream channel, granted by the property owner to the Rockland County Drainage Agency allows access along the length of Pascack Brook for the purpose of maintaining drainage.

In the Preferred Senior Housing Alternative approximately 4.6 acres would be graded to accommodate the proposed 107 residential units, driveways and parking facilities, lawns and landscaped areas. The is a reduction in disturbance of 0.6 acres compared to the previous proposal discussed in the DEIS. The impervious area of the Preferred Senior Housing Alternative is 2.83 acres, a minimal reduction of 0.02 acres compared to the previous proposal. Cut and fill amounts would be significantly reduced as shown in Table 1. Total slope disturbance would be reduced from 5.2 acres to 4.6 acres, and steep slope disturbance (≥ 15 percent) would be marginally reduced by 0.02 acres compared to the previous proposal. Similar to the previous proposal, there would be no wetland disturbance as a result of construction of the Preferred Senior Housing Alternative. Table 1 provides a quantitative comparison of the Preferred Senior Housing Alternative and the previous proposal discussed in the DEIS.

Impacts to community services and traffic would be reduced based upon the Preferred Senior Housing Alternative. Impacts to the school district would be reduced due to the change in the demographic nature of the proposed project. Construction traffic impacts would also be reduced, due to the reduction in cut and fill amounts.

In accordance with SEQRA, this FEIS provides written responses to substantive and relevant comments on the DEIS received by the lead agency during the public review period. Complete copies of all written agency comments received on the DEIS are included in Appendix A of this FEIS. Transcripts of the three public hearings are also provided in Appendix A. Comments received on this FEIS, including the 107 Unit Preferred Senior Housing Alternative will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action.

Revisions and Supplements to the DEIS

As a result of public and agency comment, the project applicant proposed modifications to the 80 unit townhouse plan described in the DEIS. The following is a summary of those plan changes which will continue to be incorporated into the Preferred Senior Housing Alternative.

- There will be a single access to the project from Pipetown Hill Road and an emergency only access to NYS Route 59 via an access easement from the Wide World Property owner to the north. The NYS DOT has stated they will not consider an access to NYS Route 59 other than an emergency access.

- The applicant has agreed to construct an eastbound left turn lane to improve traffic safety and reduce traffic delays along Pipetown Hill Road in conjunction with construction of the Hyenga Lake Project.

- A Conditional Letter of Map Revision CLOMR based upon flood plain conditions without the Hyenga Lake Dam has been issued by letter dated December 26, 2007 from the Federal Emergency Management Agency, FEMA. This letter is included for reference in FEIS Correspondence.

- The most recent Traffic analysis, dated March 3, 2008 supersedes all previous Traffic Analysis. This complete Traffic analysis is herein submitted as Appendix C.

The Preferred Senior Housing Alternative, now being proposed has been developed by the applicant in response to the need for affordable senior citizen housing. As stated in the Letter

from the Town Supervisor, dated January 27, 2009, and included in Appendix B, "The proposed use is allowable by special permit of the Town Board, and while (the supervisor) cannot commit the Town Board to a future vote, both the Town Board and the Planning Board have expressed a preference for the proposed development over the as of right use." Based upon the preference, the applicant is willing to make this improved alternative the project proposed for construction.

The proposed Senior Housing project intends to apply for a PILOT tax abatement, the FEIS includes a revised analysis to assess fiscal impact of this proposal. Impacts to Land Use and Zoning will be discussed based upon the proposed Special Use Permit application. Based upon public comment regarding traffic during the DEIS public hearings a revised Traffic Study, dated March 3, 2008 was prepared. This revised traffic analysis is included in the FEIS as Appendix C. In addition, an updated Storm Water Pollution Prevention Plan has been provided as FEIS Appendix D based upon the revised site layout.

Table 1
Alternative Impact Comparisons

Area of Concern	*80 Units Townhouse DEIS*	*No Action*	*Alternate Access NYS Route 59*	*107 Units Senior Housing Alternative*
Land Use				
Impervious Surfaces (acres)	2.85	1.65	2.72	2.83
Total Project Cut (cubic yards)	43,200	0	42,878	29,718
Total Project Fill (cubic yards)	4,200	0	2,557	7,604
Net Cut to be exported (cubic yards)	39,000	0	40,321	22,114
Residential Units				
Residential Units (Total)	80	28	80	107
Natural Resources				
Total Site Area (acres)	12.4	12.4	12.4	12.4
Total Area of Disturbance (acres)	5.2	5.2	5.2	4.6
Woodland Disturbance (acres)	0.88	0	0.88	0.75
Wetland Disturbance (acres)	0.03	0	0.03	0
Lawn/Already Disturbed (acres)	3.9	0	3.9	3.6
Steep Slope Disturbance (>15%) (acres)	1.36	0	1.33	1.33
Community Resources				
Population	142	58	142	129
Residential Trips (p.m. peak hour) to Pipetown Hill Road	62	0	0	47
Residential Trips (p.m. peak hour) to NYS Route 59	0	13	62	0
Water Demand / Sewage Flow (based on 110 gallons per bedroom, per day)	13,200	6,160	13,200	11,770
School-age Children	22	12	22	0

Notes: Estimates are approximate.
Source: Atzl, Scatassa, & Zigler, P.C.; Tim Miller Associates, Inc., 2009.

1.3 Listing of Permits and Approvals Required

Involved Agencies
The following agencies have been determined to have permitting authority over the proposed project and are therefore considered Involved Agencies.

Federal
FEMA - Letter of Map Revision
US Army Corps of Engineers - Nationwide Permit #14-Road Crossing of the Pascack Brook
US Army Corps of Engineers - Nationwide Permit #39-Wetland Disturbance of less than 0.1 acres .

New York State
NYS DEC SPDES Permit for General Construction Activities
NYS DEC Stream Bed Crossing Permit - Article 15
NYS DOT Highway Permit

Rockland County
Rockland County Planning Board - 239 GML Referral
Rockland County Department of Health - Realty Site Plan Approval
Rockland County Drainage Agency - Drainage and Water Course Permit Number 04-36
Rockland County Sewer District Number 1 - Sewer Connection

Town of Clarkstown
Clarkstown Town Board - Stream Alteration Permit (Chapter 128 of the Town Code)
Clarkstown Planning Board - Site Plan Approval
Clarkstown Highway Superintendent - Road Opening Permit
Clarkstown Department of Environmental Control - Sewer Permit
Clarkstown Department of Environmental Control - Floodplain Permit

Other
Rockland Housing Action Coalition
Village of Spring Valley

Interested Agencies

In addition to the involved agencies a Notice of Completion of the FEIS and/or a copy of the FEIS will be sent to the following interested agencies:

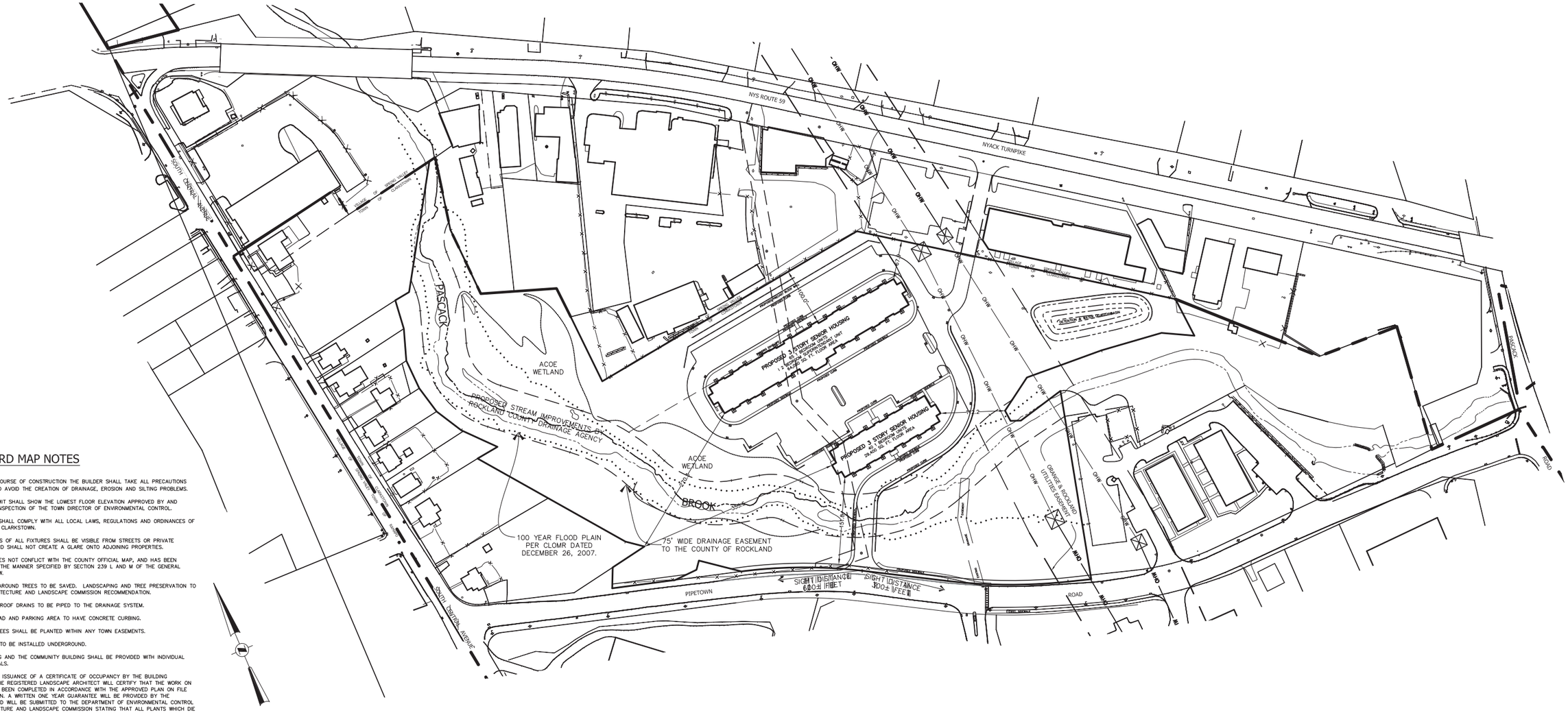
Clarkstown Town Clerk
Clarkstown Town Attorney
Legal Aid Society of Rockland County
Clarkstown Building Department
Clarkstown Police Department - Notice Only
Spring Valley Fire Department - Notice Only
Nanuet Community Ambulance Corp. - Notice Only
East Ramapo Central School District - Notice Only
Federal Emergency Management Agency - Notice Only
Rockland County Department of Highways - Notice Only

Format

This FEIS is arranged in sections, with comment summaries and responses arranged by subject area similar to the DEIS. The format of the comments and responses is as follows:

Comment # (Source): Comment summary text.

Response #: *Response text.*



STANDARD MAP NOTES

A. DURING THE COURSE OF CONSTRUCTION THE BUILDER SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID THE CREATION OF DRAINAGE, EROSION AND SILTING PROBLEMS.

B. BUILDING PERMIT SHALL SHOW THE LOWEST FLOOR ELEVATION APPROVED BY AND SUBJECT TO INSPECTION OF THE TOWN DIRECTOR OF ENVIRONMENTAL CONTROL.

C. THE BUILDER SHALL COMPLY WITH ALL LOCAL LAWS, REGULATIONS AND ORDINANCES OF THE TOWN OF CLARKSTOWN.

D. LIGHT SOURCES OF ALL FIXTURES SHALL BE VISIBLE FROM STREETS OR PRIVATE DRIVEWAYS AND SHALL NOT CREATE A GLARE ONTO ADJOINING PROPERTIES.

E. THIS PLAT DOES NOT CONFLICT WITH THE COUNTY OFFICIAL MAP, AND HAS BEEN APPROVED IN THE MANNER SPECIFIED BY SECTION 239 L AND M OF THE GENERAL MUNICIPAL LAW.

F. DO NOT FILL AROUND TREES TO BE SAVED. LANDSCAPING AND TREE PRESERVATION TO BE PER ARCHITECTURE AND LANDSCAPE COMMISSION RECOMMENDATION.

G. FOOTING AND ROOF DRAINS TO BE PIPED TO THE DRAINAGE SYSTEM.

H. ENTRANCE ROAD AND PARKING AREA TO HAVE CONCRETE CURBING.

I. NO WILLOW TREES SHALL BE PLANTED WITHIN ANY TOWN EASEMENTS.

J. ALL UTILITIES TO BE INSTALLED UNDERGROUND.

K. EACH BUILDING AND THE COMMUNITY BUILDING SHALL BE PROVIDED WITH INDIVIDUAL SEWER LATERALS.

L. PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE BUILDING INSPECTOR, THE REGISTERED LANDSCAPE ARCHITECT WILL CERTIFY THAT THE WORK ON THE SITE HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN ON FILE WITH THE TOWN. A WRITTEN ONE YEAR GUARANTEE WILL BE PROVIDED BY THE APPLICANT AND WILL BE SUBMITTED TO THE DEPARTMENT OF ENVIRONMENTAL CONTROL AND ARCHITECTURE AND LANDSCAPE COMMISSION STATING THAT ALL PLANTS WHICH DIE OR ARE LIKELY TO DIE WITHIN THE GUARANTEE PERIOD WILL BE REPLACED. THE CERTIFICATION OF OCCUPANCY MAY BE REVOKED FOR FAILURE TO HONOR THE TERMS OF THE GUARANTEE.

M. NO BUILDING PERMIT FOR A BUILDING SUBJECT TO SITE PLAN APPROVAL SHALL BE ISSUED BY THE BUILDING INSPECTOR EXCEPT UPON AUTHORIZATION OF AND IN CONFORMITY WITH THE SITE PLAN APPROVED BY THE PLANNING BOARD.

N. ANY PROPOSED RETAINING WALL SHALL BE DESIGNED AND INSPECTED DURING CONSTRUCTION AND CERTIFIED THAT THEY HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK.

O. PARKING OF ANY VEHICLES WITHIN THE 24 FOOT WIDE TRAVELED WAY IS TO BE PROHIBITED.

P. EROSION CONTROL SHALL BE PROVIDED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN, AND AS MAY BE MODIFIED BY THE DEPARTMENT OF ENVIRONMENTAL CONTROL TO CONFORM TO FIELD CONDITIONS AND THE DEVELOPMENT OF THE SITE PROGRESS.

Q. ALL NEW PAVEMENT MARKINGS SHALL BE EPOXY OR PREFORMED.

R. ALL NEW SIGNS AND PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE NYSMUTCD.

S. NO CERTIFICATE OF OCCUPANCY SHALL BE ISSUED FOR MORE THAN FOURTY-FIVE PERCENT (45%) OF THE UNITS UNTIL ALL RECREATION FACILITIES AND COMMUNITY FACILITIES ARE COMPLETED, THE CLARKSTOWN PLANNING BOARD, DURING SITE PLAN APPROVAL, MAY REDUCE TO A LESSER PERCENTAGE, BUT NOT LESS THAN TWENTY-FIVE PERCENT (25%).

T. FIRE LANES SHALL BE DESIGNATED BY THE FIRE INSPECTOR AND THE APPLICANT SHALL EXECUTE AN ENFORCEMENT CONSENT AGREEMENT WITH THE TOWN. FIRE LANE SIGNAGE AND STRIPING SHALL BE INSTALLED AS SHOWN ON THE APPROVED PLAN BY THE APPLICANT OR BUILDER PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY FOR THE BUILDING. THIS WORK SHALL NOT BE SUBJECT TO ESCROW DEPOSIT. FIRE LANE SIGNAGE AND STRIPING SHALL BE MAINTAINED BY THE OWNER TO THE SATISFACTION OF THE FIRE INSPECTOR.

BULK REQUIREMENTS

EXISTING ZONE – MF-2

PROPOSED SENIOR HOUSING	REQUIRED	PROVIDED
MINIMUM LOT AREA	180,000 SQ. FT.	373,968 SQ. FT.
MINIMUM LOT WIDTH	300 FT.	700 FT.
MINIMUM FRONT YARD	100 FT.	151.8 FT.
MINIMUM SIDE YARD	50 FT.	67.9 FT.
MINIMUM TOTAL BOTH SIDE YARD	100 FT.	338.2 FT.
MINIMUM REAR YARD	100 FT.	100.0 FT.
MAXIMUM BUILDING HEIGHT	3 STORIES/45 FT.	3 STORY/45FT.
MAXIMUM FLOOR AREA RATIO	0.25	0.25
MAXIMUM LAND COVERAGE	0.65	0.33

LOT AREA CALCULATIONS

TOTAL SITE AREA	12.372 ACS. OR 538,932 SQ. FT.	
* LESS 50% SLOPES 30% TO 50% LESS 100% SLOPES 50% OR GREATER	=	18,950 SQ. FT. 30% TO 50% SLOPES 32,650 SQ. FT. EXCESS OF 50% SLOPES
* LESS 50% OF ROAD WIDENING	=	2,659 SQ. FT.
* LESS 50% OF ORANGE AND ROCKLAND UTILITY EASEMENT	=	40,805 SQ. FT.
* LESS 50% OF WETLAND	=	20,500 SQ. FT.
* LESS 50% OF 100 YEAR FLOOD PLAIN	=	49,400 SQ. FT.
NET LOT AREA FOR ZONING PURPOSES		373,968 SQ. FT.

PARKING REQUIREMENTS

1 SPACES PER 1 BEDROOM UNIT + 2 PER SUPERINTENDENT UNIT REQUIRED

106 1 BEDROOM UNITS x 1 SPACE	=	106 SPACES
1 SUPERINTENDENT UNIT x 2 SPACES	=	2 SPACES
TOTAL SPACES REQUIRED		108 SPACES
TOTAL SPACES PROVIDED		109 SPACES

LOT AREA INFORMATION

TOTAL SITE AREA	=	538,932 SQ. FT.
TOTAL WETLAND AREA	=	139,850 SQ. FT.
TOTAL 100 YEAR FLOOD PLAIN	=	98,800 SQ. FT.
TOTAL O & R EASEMENT	=	81,590 SQ. FT.
TOTAL SLOPE 30–50% ON SITE	=	53,080 SQ. FT.
TOTAL SLOPE 50%+ ON SITE	=	38,900 SQ. FT
SLOPE 30–50% WITHIN FLOOD PLAIN and O & R EASEMENT	=	36,200 SQ. FT.
SLOPE 50%+ WITHIN FLOOD PLAIN and O & R EASEMENT	=	28,300 SQ. FT.
O & R EASEMENT WITHIN FLOOD PLAIN	=	3,475 SQ. FT.

NOTE

ALL EXISTING BUILDINGS ARE TO BE DEMOLISHED

OWNER & APPLICANT

HYENGA LAKE DEVELOPMENT CORP.
100 SNAKE HILL ROAD
WEST NYACK, NEW YORK 10994

TAX MAP REFERENCE

TOWN OF CLARKSTOWN TAX MAP
SECTION 57.14, BLOCK 3, PARCEL 2.

DISTRICTS

SCHOOL DISTRICT	– EAST RAMAPO
FIRE DISTRICT	– SV 19
LIGHTING DISTRICT	– No. 1
WATER DISTRICT	– No. 11
SEWER DISTRICT	– No. 11

Figure 1: Senior Housing Site Plan
Hyenga Lake FEIS
Town of Clarkstown, Rockland County, New York
Souce: Atzl, Scatassa & Zigler P.C.
Date: 03/04/09
Scale: 1 inch = 180 feet

File 05220 8/06/09
JS/05220

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

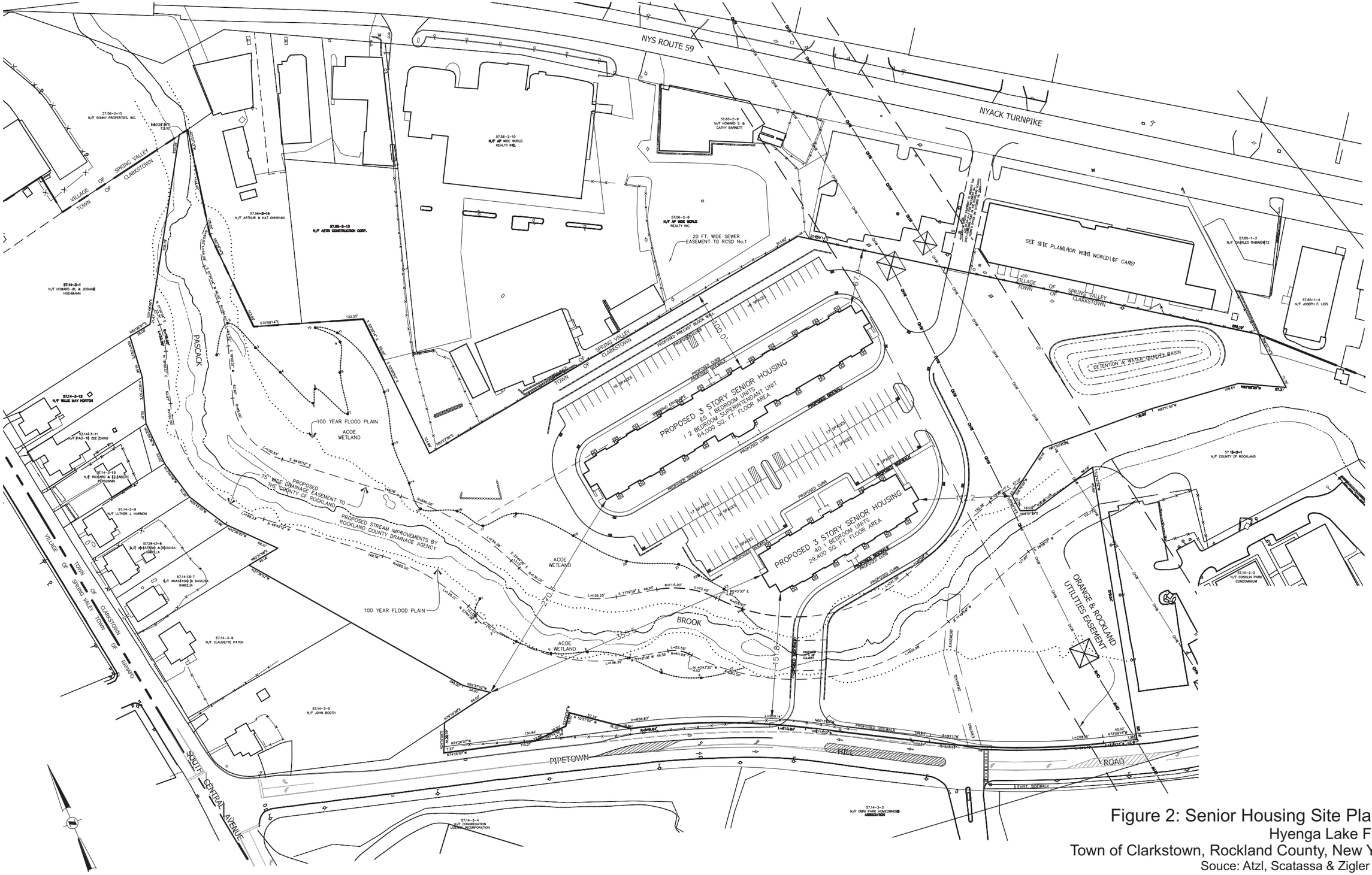


Figure 2: Senior Housing Site Plan 2
Hyenga Lake FEIS
Town of Clarkstown, Rockland County, New York
Souce: Atzl, Scatassa & Zigler P.C.
Date: 03/04/09
Scale: 1 inch = 110 feet

File 05220 8/06/09
JS/05220

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

Figure 3: Senior Housing Cut & Fill Anaysis
Hyenga Lake FEIS
Town of Clarkstown, Rockland County, New York
Souce: Atzl, Scatassa & Zigler P.C.
Date: 08/05/09
Scale: 1 inch = 50 feet

File 05220 8/06/09
JS/05220

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

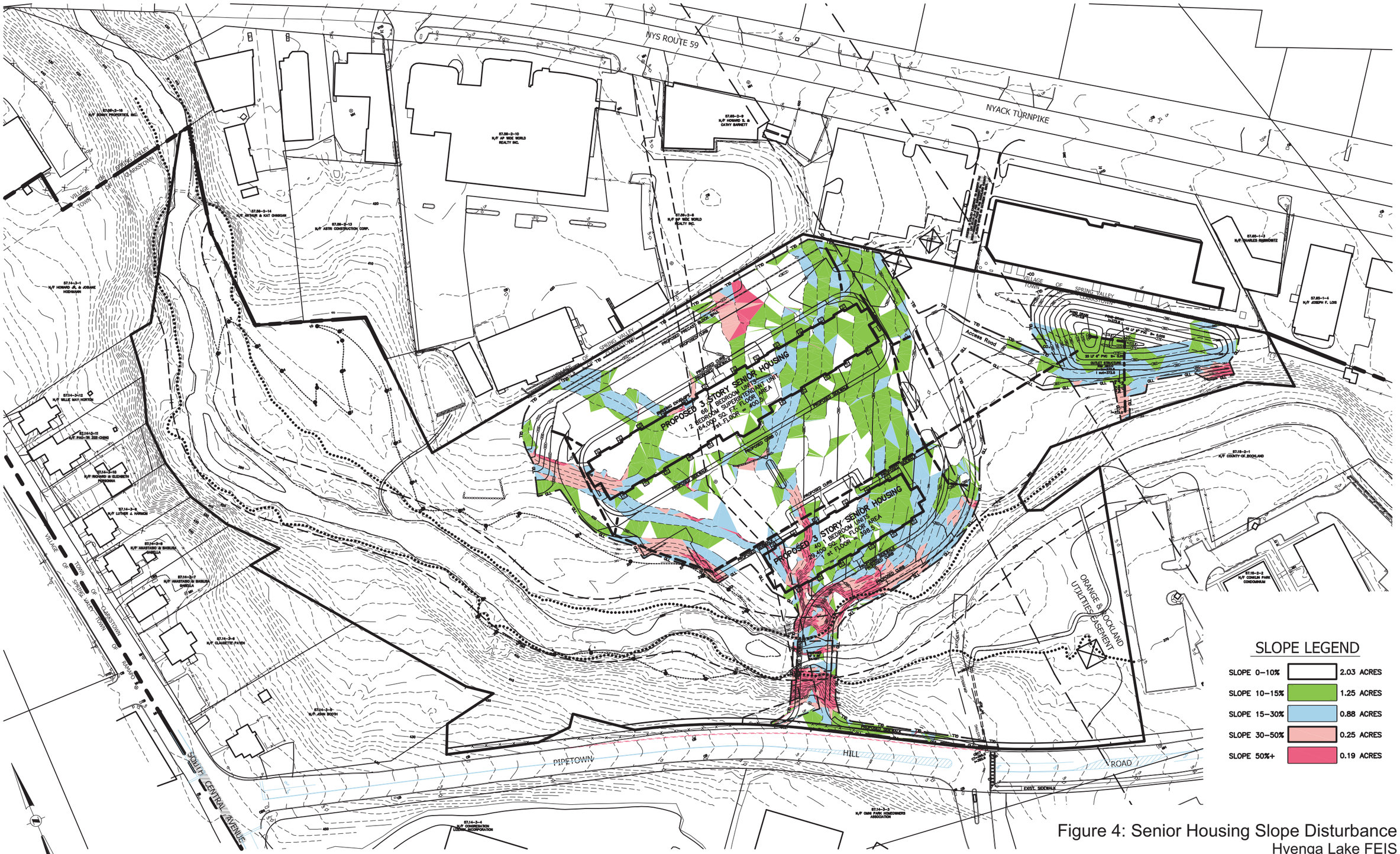


Figure 4: Senior Housing Slope Disturbance
Hyenga Lake FEIS
Town of Clarkstown, Rockland County, New York
Souce: Atzl, Scatassa & Zigler P.C.
Date: 08/05/09
Scale: 1 inch = 50 feet

File 05220 8/06/09
JS/05220

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

Figure 5: Representative Architectural Rendering Senior Apartment Building
Hyenga Lake
Town of Clarkstown, Rockland County, New York
Source: A.J. Coppola, R.A.
Date: September, 2009

File 05220 09/18/09
JS/05220

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

2.0 PROJECT DESCRIPTION

The Project Sponsor, Hyenga Lake Development LLC., now proposes to remove all existing structures on the site, install the required infrastructure, and develop 107 units of affordable Senior Housing in two, three story buildings in response to a continued demand for affordable Senior Housing in the Town of Clarkstown and Rockland County. The applicant intends to partner with the Rockland Housing Action Coalition (RHAC) in a not-for-profit endeavor. This action is consistent with the existing MF-2 zoning, under a Special Use Permit, which allows Affordable Senior Housing. The newly proposed project continues to include construction of a new access from Pipetown Hill Road to the project site via construction of a culvert over the Pascack Creek. A secondary access to provide emergency access would still be available from NYS Route 59. via a driveway constructed over a deeded easement granted to the Hyenga Lake Development LLC by Wide World Realty, the adjacent property owner to the north.

The units would be connected to existing public water and public sewer service. The proposed project is for 106 one bedroom units and a two bedroom superintendents apartment. The project is to be constructed in two buildings. The first building will contain 66 units of affordable senior apartments and the superintendents apartment. The second building will contain an additional 41 units of affordable senior apartments. The units will be available for rent to qualified senior citizens of the Rockland County with preference being given to Town of Clarkstown residents. The completed project will be managed by the Rockland Housing Action Coalition, which currently has a waiting list of more than 500 qualified applicants for this type of housing.

Comment 2.0-1 (Jeffrey Lawrence, Street Construction Inspector, Clarkstown Highway Department, June 29, 2007): Detention pond - maintained by whom? (county, town, private), Same applies to stream area & woods.

> ***Response 2.0-1***: *The detention pond shall be maintained by the managing agent for the preferred Senior Housing at Hyenga Lake . The project will comply with all bonding requirements as required by law in the Town of Clarkstown to insure appropriate storm-water facility maintenance.*

Comment 2.0-2 (Jeffrey Lawrence, Street Construction Inspector, Clarkstown Highway Department, June 29, 2007): Stream area and woods - maintained by whom? (county, town, private)

> ***Response 2.0-2***: *The stream area and woods are private property, an easement has been granted to the Rockland County Drainage Agency to maintain the stream channel as deemed by their needs.*

Comment 2.0-3 (Marvin Baum, Clarkstown Planning Board, Public Hearing July 25, 2007): I am concerned about the location of the units near high-tension wires and suggest that homes be placed away from or buffered from the wires for visual and comfort considerations.

> ***Response 2.0-3:*** *Under the Preferred Senior Housing Alternative there is no construction proposed directly under the high-tension wires or within the utility easement. A minimum twenty five foot buffer area has been left undisturbed around the base of the towers, beyond the buffer area, minimal grading is anticipated in the vicinity of the tower locations. The towers and high-tension wires are an existing condition. They are visible*

from the multifamily residences already built along Pipetown Hill Road and will be visible from the buildings proposed at Hyenga Lake. Construction will be conducted in accordance with the Safety Measures identified in DEIS Appendix L.

Comment 2.0-4 (Resident, Conklin Park, Public Hearing July 25, 2007): Has this project already been decided, or is this where we decide if we want it or not?

Response 2.0-4: *The prior proposal , is an as-of-right development for multifamily housing in a multi-family zone. The as-of right project had been amended to be in complete compliance with the designated zoning and site plan regulations. The Preferred Senior Housing Alternative is proposed under a special use permit in the MF-2 zone and is proposed to meet the need for affordable senior housing within the Town. To a large extent the project is an upgrade of existing conditions and will result in an improvement to the neighborhood.* A decision will be made by the Town Board as to the Special Use permit, and a decision will be made by the Planning Board as to when the environmental review is complete.

Comment 2.0-5 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): As part of the DEIS completeness review, questions were raised regarding Orange & Rockland Utilities' willingness to allow the proposed grading within the easement for transmission wires. The project sponsor has indicated that "additional safety measures can be provided at the time of substantive review if necessary." As part of the ongoing substantive review the project sponsor should provide written confirmation from Orange & Rockland Utilities that the proposed grading is acceptable, or illustrate an alternative approach; particularly if site plan elements or grading are affected. If acceptable, detailed engineering, legal or liability issues can be resolved as the review continues.

Response 2.0-5: *The previously proposed plan including grading and construction details for the Hyenga Lake project has been submitted to Orange & Rockland utilities for review and comment. This comment is not relevant with regard to the Preferred Senior Housing Alternative now proposed. The Senior Housing alternative does not propose any construction or grading within the utility easement.*

Comment 2.0-6 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Project Description, page 2-5 indicates that "A developer bond will be posted for the purpose of road maintenance including the culvert." This appears to be intended to meet the noted concern for any future (post occupancy) work needed for the culvert. As the review and approval process continues, the details of this offer should be worked out. Initial details should include the method of estimating the bond, the amount, the duration of time, the administrative arrangements, whether any adjustment is appropriate for inflation.

Response 2.0-6: *These issues will be worked out prior to final site plan approval.*

Comment 2.0-7 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): The term "relatively affordable" is somewhat nebulous, it should be defined and additional information on pricing be provided.

Response 2.0-7: *The proposed units offer a choice in housing alternatives within the Town of Clarkstown. According to the 2006 American Community Survey published by the US Census, more than 75 % of the occupied housing units in the Town of Clarkstown are owner occupied single family residences. The median price for these housing*

units is $535,400. The proposed project is offering a housing unit priced at less than $300,000, thus increasing the diversity of housing alternatives in the area.

This comment is no longer relevant in light of the Preferred Senior Housing Alternative now proposed. Income eligibility for potential residents of the senior citizen apartment units will be managed by the Rockland Housing Action Coalition, a not for profit agency created to meet the affordable housing needs of Rockland County residents.

Comment 2.0-8 Charles Maneri, Building Plans Examiner, Public Hearing, September 26, 2007): The two dumpster enclosures should probably be relocated because I think Orange & Rockland will have an exception to that. We have comments on another application that has a similar setup of dumpsters in that right-of-way, and they need to be removed. They don't want any type of material underneath that catches fire.

Response 2.0-8: *These dumpsters may be relocated to a location acceptable to the Town of Clarkstown and Orange & Rockland Utilities prior to final site plan approval. This comment is no longer relevant in light of the Preferred Senior Housing Alternative now proposed. There are no dumpsters located within the Orange & Rockland Utility easement on the proposed site plan.*

Comment 2.0-9 (Lawrence Tall, Manager of Conklin Park Condos, Public Hearing, September 26, 2007): There was a request being made for a bond being posted in the event that the condo association does not maintain the property.

Response 2.0-9: *The Hyenga Lake-RHAC partnership will comply with all bonding requirements as required by law in the Town of Clarkstown to insure appropriate storm-water facility maintenance.*

Comment 2.0-10 (Lawrence Tall, Manager of Conklin Park Condos, Public Hearing, September 26, 2007): According to the site plan there is no place to put snow.

Response 2.0-10: *Snow storage areas are available at the south end of the large parking area, and at the western ends of the circulation areas between the buildings. This comment is no longer relevant in light of the preferred Senior Housing Alternative now proposed. There are significant areas on the east and west ends of the Senior Housing alternative site plan to accommodate snow storage.*

Comment 2.0-11 George Hoehmann, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): I don't know what can be done, but with the new regulations with Orange and Rockland and their cutting underneath the high tension wires, it appears that there really could be a clear view from Route 59 along the easement all the way up to Pipetown Hill Road and potentially beyond, based on where their towers are. I was wondering if you considered an alteration to your layout that might actually become an architectural feature, moving the detention pond into the O & R easement, if it's allowed. Shifting your guest parking to other parts of the site you might be able to create a nice architectural feature that could become a selling point, using the detention pond as a focal point. You might be able to create a walkway effect around the detention pond. It might help to mitigate because potentially there could be a sea of parking that people area going to be viewing, looking down into the site or coming up.

Response 2.0-11: *Based upon topographic conditions it is not practical to move the stormwater detention basin and associated facilities.*

Comment 2.0-12 Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): The buildings are located close to power lines (as noted in the first hearing).

Response 2.0-12: *There are no units proposed for construction directly under the high-tension wires. A minimum twenty five foot buffer area had been left undisturbed around the base of the towers, beyond the buffer area, minimal grading is anticipated in the vicinity of the tower locations. Construction will be conducted in accordance with the Safety Measures identified in DEIS Appendix L. The proposed units are generally in a similar location to the existing bungalow units. This comment is no longer relevant in light of the Preferred Senior Housing Alternative now proposed. There is no construction nor grading anticipated within the Orange & Rockland utility easement.*

Comment 2.0-13 Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): I have a question with regard to garages versus no garages.

Response 2.0-13: *A Garage Parking Alternative plan has been developed to be in conformance to the M-2 zoning regulations with regard to enclosed parking. For the 88 units proposed there are a total of 56 garages proposed. This equates to more than 60 percent of the units having a one car garage and meets the zoning requirement stipulated in Table 19, Column 6, Item 1 which states that, " one quarter of all required parking be enclosed." This comment is no longer relevant in light of the Preferred Senior Housing Alternative now proposed. The Special Use Permit for Senior Housing does not require garage parking, no zoning variance will be required, no garage parking is proposed.*

3.0 POTENTIAL IMPACTS AND PROPOSED MITIGATION

3.1 LAND RESOURCES

Comment 3.1-1 (Marvin Baum, Clarkstown Planning Board, Public Hearing July 25, 2007): A significant portion of the property would remain undisturbed. Is that portion of the property in the steep ravine?

> ***Response 3.1-1:*** *The proposed development is to be located in the same area as the existing on-site development. Designated areas of open space include both level areas, east of the culvert and north of the wetland on the west side of the site. The preferred Senior Housing Alternative provides for increased open space compared to the previous 80 unit Townhouse proposal.*

Comment 3.1-2 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): The grading for the site proposes severe cuts and retaining walls of up to 11 feet height; this would not appear to be "minimal new disturbance."

> ***Response 3.1-2:*** *Minimal new disturbance, referred to horizontal areas of disturbance. The areas of steep cuts are necessary for adequate stormwater management.*

Comment 3.1-3 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): Cuts in the detention pond area are up to 20 feet.

> ***Response 3.1-3:*** *These areas of steep cut are necessary for adequate stormwater management. The amount of cut necessary has been reduced in the preferred Senior Housing Alternative.*

Comment 3.1-4 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): There is a severe excess of material to be removed from the site, which would seem to indicate the site is being altered to conform to a particular building type. Perhaps an alternate design should be explored which would more balance the grading. The implementation of an erosion control plan may not provide maximum practicable mitigation for soil impacts.

> ***Response 3.1-4:*** *As shown on the proposed Site Plan, the most significant area of grading is for construction of the proposed stormwater management detention basin and associated structures. This is necessary in order to ensure there will be no increase in stormwater runoff compared to existing conditions as per the NYS DES GP 02-01. The preferred Senior Housing Alternative reduces the overall cut and fill volumes, and minimizes the erosion control measures necessary.*

3.2 WATER RESOURCES

Comment 3.2-1 (Robert Jackson, Member Clarkstown Town Board, Public Hearing July 25, 2007): Buildings are shown on the floodplain map (FP1) in the 100 year flood plain. In response Deputy Director of Environmental Control Dennis Letson advised that the Applicant has done a new floodplain study that is based on the dam being gone, but the official FEMA maps that govern have not yet been revised to reflect the collapse of the dam.

> ***Response 3.2-1*****:** *A Conditional Letter of Map Revision CLOMR based upon flood plain conditions without the Hyenga Lake Dam has been issued by letter dated December 26, 2007 from the Federal Emergency Management Agency, FEMA. This letter is included for reference in FEIS Appendix B, Correspondence. As shown on the site plan, the current preferred alternative does not propose any development in or near the 100 year flood plain.*

Comment 3.12-2 (Elizabeth Moore, South Central Avenue, Public Hearing July 25, 2007): There is a potential increase in flooding. The drainage is terrible on Pipetown Hill Road.

> ***Response 3.2-2*****:** *Per the requirements of the NYS DEC General Permit for Stormwater Discharge from Construction Activity (GP 02-01), there may be no increase in stormwater runoff from the project site as a result of the proposed project. The Stormwater Pollution Prevention Plan (SWPPP) was developed for this project by Leonard Jackson Associates. The infiltration basin to treat the stormwater runoff consists of a water quantity diversion structure, and infiltration basin and an overflow spillway. The implementation of these measures will result in a decrease in stormwater runoff from this site compared to existing conditions. A revised drainage analysis for the preferred Senior Housing Alternative indicates there is a reduction in stormwater runoff compared to the previous proposal; and similar to the previous proposal there may be no increase in stormwater runoff from the project site as a result of the proposed project. The revised drainage analysis is included as FEIS Appendix D.*

Comment 3.2-3 (Resident, Conklin Park, Public Hearing July 25, 2007): Regarding the proposed detention basin and additional flooding: Where is the water coming from, and will it be rerouted?

> ***Response 3.2-3*****:** *Similar to the previous proposal, under the Senior Housing Alternative the water will flow in an easterly direction from the central portion of the site, via drainage pipes, to the stormwater detention pond. The water will be held in the detention pond and released slowly to allow for sedimentation and filtration to occur. The water will be released to drainage pipes which ultimately drain into the Pascack Creek. An overflow area is included in the design of the Basin to handle the 100 year flood conditions.*

Comment 3.2-4 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): The project sponsor has indicated that a Conditional Letter of Map Revisions (CLOMR) has been filed with FEMA to formally amend the flood plain elevations as a result of the loss of the dam. The project sponsor should indicate the status of the requested amendment. Page 1-5 indicates application has not yet been made and suggests this would not occur until after "completion of the project developments."

Response 3.2-4**:** *A Conditional Letter of Map Revision CLOMR based upon flood plain conditions without the Hyenga Lake Dam has been issued by letter dated December 26, 2007 from the Federal Emergency Management Agency, FEMA. This letter is included for reference in FEIS Appendix B, Correspondence*.

Comment 3.2-5 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Executive Summary, page 1-2 and elsewhere indicates that easements have been granted to the Town of Clarkstown and the Rockland County Drainage Agency for stormwater purposes. Copies of these easements should be provided to the Planning Board for review.

Response 3.2-5**:** *A copy of The Survey of Drainage Easement to be conveyed to Rockland County, dated November 29, 2001 has been included in Appendix B for reference.*

Comment 3.2-6 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Executive Summary, page 1-7 refers to an environmental analysis conducted by the Rockland County Drainage Agency for the Pascack Brook. Reference sources relied on in the preparation of a DEIS should be provided in an Appendix.

Response 3.2-6: *The Bioassessment Report, entitled Aquatic Life and Habitat, Fauna Biota, Vegetation and Wetlands, conducted by Robert Torgersen, dated April 14, 2005 and prepared for the Rockland County Drainage Agency, was included as Appendix G in the DEIS. The DEIS should have included a specific text reference to Appendix G.*

Comment 3.2-7 (Letter, Dennis M. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control): Page 1-2, paragraph 1: How will the RCDA access the 75 foot easement?

Response 3.2-7: *The adjoining parcel to the east is owned by Rockland County. In addition, as shown on the site plan there is a 15' easement to the Town of Clarkstown from Pipetown Hill Road to access the stream, located east of the proposed culvert.*

Comment 3.2-8 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): It seems contradictory to indicate that the buildings will be slab on grade and also have basements.

Response 3.2-8: *Based upon the contour of the land, the buildings are to be constructed partially slab on grade, there are half basements proposed in some of the buildings. This continues to be true for the proposed preferred Senior Housing Alternative.*

Comment 3.2-9 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): The assertion that the project will not change the brook seems incorrect in that it proposes a new culvert crossing from Pipetown Hill Road.

Response 3.2-9**:** *Similar to the previous proposal, under the Senior Housing Alternative the proposed culvert footings would be located on the stream banks outside of the stream bed, and will extending from one stream bank to the other. Temporary construction impacts will be mitigated through the use of Best Management Practices. No long term impacts to the stream are anticipated as a result of placement of the culvert over the stream.*

Comment 3.2-10 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): Until the FEMA CLOMR is received, the project flood plain is at the elevation shown on the 2000 FIRM. What is the status of the CLOMR application, as it will impact the area and development of the site?

> ***Response 3.2-10*****:** *As discussed, the CLOMR was issued on December 26, 2007, a copy of the FEMA letter is included in Appendix B for reference.*

Comment 3.2-11 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): The proposed pond will have a depth of approximately 10.5 feet to the spillway. The narrative should expand to explain the volume of the pond and the relationship to classification as a dam based on height and volume detained.

> ***Response 3.2-11*****:** *The Hyenga Lake project detention & water quality basin does not require a dam permit from the NYS DEC for the following reasons:*
>
> *1. The height of the berm to the top of the slope is approximately 10.5 feet.*
> *2. The total storage volume in the water quality /detention basin is 124,866 gallons. Refer to the Water Quality / Detention Basin Volume calculations in the letter from Leonard Jackson Associates (LJA) dated, February 26, 2008, included in Appendix B, Correspondence.*
>
> *A permit would be required only if other criteria were also met. For convenience the NYS DEC criteria regarding dam permits as indicated in Section ELS-15-0503 are listed below. (Copy included in LJA February 26, 2008, letter.)*
>
> - *A Dam permit is required if Height $\geq$ 15 feet and volume is > 1,000,000 gallons.*
> - *A Dam permit is not required if Height $\geq$ 15 feet and volume is $\leq$ 1,000,000 gallons.*
> - *A Dam permit is required if volume is $\geq$ 3,000,000 gallons and Height $\geq$ 6 feet.*
> - *A Dam permit is not required if volume is $\geq$ 3,000,000 gallons and Height is < 6 feet.*

Comment 3.2-12 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): Pg. 1-7, Construction Stormwater Management: Previous comments related to soil impacts and extent of grading [3.1-2, 3.1-3] are applicable here.

> ***Response 3.2-12*****:** *Similar to the previous proposal, under the Senior Housing Alternative the proposed project would be constructed in the same area of the site as the existing bungalow community, resulting in minimal new disturbance when viewed horizontally. There are areas of steep cuts which are necessary for adequate stormwater management.*

Comment 3.2-13 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The Rockland County Drainage Agency's letter dated March 13, 2006, includes several comments, requirements, and requests for additional information which must all be satisfied.

> ***Response 3.2-13*****:** *In their Letter of March 16, 2006 the Rockland County Drainage Agency (RCDA) makes specific reference to their concern for the safety and welfare of the residents downstream of the previous location of the Hyenga Lake Dam, and requested that appropriate measures be taken if reconstruction of the dam was*

anticipated. The project applicant has no intention of reconstruction of the dam, thus insuring the safety and welfare of the downstream population.

Additionally, the RCDA suggests that the applicant contact the NYS DEC Dam Safety Unit regarding status of the dam. As noted in DEIS Correspondence, On Thursday March 24, 2005 Mr. Michael Stankiewiez, P.E. of the NYS DEC Dam Safety unit was contacted. He explained that the Hyenga Lake Dam cannot be removed from DEC's Dam Inventory, for "historical reasons." Instead, it will remain in their records as a "failed" dam. Excluding other DEC permits which are not related to the dam, no permits need to be filed with the Dam Safety Unit regarding the installation of the proposed culvert.

"**Comment 3.2-14 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007):** A short-term maintenance agreement between the applicant and the Town should include a yearly inspection of the stormwater management facilities and a report to the Town ensuring the safety of the facilities. The Town should also be assured that the applicant has the financial ability to maintain these features throughout construction, prior to the dedication of these facilities to the Town.

Response 3.2-14**:** *The stormwater facilities will be privately maintained even after construction is complete. This continues to be true for the preferred Senior Housing Alternative. The Hyenga Lake/Rockland Housing Action Coalition partnership will comply with all financial requirements as set forth by the NYS Attorney General's office.*

Comment 3.2-15 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): There shall be no net increase in run-off upon completion of the project.

Response 3.2-15**:** *Per the requirements of the NYS DEC General Permit for Stormwater Discharge from Construction Activity (GP 02-01), there may be no increase in stormwater runoff from the project site as a result of the proposed project. A revised Stormwater Pollution Prevention Plan (SWPPP) has been developed for the preferred Senior Housing alternative for this project by Leonard Jackson Associates, included as FEIS Appendix D. The infiltration basin to treat the stormwater runoff consists of a water quantity diversion structure, and infiltration basin and an overflow spillway. The implementation of these measures will result in a decrease in stormwater runoff from this site compared to existing conditions.*

Comment 3.2-16 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): Prior to the start of construction or grading, a soil and erosion control plan shall be developed and in place for the entire site that meets the New York State Guidelines for Urban Erosion and Sediment Control.

Response 3.2-16**:** *A Soil Erosion Control Plan and a Construction Phasing Plan shall be included in the final plan set subject to final approval by the Planning Board prior to construction.*

Comment 3.2-17 (Mr. Tanler, President of the Board of Managers of the Conklin Park Condominium, Public Hearing, September 26, 2007): I am concerned about the impact on the flooding propensities. We live with the Pascack Brook running right next to us. We had to have the Corps of Engineers come in and fix it up back in '99, 2000. Will all the additional people living up there, has that been looked at? This is not just a question of dollars, it's a question of people's lives, the quality of life, and their safety.

> ***Response 3.2-17*** *As discussed herein, the Storm Water Pollution Prevention Plan, in accordance with NYS DEC GP 02-01, has identified proposed measures to reduce stormwater runoff below existing levels as a result of this project. The infiltration basin to treat the stormwater runoff consists of a water quantity diversion structure, and infiltration basin and an overflow spillway.*

Comment 3.2-18 (Lawrence Tall, Manager of Conklin Park Condos, Public Hearing, September 26, 2007): Is the detention basin going to be piped into the Pascack Creek at all?

> ***Response 3.2-18***: Yes, the water will be detained in the stormwater detention pond to allow for sedimentation and a reduced rate of infiltration. It will ultimately be discharged to the Pascack Brook via drainage pipes from the stormwater facility.

Comment 3.2-19 (Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): Regarding the former Hyenga Lake site itself, which is now basically a stream and a very steep area, in terms of maintenance and ongoing safety, when dirt, litter, garbage, whatever collects in there and becomes problematic for the stream, as well as just generally not nice (because it's not being cleaned up right now) is there going to be an obligation of the condominium association? Or is that the County's responsibility completely?

> ***Response 3.2-19:*** *The Rockland County Drainage Agency has authority over the Pascack Creek in terms of maintenance. The Hyenga Lake - RHAC partnership would have responsibility for maintaining all common areas on site.*

Comment 3.2-20 (Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): Who determines the need for maintenance of the detention pond?

> ***Response 3.2-20:*** *A maintenance schedule for the detention pond shall be set forth in the contract between the Hyenga Lake/RHAC and their management agent to be reviewed and approved by the Town Department of Environmental Control.*

3.3 AIR QUALITY

Comment 3.3-1 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The DEIS does not state anticipated truck movements on the local road system over the pre construction, construction, and post-construction phases of the project. The Town should consider requiring the applicant to use clean diesel fuel trucks and equipment with particulate traps to reduce the fine particulate matter in the air, which has been found to be associated with serious health problems.

Response 3.3-1: *Comment noted.*

Comment 3.3-2 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): Use of construction equipment and trucks shall be limited or avoided on designated ozone action days.

Response 3.3-2: *Comment noted.*

Comment 3.3-3 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): "No Idling" for more than three (3) consecutive minutes when the vehicle is not in motion shall be applied to heavy construction equipment and trucks during all phases of the project per Rockland County Sanitary Code 12.12.12.

Response 3.3-3: *Comment noted.*

Comment 3.3-4 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The Town should consider requiring the applicant to spray trucks with water prior to leaving the site to reduce the amount of soil that may travel onto the road system.

Response 3.3-4: *Similar to the previous proposal, under the Senior Housing Alternative, when conditions warrant, construction vehicles will be sprayed and wheels will be washed to reduce the amount of soil traveling off site as a result of construction.*

3.4 VEGETATION & WILDLIFE

Comment 3.4-1 Daniel Kraushaar, Deputy Town Attorney, Public Hearing, September 26, 2007): The Town Board is considering and is probably very close to adopting a tree preservation law. I don't know whether or not your plan would necessarily comply with it, and you are certainly entitled to get a draft of the law. I believe the law doesn't just address removing trees, but if there is an absence of trees, that trees have to be planted.

> ***Response 3.4-1*** *The applicant has reviewed the Town of Clarkstown tree preservation law. A landscaping plan will be submitted prior to preliminary site plan review of the Preferred Senior Housing Alternative which demonstrates project compliance with the law.*

Comment 3.4-2 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): There does not seem to be any assessment of the area north of the Brook and west of the existing structures. A report by Tim Miller Associates is referenced in the text, but does not seem to be included with the appendices, this should be added.

> ***Response 3.4-2:*** *An environmental analysis was conducted by the Rockland County Drainage Agency (RCDA) for the Pascack Brook (DEIS Appendix G). The assessment classified the ecological community through which the brook is flowing as "highly disturbed," both reflective of the medium density residential development of the area as well as the erodible and unstable banks that were created after the loss of the Hyenga Lake Dam.*
>
> *The RCDA report assessed both the forested vegetation on the southwestern slopes of the property along Pipetown Hill Road, and the colonizing shrub and scrub forest that is developing on the exposed sediments that have remained behind after the draining of Hyenga Lake. The eastern slopes of the property have a well established northern hardwood forest that is dominated by red maple, although no native habitat is present as the area has been disturbed by adjoining residential developments. Other trees and shrubs observed in this area during a site visit by Tim Miller Associates in February, 2006, included beech, red and white oaks, American elm, slippery elm, pignut hickory, tuliptree, catalpa, Japanese barberry, brambles, red-osier dogwood and spicebush, however none of these species were observed in large numbers.*

Comment 3.4-3 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): The erosion control and stormwater management mitigations are not relevant to this section. Additional information could be provided regarding wildlife surveys of the site and any potential relocation of such populations.

> ***Response 3.4-3:*** *Comment noted. The erosion control and stormwater management mitigation information should be appropriately placed in section 3.2, Water Resources.*
>
> *The site has already been highly disturbed and the proposed construction is to take place in the area of the existing bungalows. The DEIS notes correspondence with the USFWS and the DEC relating to endangered and threatened wildlife and vegetation*

along with a table identifying typical species potentially present on the site. All studies were done in accordance with the adopted DEIS which did not specify a requirement for an on-site wildlife assessment. The proposed construction of the site will alter wildlife habitat. A reduction in habitat will result in the local loss or displacement of wildlife relying upon said habitat. There have been no recorded reports that nearby habitats are saturated to their carrying capacities from local, State or Federal agencies that would monitor these conditions and areas of the site will remain available for local relocation of some individuals. Displacement of individuals to adjacent properties, is likely, but the effect on the overall population is expected to be negligible. Loss of other individuals, through predation, human interaction or loss of habitat, may also occur. This is not, however, to suggest that the loss of regionally common wildlife habitat and diminished site wildlife populations of common local species can be characterized as a significant adverse environmental impact for purposes of SEQRA. None of the species observed have highly specialized habitat requirements.

Comment 3.4-4 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The existing vegetation helps to prevent soil erosion on the site's steep slopes, therefore it is important to maintain as much of the existing vegetation as possible throughout all phases of the project. Clearing limit lines and construction fencing shall be in place prior to any construction equipment being brought onto the site.

Response 3.4-4: *Comment noted. Similar to the previous proposal, under the Senior Housing Alternative, these measures are will be detailed on the Erosion Control plan approved for the project. The sites steepest slopes will remain undisturbed by the proposed project.*

Comment 3.4-5 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): In order to best protect existing trees, fencing can be placed at the drip line as the minimum protection during construction.

Response 3.4-5: *Comment noted. The Senior Housing Alternative will include snow fencing shall be placed at the drip line of trees to be protected which are adjacent to construction areas.*

Comment 3.4-6 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007):) The impervious surfaces proposed for the site are of concern to the County Planning Department. The increased impervious surface and diminished natural vegetation on the site may lead to increased runoff on sites downhill and decreased recharge of the groundwater system. The grading of the site will drastically impact the Highways and Pascack Brook. Every effort must be made to retain as much natural vegetation and grading on the site as possible, and to limit, to the extent feasible, the amount of impervious surfaces.

Response 3.4-6: *The Preferred Senior Housing Alternative has reduced the total disturbed area to 4.6 acres, a reduction of 0.6 acres which represents more than a ten percent reduction in area disturbed. The most significant grading proposed on site is related to creation of the stormwater detention facilities necessary to limit the stormwater rates and volume to less than existing conditions as per NYS DEC GP 02-01.*

Comment 3.4-7 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): In order to reduce the amount of impervious surface on the site and potentially increase the amount of water recharged into the ground water system, the applicant should consider the use of pervious pavers for driveways and sidewalk areas. Additionally, islands and other areas that could serve as drainage swales should be considered

Response 3.4-7: *Similar to the previous proposal, the Senior Housing Alternative would increase the on-site impervious area by 1.2 acres or less than 10 percent of the total site area. The use of pervious pavers for the internal parking and circulation area is impractical from a maintenance standpoint in areas which must be commercially plowed for snow removal. Consideration will be given to drainage swales along the perimeter of the parking areas throughout the site.*

3.5 HISTORIC & CULTURAL RESOURCES

Comment 3.5-1 (Andrea Gannis, Resident of Omni Park Condominiums, Public Hearing July 25, 2007): I live in one of the buildings facing the project and the gorgeous view I purchased is being taken away.

> ***Response 3.5-1*** *The applicant has a right to develop his property. The proposed development of the preferred Senior Housing Alternative is generally in the area the existing bungalows are in today. No disturbance is proposed to the ravine and brook area which are very likely the view from Omni Park.*

Comment 3.5-2 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): Historic and Cultural Resources: This section seems adequate based on the narrative and supporting information included in the appendices.

> ***Response 3.5-2*** *Comment noted.*

Comment 3.5-3 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The Town should require the applicant to use natural tones to blend into the environment and reduce the visual impact of the proposed development.

> ***Response 3.5-3*** *Similar to the previous proposal, under the Senior Housing Alternative the applicant is willing to use natural tones for the construction of building exteriors and roofing materials.*

3.6 TRAFFIC & TRANSPORTATION

The Final EIS is prepared as an addendum to the Draft EIS. Often the final details of project review and negotiated mitigation measures are presented in the Final EIS and become the basis for the SEQRA findings. In this case, An evaluation of the impacts of the 107 Unit Senior Housing Alternative, compared to as of right development have been assessed.

The DEIS traffic Section 3.6 provides rates and trip generation projections for the previously proposed 80 unit townhouse project. Trip generation characteristics for Senior Housing are lower than trip generation for townhouse units which are not age restricted. A comparison of the trip generation rates and the number of vehicle trips that can be expected from the Preferred Senior Housing Alternative are shown in FEIS Table 3.6-1 and 3.6-2. As the tables show there is a reduction of 29 a.m. peak hour trips and a reduction of 45 p.m. peak hour trips as a result of the Senior Housing Alternative. This represents a 70% percent reduction in the site generated traffic.

Table 3.6-1
Hyenga Lake - Trip Generation Rates

Potential Land Use and Size {ITE Code}	Trips Rates [1]			
	AM Peak Hour		PM Peak Hour	
	IN (Trips/ Unit)	OUT (Trips/ Unit)	IN (Trips/ Unit)	OUT (Trips/ Unit)
Apartment Residential Unit - 80 Units {220}	0.11	0.43	0.50	0.27
Senior Adult Housing - 107 Units {252}	0.047	0.083	0.096	0.064

[1] Trip Generation, Institute of Transportation Engineers, 8th edition, Washington DC, 2008.

Table 3.6-2
Hyenga Lake - Trip Generation

Land Uses (size) {ITE Code}[1]	Trips					
	AM Peak Hour			PM Peak Hour		
	IN (Trips)	OUT (Trips)	Total	IN (Trips)	OUT (Trips)	Total
Apartment Residential Unit (80) {220}	9	34	43	40	22	62
Senior Adult Housing - 107 Units {252}	5	9	14	10	7	17
Reduction in Trips Generated Senior Housing Alternative	(4)	(25)	(29)	(30)	(15)	(45)

[1]Trip Generation, Institute of Transportation Engineers, 8th edition, Washington DC, 2008.
Note: See Table 3.6-1 for rates.

Comment 3.6-1 (Jeffrey Lawrence, Street Construction Inspector, Clarkstown Highway Department, June 29, 2007): Detail sheet should include culvert specs & cross sections, showing clear span culvert. (see DEIS Appendix F - culvert design).

> ***Response 3.6-1*:** *Culvert design has been provided in DEIS Appendix F. Additional details will be provided for the culvert design prior to final site plan approval.*

Comment 3.6-2 (Jeffrey Lawrence, Street Construction Inspector, Clarkstown Highway Department, June 29, 2007): Will the entrance & exit roadway on to Pipetown Hill Road remain private or will a section be dedicated as a town road? (i.e. Sierra Vista Lane) If dedicated must comply with town specs.

> ***Response 3.6-2*:** *The Pipetown Hill Road access will be built to the Town of Clarkstown Specifications, dedication of a portion of the road would be at the discretion of the Town of Clarkstown.*

Comment 3.6-3 (Jeffrey Lawrence, Street Construction Inspector, Town of Clarkstown Highway Department, June 29, 2007): Will a traffic signal/one way turn lanes be installed or is it warranted onto Pipetown Hill Rd. (see appendix #1 - *traffic reports) (Appears no light needed?)*

> ***Response 3.6-3:*** *The applicant is proposing to construct an eastbound left turn lane on Pipetown Hill Road, based upon traffic safety and traffic delay considerations. The Traffic volume on Pipetown Hill Road would not meet traffic signal warrants as defined by the NYS DOT.*

Comment 3.6-4 (Letter, New York State Department of Transportation, July 24, 2007): The NYS DOT will not support or approve any subject access other than the proposed emergency access to Route 59 because of traffic problems at this location.

> ***Response 3.6-4:*** *The project as proposed will have a single access onto Pipetown Hill Road. Emergency only access will be available through the easement from Wide World Auto to NYS Route 59.*

Comment 3.6-5 (Marvin Baum, Clarkstown Planning Board, Meeting July 25, 2007): I am concerned about traffic onto and on Route 59. I have been at the site location many times, in particular during rush hour, and it does get nasty and frustrating, no matter what intersection you come into, there is congestion.

> ***Response 3.6-5:*** *As stated above, access for this project will be onto Pipetown Hill Road. An earlier version of the traffic study provided traffic volume counts along NYS Route 59 in the vicinity of the existing access to the property. The p.m. peak hour is the most critical time period for this area, p.m. peak hour through volumes at this location are approximately 1,718 vehicles.*
>
> *The preferred Senior Housing Alternative is anticipated to result in a reduction of 45 p.m. peak hour trips for a total peak hour trip generation of 17 p.m. peak hour vehicles, This is compared to the total site generated traffic from the previous project during the p.m. peak hour which was projected to be 62 vehicles. Approximately 20 % of the site*

generated volume, or 3 additional vehicles would be anticipated to travel along NYS Route 59 during the p.m. peak hour under the Senior Housing Alternative.

Comment 3.6-6 (Robert Jackson, Member Clarkstown Town Board, Planning Board Meeting, July 25, 2007): No school buses will be stopping at Pipetown Road. Where will they be stopping?

Response 3.6-6: *School bus stop pick-up and drop off will be handled in a manner similar to Omni Park, at the discretion of the School District. This comment is no longer relevant. Based upon the change in demographics and the restriction on Senior Housing, no school age children are expected to live at Hyenga Lake.*

Comment 3.6-7 (George Hoehmann, Member Clarkstown Town Board, Planning Board Meeting, July 25, 2007): Has the Applicant considered making a four way intersection and having the entrance to this project across from Omni?

Response 3.6-7: *Similar to the previously proposed project, This was considered for the Senior Housing Alternative however, based on a review of the grades and site plan layout, this is not feasible. There is a sufficient amount of separation between these two driveways so as to avoid conflict of turning movements including the left turns entering each development.*

Comment 3.6-8 (Tracy Butone, Unit Owner and President, Omni Park Condominiums. Similar comments were made by Elizabeth Moore, South Central Avenue; Andrea Gannis, Resident of Omni Park Condominiums; and Ruth LaTor, Hidden Ridge, Public Hearing July 25, 2007): Traffic is a disaster here. I do not want to see an exit on Pipetown Hill Road. It takes the unit owner an average of two to five minutes to leave the complex and numerous accidents have occurred. There should be speed limits as cars travel at 50-60 miles per hour.

Response 3.6-8: *Similar to the previously proposed project, under the Petered Senior Housing Alternative, the NYS DOT has precluded access for this project onto Route 59. The access onto Pipetown Hill Road is a significantly safer alternative. The proposed left turn lane into Hyenga Lake will help to alleviate delays on Pipetown Hill Road. Vehicle speeds along Pipetown Hill Road are an enforcement matter for the Clarkstown Police.*

Comment 3.6-9 (Resident, Conklin Park, Public Hearing July 25, 2007): How many vehicles would be generated during peak hours? If you have 80 units you could only assume you would have an extra 80 vehicles on the road.

Response 3.6-9: *As shown in Tables 3.6-1 and 3.6-2, the preferred Senior Housing Alternative at Hyenga Lake is projected to add 14 a.m. peak hour trips and 17 p.m. peak hour trips. The driving characteristics of a senior population also typically tend to take place outside of peak traffic commuting hours.*

Comment 3.6-10 (Resident, Conklin Park, Public Hearing July 25, 2007): Regarding the construction vehicles, the trucks are going to damage the existing roads more than what they are.

Response 3.6-10: *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the construction company will take responsibility to restore the roads to existing conditions, should any damage occur during construction.*

Comment 3.6-11 (Manager, Omni Park, Public Hearing July 25, 2007): Not only is Pipetown Hill Road one lane in each direction, but the angle of the road when you are exiting or entering the property is dangerous. The incline and the speed of the road coming down make it very difficult to make a left turn.

Response 3.6-11: *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the proposed Hyenga Lake project includes construction of an eastbound left turn lane, at the bottom of the hill to provide for safe stacking of left turning vehicles entering the site.*

Comment 3.6-12 (Dennis Letson, Deputy Director Department Town of Clarkstown of Environmental Control, Public Hearing July 25, 2007): I suggest that prior to the next appearance Leonard Jackson prepare and show the pavement markings on Pipetown Hill Road as they exist now so the Board could evaluate them.

Response 3.6-12: *A plan which shows the existing and proposed markings on Pipetown Hill Road has been prepared and is attached as the last page of the revised Traffic Analysis included as FEIS Appendix C.*

Comment 3.6-13 (Andrea Gannis, Resident of Omni Park Condominiums, Public Hearing July 25, 2007): Having an emergency access through this new project will only allow people from Route 59 to go through the complex.

Response 3.6-13: *The emergency access to NYS Route 59 is located over an easement from the property owner to the north, Wide World Auto. The access cuts through their parking area, and as such will not be conducive to everyday use.*

Comment 3.6-14 (Betsey McKenna, Conklin Park, Public Hearing July 25, 2007): I am concerned about access onto Pipetown Road; why not use Pascack?

Response 3.6-14: *The property does not have any frontage on Pascack Road.*

Comment 3.6-15 (Letter, John Sarna, P.E., August 28, 2007): The methodology follows the normal study procedures, and is acceptable.

Response 3.6-15: *Comment noted.*

Comment 3.6-16 (Letter, John Sarna, P.E., August 28, 2007): Description of Existing Road Network: On page 3, Pipetown Hill Road is described as providing residential access to the multifamily developments in the area. It does do that, but its principal use is to provide a travel route between areas in Spring Valley, Chestnut Ridge and other areas in Ramapo and the New York State Thruway, the Garden State Parkway Extension and the commercial areas in Clarkstown. As such, it is serving almost as a minor arterial. The traffic volumes bear this out. The description should be revised.

Response 3.6-16: *This revised description has been included in the introduction to the FEIS.*

Comment 3.6-17 (Letter, John Sarna, P.E., August 28, 2007): The same comment [as above] could apply to both Central Avenue and Pascack Road.

Response 3.6-17: *Comment noted.*

Comment 3.6-18 (Letter, John Sarna, P.E., August 28, 2007): The road descriptions do not indicate that all three of the studied intersections are signalized.

Response 3.6-18: *Page 3.6-1 of the DEIS provides a list of the intersections studied and notes which intersections are signalized.*

Comment 3.6-19 (Letter, John Sarna, P.E., August 28, 2007): 2008 No-Build Traffic Volumes: The annual background growth rate of two percent is acceptable.

Response 3.6-19: *Comment noted.*

Comment 3.6-20 (Letter, John Sarna, P.E., August 28, 2007): At this time a build year of 2008 seems unrealistic. This application has been around for a while, and it may have been valid at the beginning, but it is now nearing the end of 2007 and, with the SEQR reviews of both the DEIS and FEIS still to be completed, it does not seem reasonable that the development could be constructed and fully occupied by 2008. A completion date of 2010 might seem more reasonable, in which case the Build condition traffic volumes would increase by four percent, with corresponding increases to the Build condition volumes. The impact on the analyses, however, probably would not be significant.

Response 3.6-20: *Comment noted. Based upon the current consideration of the preferred Senior Housing alternative a completion date of 2010 is more realistic.*

Comment 3.6-21 (Letter, John Sarna, P.E., August 28, 2007): Site Generated Traffic Volumes: The estimates of generated traffic for the 80 DU apartment development, shown in Table No. I, conform to the ITE trip generation rates, and are acceptable.

Response 3.6-21: *Comment noted.* Trip generation for the preferred alternative indicate 14 am. peak hour trips and 17 p.m. peak hour trips, which is a 70 percent reduction compared to the trip generation of the 80 townhouse units proposed in the DEIS.

Comment 3.6-22 (Letter, John Sarna, P.E., August 28, 2007): Arrival and Departure Distributions: The directional distributions of the site generated traffic are reasonable. It should be noted that differences in these percentages of (say) ten percent would have negligible impact of the results.

Response 3.6-22: *Comment noted.*

Comment 3.6-23 (Letter, John Sarna, P.E., August 28, 2007): At the bottom of page 5 it is stated that "it should be noted that for the purpose of this analysis all site traffic is expected to use the Pipetown Hill Road access." My understanding is that Pipetown Hill Road is the only

site access, with any connection to Route 59 for emergency use only. This statement, which may have come from an earlier text version, could be misconstrued and should be revised.

> ***Response 3.6-23:*** *Pipetown Hill Road is the single site access and access to NYS Route 59 is only for emergency purposes, this statement has been emphasized in the FEIS introduction to avoid any further confusion.*

Comment 3.6-24 (Letter, John Sarna, P.E., August 28, 2007): The capacity analysis, utilizing the 2000 Highway Capacity Manual and the HCS Highway Capacity Software, is done properly.

> ***Response 3.6-24:*** *Comment noted.*

Comment 3.6-25 (Letter, John Sarna, P.E., August 28, 2007): The following errors are noted for the capacity analyses at the intersection of Pipetown Hill Road and Central Avenue:

- Under present conditions the right turn from Pipetown Hill into Central Avenue can move concurrently with the exclusive left turn movement from Central Avenue southbound into Pipetown Hill Road, and there is a right turn green arrow on the Pipetown Hill Road approach that controls this movement. For the Existing and No-Build and Build conditions this movement has not been factored into the capacity calculations; it is included in the recommended revised operation.

- The capacity on the Pipetown Hill Road approach has been calculated with 12 foot lanes. They actually measure slightly under 11 foot width.

- The capacity on the Pipetown Hill Road approach has been calculated assuming a three percent upgrade. The grade appears to be more than that. Note: John Collins Engineers has provided me with a rerun of the capacity analysis using an eight percent upgrade. The resulting capacity calculation shows, as expected, slightly higher v/c ratios and average vehicle delay times, but not by themselves enough to significantly affect the results.

> ***Response 3.6-25:*** *Comments noted. The revised Traffic Analysis contained in Appendix C of this FEIS incorporates the appropriate revisions.*

Comment 3.6-26 (Letter, John Sarna, P.E., August 28, 2007): At the intersection of Pipetown Hill Road with Central Avenue, the capacity calculations for the 2008 No-Build and Build conditions show Level of Service E and F in the A.M. and P.M. peak hours respectively on Central Avenue approaches. The Traffic Impact Study recommends retiming the traffic signal to increase the cycle length from 66 to 70 seconds and to switch some green signal time from the Pipetown Hill Road approach to the Central Avenue approaches. The result produces better operations on the Central Avenue approaches, as well as for the overall intersection, but it does increase the v/c ratios and average vehicle delay times on the Pipetown Hill approach. In addition:

- Since the two-lane section of the Pipetown Hill approach is relatively short, a check should be made of the queuing on this approach under the revised signal timing to ascertain whether the approach can operate as a full two-lane section.

- The recommended signal timing calls for different phase timing in the A.M. and P.M. peak hours. A check should be made as to whether the existing signal controller can accommodate multiple signal phasing sequences, and/or whether any additional equipment, such as an

internal clock, might be required. It is noted that the recommended signal tuning revisions apply to both the Build and No-Build conditions.

- Finally, it should be noted that the intersection of Pipetown Road and Central Avenue is in the Village of Spring Valley, and the signal is not under the control of the Clarkstown Highway Department.

> ***Response 3.6-26:*** *This is addressed in the October 28, 2007 letter from John Collins Engineers, a copy of which is contained in FEIS Appendix B.*

Comment 3.6-27 (Letter, John Sarna, P.E., August 28, 2007): The items listed above, when corrected, should not result in significant changes in the calculated results or in the DEIS findings, but they should be addressed and corrected where necessary in order to have a fully supportable SEQR document, which ultimately becomes an official Planning Board document.

> ***Response 3.6-27:*** *Comment noted. The appropriate revisions have been included in the Revised Traffic Analysis included as FEIS Appendix C.*

Comment 3.6-28 (Letter, John Sarna, P.E., August 28, 2007): The results of the traffic study are summarized in Section 3.6 of the Draft Environmental Impact Statement under the heading Impact on Transportation. The full Traffic Impact Study is included as Appendix I of the DEIS.

- All revisions made to the Traffic Impact Study as a result either of this review or of any other comments should be reflected in Section 3.6 of the Draft Environmental Impact Statement as well.

- Figure 3.6-2, Intersections Studied, shows an access to Route 59, and indicates that the intersection of this access with Route 59 was studied. It does not show that the intersections of Pascack Road with Pipetown Hill Road and with Forman Drive were studied. This figure, which may have been taken directly from an earlier version of the DEIS, needs to be revised and/or replaced.

> ***Response 3.6-28:*** *The complete Revised Traffic Analysis has been included in the FEIS Appendix C, Revised Traffic Analysis. The FEIS Introduction notes that the most recent Traffic analysis supersedes all previous Traffic Analysis. Revised DEIS figures have been included as replacement pages in the FEIS Appendix C, Revised Traffic Analysis.*

Comment 3.6-29 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): One of the alternatives noted, on page 4-2, briefly examines alternate access, with only the Route 59 access being available. Page 4-3 includes a summary of an earlier traffic study by John Collins Engineers that evaluated two entrances - one at Route 59 carrying 65 percent of the traffic during peak periods and the other at Pipetown Hill Road carrying 35 percent during peak periods. The summary does not indicate whether changes in pavement marking would be necessary to allow for westbound left turn lanes. If the Planning Board wishes to fully evaluate Route 59 as the only access, some additional analysis would be appropriate.

> ***Response 3.6-29:*** *The NYS DOT has stated they will not allow any access to NYS Route 59 other than emergency access, thus rendering of this alternative void.*

Comment 3.6-30 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Executive Summary, page 1-1 refers to the driveway providing access to Route 59, but does not refer to its being intended for emergency access only. This should be clarified. Page 1-10 refers to this access as secondary.

> ***Response 3.6-30:*** *Pipetown Hill Road is the single site access and access to NYS Route 59 is only for emergency purposes, this statement has been emphasized in the FEIS introduction to avoid any further confusion.*

Comment 3.6-31 (Letter, Dennis M. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): What is the implication of timing between this project and construction of the access from Route 59 by others? Is this a second primary access or emergency access only?

> ***Response 3.6-31:*** *As stated, the Route 59 access will be for emergency purposes only, and the project will no longer rely on construction of this access by others. The existing site access from NYS Route 59 is anticipated to be used for construction vehicles to complete construction of the culvert. Upon completion of the culvert, a stabilized construction access will be available from Pipetown Hill Road for the remainder of construction. Due to the amount of time which has passed in development of the preferred Senior Housing Alternative, the construction of Wide World Auto and the emergency access provided over their easement is constructed and ready to be used.*

Comment 3.6-32 (Robert Jackson, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): With the increased truck traffic coming down Pipetown Hill Road, once the County builds its new garage around the block from this project, a left turn lane going into this project would help coming eastbound. You will have large trucks coming down Pipetown Hill Road towards Pascack Road, and it would be a good idea to have a turning lane into this project. Otherwise, when people do turn into this project, it will back up traffic further down Pipetown Hill Road.

> ***Response 3.6-32:*** *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the applicant has committed to construction of an eastbound left turn lane as part of the project.*

Comment 3.6-33 (Robert Jackson, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): I don't think your map shows a sidewalk on your side of Pipetown Hill Road. I am requesting it since we have shopping nearby, children, school buses and the like.

> ***Response 3.6-33:*** *Sidewalks are not proposed as part of this project.*

(Comment 3.6-34 George Hoehmann, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): I had asked the question regarding looking at realigning your entrance with the park and looking at a four-way intersection.

> ***Response 3.6-34:*** *This was considered however, based on a review of the grades and site plan layout, this is not feasible. There is a sufficient amount of separation between these two driveways so as to avoid conflict of turning movements including the left turns entering each development.*

Comment 3.6-35 (Richard Shoberg, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): I see an increase in traffic all through Clarkstown. People are going to use Pipetown Hill Road. You have a Lowe's going in, and people find other avenues and short-cuts. If you don't put a left turn lane in at this point, you can't retrofit it, and so that's why I think it's essential that it be done now, because it's planning for what is to come and I think it solves the situation or mitigates it to some degree.

> ***Response 3.6-35:*** *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the applicant has committed to construction of an eastbound left turn lane as part of the project. Construction of the preferred Senior Housing Alternative results in a 70% decrease in the Traffic to be generated by the proposed project.*

Comment 3.6-36 (George Hoehmann, Member Clarkstown Planning Board, Public Hearing, September 26, 2007): Because of the grade of the road, if an inattentive driver made an aggressive move it could result in slipping on the pavement. A left turn lane will make it a safer area for these additional units to be able to be accessed for additional vehicles.

> ***Response 3.6-36:*** *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the applicant has committed to construction of an eastbound left turn lane as part of the project.*

Comment 3.6-37 Mr. Tanler, President of the Board of Managers of the Conklin Park Condominium, Public Hearing, September 26, 2007): I can tell you anecdotally that I have witnessed personally an extraordinary amount of traffic cascading down Pipetown Hill Road long before there was even the additional condos, which were put up since I moved in. And I can tell you this: It is a speedway. Pipetown Hill Road is used by hot rodders late at night. Ordinary drivers use it in total disregard for speeding laws, and this is without a traffic light. My first recommendation is, if there is any way that a traffic light can be installed at this location, whether or not you approve of this development, it is needed, because you have people going 60-70 miles an hour up and down this road at all hours of the day.

> ***Response 3.6-37:*** *Traffic volumes are not sufficient to meet the NYS DOT warrants for a traffic signal. The reduction in projected site generated traffic as a result of the preferred Senior Housing alternative further reduce projected volumes along this roadway. Enforcement of the speed limit is a matter for the Clarkstown Police Department.*

Comment 3.6-38 Mr. Tanler, President of the Board of Managers of the Conklin Park Condominium, Public Hearing, September 26, 2007): Pulling out of my development we have two ways of doing so. I have sometimes sat there at hours of the day anywhere from five to ten minutes until I am able to pull out. When traffic is coming either from Pascack or down from Central, it is almost impossible to pull out, so there needs to be some way to provide a degree or safety for drivers and pedestrians as they try to get into this flow of traffic. You have 80 units being proposed with hundreds of people moving in…An extraordinary amount of traffic will be added. You need to address that.

> ***Response 3.6-38:*** *Development of the preferred Senior Housing alternative for Hyenga Lake is projected to add 14 a.m. peak hour trips and 17 p.m. peak hour trips. A left turn*

lane has been included as part of the project to alleviate delays along Pipetown Hill Road .

Comment 3.6-39 (Ms. Ricketts, Public Hearing, September 26, 2007): I just need some clarification on basically this trip generation manual because I noticed in the report the current edition is from. I am curious, based on development that has happened over the past four years, what type of factors were included in your model to represent Nanuet?

Response 3.6-39: *Existing traffic volume counts of the vehicles actually at the intersections studied was the basis of the Traffic Analysis.*

Comment 3.6-40 (Ms. Ricketts, Public Hearing, September 26, 2007): We have testimony from people who live on the street, that they know traffic is a problem, but your trip rate, your whole model is saying that it isn't, so there is obviously a discrepancy.

Response 3.6-40: *The problems identified primarily have to do with excessive speeding along Pipetown Hill Road and delays exiting the existing developments. The additional traffic generated by the Hyenga Lake Project will not have a significant impact on traffic operations in the area. Construction of a left turn lane on Pipetown Hill Road are expected to result in an overall improvement to traffic operating conditions.*

Comment 3.6-41 (Ms. Ricketts, Public Hearing, September 26, 2007): As Mr. Tanler said, it is normal to have to wait at least five minutes to get out of the Conklin Park complex, so this is not, "We had an accident on 59 and people are trying to take an alternative route," this is every day, all day…So as far as putting in a left or right turn, is it safe to infer that you guys will be widening the road or using the existing road and just painting some lines and arrows?

Response 3.6-41: *Similar to the previously proposed project, under the preferred Senior Housing Alternative, the improvements will include a combination of road widening and new pavement marking as shown on Drawing CP-1 in Appendix C.*

Comment 3.6-42 (Lawrence Tall, Manager of Conklin Park Condos, Public Hearing, September 26, 2007): I suggest that the traffic consultant go to the municipality, go to Clarkstown and Spring Valley police and get their accident reports because 13 in a two or three year period …the information from the DOT may not be accurate.

Response 3.6-42: *The database includes all reported accidents.*

Comment 3.6-43 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): Comments shall be requested from the Rockland County Department of Highways and all concerns shall be addressed.

Response 3.6-43**:** *Comment noted.*

Comment 3.6-44(Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): The proposed subdivisions may require sidewalks for safe pedestrian access through and within the proposed project.

Response 3.6-44: *No Sidewalks are proposed as part of this project.*

Comment 3.6-45 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): The proposed disposal site for fill that is to be removed from the site shall be listed in order to determine the full effect on the local road system and the impacts on local traffic. Additionally, the applicant shall abide by all regulations regarding the disposal of fill from construction projects..

Response 3.6-45: *The proposed disposal site is not known at this time and is at the discretion of the construction company. It is anticipated that the trucks carrying fill would access I-287 and would not impact local roads other than Pipetown Hill Road.*

Comment 3.6-46 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): The proposed construction truck movements on and off the highways could impact traffic flow. Therefore, the New York State Department of Transportation shall review the applicant's construction plans relative to the state highway.

Response 3.6-46**:** *NYS DOT is an involved agency and thus will review all plans prior to final site plan approval.*

Comment 3.6-47 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): The local fire and emergency personnel shall review the plan to determine the effectiveness of the proposed emergency access and the internal flow of the site to determine if there is sufficient area for emergency equipment, and if the location of emergency parking and/or access is appropriate.

Response* 3.6-47*: *Comment noted. Plans for the preferred Senior Housing alternative now proposed shall be submitted to the local fire and emergency personnel for comment prior to preliminary site plan approval.*

Comment 3.6-48 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 5, 2007): A decision should be made during the review process about whether two means of access are preferred for this project, especially given the number of units proposed and residents' needs to access the state highway Route 59..

Response* 3.6-48*: *Emergency only access is proposed to access NYS Route 59 via an easement over the Wide World Property to the north. The NYS DOT has firmly stated this access can be for emergency purposes only.*

***Comment* 3.6-49 (Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007):** John Collins refers to the accident study as I think Table A. It's actually Table B, I believe.

> ***Response 3.6-49:*** *Comment noted.*

Comment 3.6-50 (Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): It seems to me there were a fair number of accidents. I don't have other roads to compare it against, and one of the concerns I have just overall is that when you have a road that does seem to have a fair number of accidents, that even small changes may have a higher percentage impact than just what you would expect if there is an increase in traffic during peak hour of, you know, three percent or five percent. Does that mean you will have the probability of a three or five percent increase in traffic accidents, or could it be eight percent you get?

> ***Response 3.6-50:*** *The expected traffic volume increases from the preferred Senior Housing alternative can be accommodated without a significant impact. The peak hour traffic volume increases along Pipetown Hill Road will result in a 0.1% increase in traffic volume. This should not increase the accident rate for this roadway. The Applicant is providing access improvements to minimize safety impacts.*

Comment 3.6-52 (Marvin Baum, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): This does tend to be an area where there are a number of undocumented people living. I don't know if people the people have insurance. Are there are additional accidents that aren't showing up on the accident data, you know, a fender bender, something minimal they don't want to get involved in making a big issue?

> ***Response 3.6-52:*** *There may be some other unreported accidents but significant accidents are included in the database.*

Comment 3.6-53 (Robert Jackson, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): We never considered putting an entrance/exit out to 59, everything has been on Pipetown Road?

> ***Response 3.6-53:*** *The existing access to this site is currently from NYS Route 59. Under the preferred Senior Housing alternative proposed, emergency only access is proposed to access NYS Route 59 via an easement over the Wide World Property to the north. The NYS DOT has firmly stated this access can be for emergency purposes only.*

3.7 ENERGY & UTILITIES

Comment 3.7-1 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): The District maintains sewers in an easement on the above property. Drawings that Atzl., Scatassa & Zigler prepared in 2005 did not show the sewers or the easement. We had submitted a partial plan of the District's Comprehensive Sewer Plans showing our sewers on this property with a letter to the Planning Board dated March 9, 2005.

> ***Response 3.7-1:*** *The location of Sewers, as per the Rockland County Sewer District's Comprehensive Sewer Plans, on this property will be included on the site plans submitted for approval signature.*

Comment 3.7-2 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): Our office must approve any construction to be done within our easements.

> ***Response 3.7-2:*** *Similar to the previous proposal, under the Senior Housing Alternative plans will be submitted to the Rockland County Sewer District for approval prior to final site plan approval.*

Comment 3.7-3 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): . No permanent structures maybe built within our easements.

> ***Response 3.7-3:*** *Similar to the previous proposal, under the Senior Housing Alternative no permanent structures are proposed within the Rockland County District easements.*

Comment 3.7-4 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): If any foundation work or other types of major excavation work is to be done within close proximity to the easement boundary, we must be notified forty-eight (48) hours in advance. Shoring or other types of precautions may be needed to protect the sewer main. The property owner must also pay these expenses.

> ***Response 3.7-4:*** *Similar to the previous proposal, under the Senior Housing Alternative potential areas of excavation work or major excavation which are of concern to the Rockland Sewer District will be noted on the approved site plan. Forty eight hour notice will be given prior to any work being conducted within the identified areas.*

Comment 3.7-5 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): To prevent any damage from occurring to the existing main, the District must be notified when the land within the easement is to be modified. This includes but is not limited to regrading, raising or lowering of manhole frames, or working in close proximity to sewers and manholes within the easement

> ***Response 3.7-5:*** *Similar to the previous proposal, under the Senior Housing Alternative the Sewer District will be notified prior to any work being conducted within any easement area. As described above, areas of concern will be identified in advance on the approved site plan.*

Comment 3.7-6 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): The contractor must obtain required insurance and sign a waiver to defend, indemnify, save and hold harmless the County of Rockland and Rockland County Sewer District No. 1 from any claims arising from work performed within our easements and on our facilities.

> ***Response 3.7-6:*** *The Hyenga Lake-RHAC partnership will secure the required insurance and hold harmless agreements prior to construction on the project site.*

Comment 3.7-7 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): If, as the DEIS states, the project sponsor intends to connect this development to the sewers on Route 59 and thereby abandon the existing sewers on this site, the project sponsor must address the abandoned sewers and easement in the proposal.

> ***Response 3.7-7:*** *Similar to the previous proposal, under the Senior Housing Alternative sewers are anticipated to connect to the sewer main located near NYS Route 59. The abandoned sewers will be removed from any area disturbed during construction. Abandoned sewers located in undisturbed areas will remain intact.*

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Comment 3.7-8 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): The "Wastewater" paragraph of Section 1.2,7 (Utilities) on page 1-13 of the DEIS refers to "Rockland County Sewer District No. 11". Please note that we are Rockland County Sewer District No. 1, not 11.

> ***Response 3.7-8:*** *Comment noted.*

Comment 3.7-9 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): Section 1.3 (Listing of Permits and Approvals Required) on page 1-18 of the DEIS lists Rockland County Sewer District No. I as an "Interested Agency" only, and not as an "Involved Agency" with permitting authority over the proposed project. However, all permits, fees and inspections associated with sanitary sewer construction within the Village of Spring Valley are the responsibility of the District. Since the sewers from this project will connect to sewers on Route 59 that are in Spring Valley, a permit must be obtained from the District. This will require approval of the details for connecting to the existing sewers, and submittal of all necessary insurance, bonds, indemnification, and permit fees. Please have the EIS revised to list Rockland County Sewer District No. 1 as an Involved Agency.

> **Response 3.7-9:** *Rockland County Sewer District No. 1 will be considered as an involved agency.* Plans for the preferred Senior Housing Alternative now proposed will be sent to the Rockland County Sewer District for review and comment as part of the FEIS distribution. *Since there is a new Preferred Senior Housing Alternative, a public hearing on the FEIS will be conducted thus offering an additional opportunity for public comment on this project. Comments received on this FEIS, including the Preferred Senior Housing Alternative will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action*

Comment 3.7-10 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): Section 3.7.9 (Wastewater-Existing Conditions) on page 3.7-3 of the DEIS states, "The design capacity of the WPCF plant is approximately 29 million gallons per day." Please note that this is the *permitted* capacity of the plant, and not necessarily the *design* capacity.

Response 3.7-10: *Comment noted.*

Comment 3.7-11 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): Since the District was not listed as an Involved Agency, we did not receive the set of engineering plans to which Section 3.7.10 (Wastewater - Potential Impacts & Mitigation) refers on page 3.7-3 of the DEIS. Per the latest set of plans in our possession for this project, an easement for the sewer extension crossing Tax Lots 57.56-2-8 and 57.65-1-1 must be filed before granting approval to tie in.

Response 3.7-11: *The Hyenga Lake development has an access easement, including utility access across the Wide World Auto property to gain access to NYS Route 59.* Plans for the *Preferred Senior Housing Alternative* now proposed will be sent to the Rockland County Sewer District for review and comment as part of the FEIS distribution. *Since there is a new Preferred Senior Housing Alternative a public hearing on the FEIS will be conducted thus offering an additional opportunity for public comment on this project. Comments received on this FEIS, including the Preferred Senior Housing Alternative will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action.*

Comment 3.7-12 (Letter, Joseph LaFiandra, Engineer II, County of Rockland, Sewer District No. 1, August 8, 2007): Section 3.7.10 (Wastewater - Potential Impacts & Mitigation) on page 3.7-3 of the DEIS states, "The proposed project will be served by facilities owned and operated by Rockland County." Actually, the sewers for the proposed project are tributary to sewers that are owned by the Village of Spring Valley and Rockland County Sewer District No.1 (not Rockland County). In addition, Rockland County Sewer District No. 1 maintains the sanitary sewers that the Village of Spring Valley owns.

***Response 3.7-12*:** Comment noted, This reference will be corrected in all future text.

Comment 3.7-13 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Page 3.7-4 refers to the sewage collection and treatment system and states that "...no additional mitigation is proposed beyond the payment of the necessary taxes by future residents and dedication of the on-site collection system to the Town." The payment of taxes is not mitigation - it is a requirement. The on-site collection system will not necessarily be dedicated to the town. This statement should be clarified.

Response 3.7-13: *At the Town's discretion, it is anticipated the on-site sewer collection system will be dedicated to the Town of Clarkstown and become part of the Rockland County Sewer District No. 1.*

Comment 3.7-14 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): Utilities: Information from the RC Health Department and United Water regarding extent of water resources available for new development should be secured for this project.

> ***Response 3.7-14:*** *Prior to final site plan approval, the applicant will contact United Water of New York to ensure there will be a sufficient water supply during peak demand periods and in a drought situation,.*

Comment 3.7-15 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 2, 2007): Projects requiring water main extensions and all public water supply improvements shall be reviewed by the Rockland County Department of Health prior to construction. Plans must be signed and stamped by a NYS Professional Licensed Engineer and shall be accompanied by a completed NYS Department of Health Form 348, which must be signed by the public water supplier.

> ***Response 3.7-15*****:** *The necessary signatures and approvals will be secured prior to final site plan approval.*

Comment 3.7-16 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 2, 2007): Water is a scarce resource in Rockland County; thus proper planning and phasing of this project are critical to supplying the current and future residents of the Towns, Villages, and County with an adequate supply of water. Prior to approval of the proposed project, a letter from the public water supplier shall be issued, indicating there will be a sufficient water supply during peak demand periods and in a drought situation.

> ***Response 3.7-16*****:** *Prior to final site plan approval, he applicant will contact United Water of New York to ensure there will be a sufficient water supply during peak demand periods and in a drought situation.*

Comment 3.7-17 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 2, 2007): Public sewer mains requiring extensions within a right-of-way or an easement shall be reviewed and approved by the Rockland County Department of Health prior to construction.

> ***Response 3.7-17****: Comment noted.*

Comment 3.7-18 (Letter, Salvatore Carallo, Commissioner of Planning, County of Rockland Department of Planning, November 2, 2007): Even though Rockland County Sewer District #1's facilities are discussed in Sections 3.7.9 and 10, there is no indication from that Sewer District that there is sufficient capacity to serve the proposed development upon completion. The Town should receive notification from the District indicating such.

> ***Response 3.7-18: P****rior to final site plan approval, the applicant will secure a letter from the Rockland County Sewer District to ensure there is sufficient capacity to serve the proposed development upon completion.*

3.8 COMMUNITY FACILITIES & SERVICES

Since 1986, the Rockland Housing Action Coalition, Inc., also known as RHAC, has made significant strides in providing cost-effective housing for income eligible families and active adults in Rockland County. Partnerships have been created with local builders, lending institutions, government officials, grant providers, community based organizations and dedicated individuals who support the RHAC mission of providing cost-effective homes to middle income individuals and families.

In recent years, RHAC has been working with the public and private sectors to develop rental housing for our growing senior population. The Coalition is always moving in new directions, seeking new ways to fulfill our mission to provide cost effective rental and for sale homes for Rockland residents, help us to create housing opportunities. build new homes, administer all of our counseling programs and empower individuals with the skills they need to find affordable housing in Rockland County, close to their families and friends.

The preferred Senior Housing Alternative has been developed by the applicant in response to the demonstrated need for affordable senior citizen housing in the Town of Clarkstown. Appendix F contains a Market Demand Analysis for this type of housing in this region. As stated in a letter from the Town Board, dated January 27, 2009, the town supervisor states, "On behalf of the Town Board and the Town of Clarkstown, I am writing to express our support of the Rockland Housing Action Coalition's application for funding to the New York State Division of Housing and Community Renewal's Low Income Tax Credit Program and the New York State Housing Trust Fund Corporation to develop Hyenga Lake as a rental apartment complex for low income Seniors.

The letter further states, "The proposed use is allowable by special permit of the Town Board, and while (the supervisor) cannot commit the Town Board to a future vote, both the Town Board and the Planning Board have expressed a preference for the proposed development over the as of right use." Based upon the preference, the applicant is willing to make this preferred alternative the project proposed for construction. The applicant intends to partner with the RHAC in a not-for-profit arrangement to provide affordable rental housing units to senior citizens who have been income qualified by the RHAC.

The proposed Affordable Senior Housing project intends to apply for a Payment in Lieu of Taxes (PILOT) tax abatement. A PILOT tax abatement commits municipal fiscal resources to help to meet the needs of the community. In the Town Board's January 27, 2009 letter it further stipulates that, "The Town Board has in the past, supported PILOT programs to defray some of the building costs and reduce rents. I (the supervisor) believe the board would be supportive of a PILOT in this case as well."

The following Fiscal Analysis compares existing conditions to the previous 80 townhouse unit proposal and the 107 unit affordable senior housing preferred alternative to assess fiscal impact of this proposal. For ease of comparison, the assessed values and tax projections are based on the same rates as were used in the DEIS.

Current Assessed Value

The assessed value of the existing project site is $481,000. According to the Clarkstown Assessor's office, in 2006, the total annual property taxes including highway taxes, generated by the project site and paid to the Town of Clarkstown are $17,139, Rockland County receives $1,920, while the annual property taxes paid to the school district are $23,674. As discussed in the DEIS, the Town of Clarkstown utilizes the homestead tax rate for residential property owners.

Projected Assessed Value - 80 Townhouse Units

The previous proposal was to construct 80 units of multifamily housing in eleven two story buildings. Nine of the buildings will be 8 unit structures with four, one bedroom units on the first floor, and four, two bedroom units on the second floor. The two remaining buildings will each have two, one bedroom units on the first floor and two, two bedroom units on the second floor. For the purpose of this analysis, it is assumed the units will be market rate "for sale" condominiums. The units would likely sell for approximately $250,000 for a one bedroom unit and $285,000 for a two bedroom unit.

Based upon the projected sales price, the total market value of the previously proposed project is estimated to be $21,400,000. Using the Town's 2006 equalization rate of 31.0 percent, the total Market Assessed Value of the proposed project used for this analysis is $ 6,634,000.

Projected Property Taxes - 107 Units Affordable Housing PILOT Tax Abatement

A PILOT tax abatement agreement is a payment in lieu of taxes made by the property owner at a reduced rate compared to a full market value tax assessment, in exchange for the applicant providing a service or opportunity which meets the needs of the community. The project is in effect underwritten by the municipality in order to provide a service, in this case, affordable housing, which meet the needs of the community. The PILOT agreement is negotiated on a case by case basis, between the applicant and the Town Board, usually for a period of 10 years or more, not to exceed 40 years.

The most recent PILOT in the Town of Clarkstown, negotiated by the RHAC, who will partner with the Hyenga Lake Development, LLC in a not-for-profit arrangement to provide affordable housing, was Seton Village. The terms of this PILOT agreement have been used to project anticipated taxes to by paid by the Hyenga Lake project upon successful negotiation of a PILOT agreement with the town.

The terms of the comparable Housing PILOT agreement are as follows;

- 10 Year Term
- taxes to be paid = $410 per unit.
- 5% annual increase in the per unit taxes to be paid
- Disbursement;
  - Town 25%
  - School 60%
  - County 15%

Based upon the terms of this representative PILOT agreement the Taxes projected to be paid by the Hyenga Lake development are shown in Table 3.8-1. The Hyenga Lake Senior Housing Development will be constructed in two phases, building one will be constructed first with 66 units, and building two will be constructed second with 41 units, thus the tax analysis shows the taxes to be paid, for Building One and Full Build over the course of the 10 year PILOT agreement.

Table 3.8-1
Taxes projected to be paid by Hyenga Lake Senior Housing Development

Year	Building One	Full Build
1	$27,060	$43,870
2	$28,413	$46,064
3	$29,834	$48,367
4	$31,325	$50,785
5	$32,892	$53,324
6	$34,356	$55,990
7	$36,263	$58,790
8	$38,076	$61,730
9	$39,980	$64,816
10	$41,979	$68,057

Source: Rockland Housing Action Coalition, May 10, 2009.

Table 3.8-1 illustrates that at full build, in year 10 of the PILOT agreement, a total of $68,057 will be paid in taxes. The representative PILOT agreement apportions 25% of these taxes to the Town and 60% to the school district with the remaining 15% going to Rockland County. Since the Hyenga Lake Senior Development is age restricted, it is more likely that 60% will go to the Town and 25% will go to the School District, with the remaining 15% to be allocated to the County.

Current and Projected Tax Revenues

Table 3.8-2 compares the taxes generated by the existing property to the taxes to be generated by the previous Hyenga Lake townhouse proposal, and further compares the taxes to be generated by the preferred alternative under a PILOT agreement. As stated, For ease of comparison, the assessed values and tax projections are based on the same rates as were used in the DEIS.

According to the Town of Clarkstown, Receiver of Taxes, the Town's tax rate includes town governmental services, highway maintenance, public parking, lighting and special assessments for water and sewer districts; the taxes to the Spring Valley Fire and Nanuet Community Ambulance Districts are also included. As presented in Table 3.8-2, The total tax revenues generated by the site as a result of the 107 Senior Housing proposal paid to the Town would be approximately $40,834 annually, and annual taxes paid to Rockland County would be $10,209.

Table 3.8-2 Current & Projected Taxes Generated by Project Site			
Taxing Authority	**Current Taxes ($)**	**80 Units Townhouse Projected Taxes Total ($)**	**107 Units Senior Housing PILOT Projected Taxes Total ($)**
Rockland County	**$1,920**	**$26,480**	**$10,209**
Town of Clarkstown	**$17,139**	**$155,111**	**$40,834**
East Ramapo School Tax	**$23,674**	**$326,515**	**$17,014**
TOTAL	**$42,733**	**$508,106**	**$68,057**

Notes:
(1) Tax Rate per $1,000 of Assessed Valuation.
** Tax Rate is assessed per unit
Municipal taxes are based upon Town of Clarkstown 2006 Homestead Tax Rates.
East Ramapo Central School Tax Rates are for the 2005-2006 school year.

Annual tax revenues to the East Ramapo Central School District would be approximately $17,014. This would be net revenue, since the restrictions on Senior Housing prohibit school age children.

Costs Associated with the Proposed Project

An approximate estimate of costs to the Town of Clarkstown associated with the proposed residential development may be determined by obtaining a reasonable composite of current costs on a per capita basis and multiplying this amount by the anticipated population of the proposed project.

Through a review of the Town's operating budget, the amount of expenditures can be derived and, by dividing the population into the amount of expenditures, the per capita cost can be determined. To estimate the portion of the per capita cost which is paid for by property tax revenues (as opposed to other forms of income to the Town), the per capita cost is multiplied by the proportion that property tax revenue comprises of the overall income stream. As detailed in the DEIS, a per capita municipal cost of $1,075 per person for municipal services has been established. This represents a "worst-case" estimate of per capita costs, as the commercial and other land uses in the Town also place demand on the various Town and other governmental services which are not considered in deriving the per capita cost.

As detailed in the DEIS, the 80 Townhouse project would generate 142 persons, including 22 schoolage children. Based on a per capita cost of $1,075, the additional costs to the Town of Clarkstown are projected to be approximately $152,650.

Based upon the difference in demographics, and the fact that the 106 units of senior housing are all one bedroom units (the superintendent apartment is a two bedroom unit), the projected population of the Senior Housing Alternative is estimated to be 129 persons with no school age

children.[1] Thus, based on a per capita cost of $1,075, the costs to the Town of Clarkstown are projected to be approximately $138,675.

Net Revenue

As shown in Table 3.8-2, although the tax revenue generated by the Senior Housing Alternative is reduced compared to the 80 unit townhouse development, a comparison of the existing tax revenue to the total future project-generated tax revenues indicates there will be a net increase of approximately $25,324, while still meeting the need to provide affordable housing to the community.

Comment 3.8-1 (Marvin Baum, Clarkstown Planning Board, Public Hearing September 26, 2007): How did the Applicant arrive at the number of children that this development would generate? (80 units with 22 children.)

> ***Response 3.8-1:*** *The Hyenga Lake development has been designed to include one- and two-bedroom dwellings. However, for purposes of providing a generous estimate of the total number of school age children that would be introduced by the development, a "worst-case analysis" was conducted using student multipliers for two- and three-bedroom dwellings, since the number of school age children generated by this scenario would be higher than if one and two bedroom unit multipliers were used. Demographic multipliers for common configurations of standard housing types for school-age children published in the Urban Land Institute's Development Impact Assessment Handbook based upon research of Robert Burchell and David Listokin, noted researchers in their field. These multipliers project that, in the northeast region, 0.1393 school age children per household would be generated by a two-bedroom multifamily unit, and 0.4151 school age children would be generated by a three bedroom unit. Based upon these conservative multipliers, approximately 22 students are projected to reside in the Hyenga Lake development.*
>
> *The Rutgers University Center for Urban Policy Research has published more recent multipliers, (June 2006) are also the result of research by Burchell, Listokin and Dolphin, and are based upon region of the country, housing type, bedroom count, similar to the ULI Handbook and are further fine tuned based upon purchase price. This demographic study indicates that the 2- and 3- bedroom units in the northeast area of the county for a single family attached units would be 0.14 students and 0.39 students, thus supporting the demographic projections made in the DEIS.*
>
> *This comment is not relevant to the Preferred Senior Housing Alternative now being proposed. This alternative is for 106 one bedroom apartments and one, two bedroom superintendent apartment. Based upon the change in demographics and the restrictions on residents, no school age children are anticipated to reside at Hyenga Lake*

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[1] According to the Rutgers Center for Urban Policy Research, the demographic multiplier for a one bedroom unit in a multifamily building is 1.32 persons, there are no published multipliers for age restricted housing, the Rutgers CUPR is the best available resource for demographic multipliers, and are differentiated by unit type, bedroom count and rental or ownership value. The student multiplier for this same category is 0.21, the overall multiplier could be reduced by this number, since the project is restricted to adults. In order to provide a conservative estimate a multiplier of 1.2 has been used.

Comment 3.8-2 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Executive Summary, page 1-2 estimates that projected selling prices would be $250,000 for one bedroom units and $285,000 for two bedroom units. With the passage of time since the draft DEIS was completed, do these figures need to be adjusted?

> ***Response 3.8-2:*** *Given the current uncertainty regarding economic conditions, these values appear reasonable for projection purposes. Actual selling prices will be dependent upon market conditions at the time of sale. This comment is not relevant to the Preferred Senior Housing Alternative now being proposed. The Preferred Senior Housing Alternative includes 106 rental apartments to be managed by the Rockland Housing Action Coalition, whereby residents will be income qualified in order to be eligible to live here.*

Comment 3.8-2 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Page 2-4 includes a MILL fee of $7,200 per lot. The project sponsor should confirm the accuracy of this figure, and include it in the fiscal impact.

> ***Response 3.8-3:*** *Page 2-4 states, "on-site recreation has been provided in the form of a community building. In addition, the Project Sponsor proposes to pay the applicable fee in lieu of recreation land as per the Town's site plan regulations. Recreation fees are currently $7,200 per lot." This comment is not relevant to the Preferred Senior Housing Alternative now being proposed.*
>
> *The applicant will pay the prevailing fee at the time of site plan approval. This is a one time fee which is part of the construction cost of the project and as such does not have a direct impact on the long term fiscal impact of the project upon the Town of Clarkstown.*

Comment 3.8-4 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): The Police Headquarters is located northeast of the project site.

> ***Response 3.8-4:*** *Comment noted.*

Comment 3.8-5 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): The fire department response included in the correspondence indicates the general statistics for that district. There is no direct response as to the impact of this project on the ability to provide service; additional information should be secured.

> ***Response 3.8-5:*** *A second letter has been sent to the Spring Valley Fire Department, dated, January 30, 2008, requesting they assess the impact of construction of the Hyenga Lake project to the Fire District, no response has been received. If a timely response is received, it will be included in Appendix B and distributed as part of the final FEIS. In accordance with SEQRA, this FEIS provides written responses to substantive and relevant comments on the DEIS received by the lead agency during the public review period. Since there is a new Preferred Senior Housing Alternative being considered, a public hearing on the FEIS will be conducted thus offering an additional opportunity for public comment on this project. Comments received on this FEIS, including the*

Preferred Senior Housing Alternative will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action.

Comment 3.8-6 (Letter, Dennis P. Letson, P.E. Deputy DIrector, Town of Clarkstown Department of Environmental Control, October 31, 2007): Pg. 1-12: The tax generation numbers would indicate that the project is a net cash benefit to the (school) district. An analysis of the potential impact of the increased cost and its effect on rate per $1000 should be provided to verify that the overall cost to district taxpayers will not increase.

Response 3.8-6: *The school tax rate is based upon the School Budget. The tax rate equals the amount of tax revenue necessary to fund the School District budget after considering all forms of revenue, i.e. State Aid. The tax rate equals the amount of tax revenue necessary to be raised by taxes, divided by the total assessed value of property within the school district. The project will increase the cost to the school district, however the increase in tax revenue is greater than the increase in cost, thus resulting in a lower tax rate to generate the revenue necessary to be raised by taxes. This comment is not relevant to the Preferred Senior Housing Alternative now being proposed. Based upon the change in demographics other restrictions, it is not anticipated that any school age children will live at Hyenga Lake, thus any taxes generated would have a positive effect on the School District's Budget.*

A revised Fiscal Analysis based upon the Preferred Senior Housing Alternative has been prepared as discussed earlier in this section. Since there is a new Preferred Senior Housing Alternative being considered, a public hearing on the FEIS will be conducted thus offering an additional opportunity for public comment on this project. Comments received on this FEIS, including the revised Fiscal Analysis for the Senior Housing alternative will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action.

Comment 3.8-7 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The calculations used a northeast region multiplier to justify that 22 school-aged children would live amongst the 40 one-bedroom and 40 two-bedroom units. Since the units are not proposed to be age-restricted, and this area tends to be more densely populated than the multiplier suggested, that total may be low and in need of adjustment upward. Not taking into account the number of bedrooms in each unit, the existing development has 26 occupied housing units (on Page 3.9-1) with 12 school age children (on Table 4-1 of Section 4.4). That student density formula results in 37 students for 80 units.

Response 3.8-7: *Although the proposed project is to be constructed as half one bedroom units and half two bedroom units. The demographic student multipliers projected a worst case analysis by utilizing the multipliers for half two bedroom units and half three bedroom units. This was done specifically to adjust the student count upwards and provide a conservative analysis.*

As discussed in Response 3.8-1, The Hyenga Lake development has been designed to include one- and two-bedroom dwellings. However, for purposes of providing a generous estimate of the total number of school age children that would be introduced by the development, a "worst-case analysis" was conducted using student multipliers for

two- and three-bedroom dwellings, since the number of school age children generated by this scenario would be higher than if one and two bedroom unit multipliers were used. Demographic multipliers for common configurations of standard housing types for school-age children published in the Urban Land Institute's Development Impact Assessment Handbook based upon research of Robert Burchell and David Listokin, noted researchers in their field. These multipliers project that, in the northeast region, 0.1393 school age children per household would be generated by a two-bedroom multifamily unit, and 0.4151 school age children would be generated by a three bedroom unit. Based upon these conservative multipliers, approximately 22 students are projected to reside in the Hyenga Lake development.

The Rutgers University Center for Urban Policy Research has published more recent multipliers, (June 2006) are also the result of research by Burchell, Listokin and Dolphin, and are based upon region of the country, housing type, bedroom count, similar to the ULI Handbook and are further fine tuned based upon purchase price. This demographic study indicates that the 2- and 3- bedroom units in the northeast area of the county for a single family attached units would be 0.14 students and 0.39 students, thus supporting the demographic projections made in the DEIS.

This comment is not relevant to the Preferred Senior Housing Alternative now being proposed. Based upon the change in demographics and other restrictions, it is not anticipated that any school age children will live at Hyenga Lake, thus any taxes generated would have a positive effect on the School District's Budget.

A revised Fiscal Analysis based upon the preferred Senior Housing Alternative has been prepared, and is included in this section. Since there is a new Preferred Senior Housing Alternative being considered, a public hearing on the FEIS will be conducted thus offering an additional opportunity for public comment on this project. Comments received on this FEIS, including the revised Fiscal Analysis will be addressed in an FEIS addendum to be circulated to all involved and interested agencies and made part of the Final SEQRA record pertaining to this action.

3.9 LAND USE & ZONING

Comment 3.9-1 (Jose Simoes, Town Planner, Town of Clarkstown, Public Hearing, September 26, 2007): As is the case with subdivisions and site plans dealing with multi-family developments, this project would require some sort of parkland, or as an alternative, money in lieu thereof.

> ***Response 3.9-1***: *The site will include passive recreation areas similar to the Middlewood model in the Town of Clarkstown.*

Comment 3.9-2 (Marvin Baum, Clarkstown Planning Board, Public Hearing September 26, 2007): Although a large portion of the property is not being developed, there is not a lot of greenery and open space that would be safe for children to play in.

> ***Response 3.9-2***: *The open space south of the Pascack Brook will serve as natural vegetated buffer from Pipetown Hill Road. The area of open space north of the stream, on the western portion of the site, is flat and easily accessible from the residential units*. This area will serve as passive recreational land. Due to the change in demographics of the preferred alternative, no children are expected to reside at Hyenga Lake.

Comment 3.9-3 (Tracy Butone, Unit Owner and President, Omni Park Condominiums, Public Hearing September 26, 2007): I am concerned about another 80 units being built. It is not fair to the residents of Omni Park, who were there originally, and the units are in the price range of $300,000. Low income housing is bringing down the value of our houses.

> ***Response 3.9-3***: *The preferred alternative of affordable Senior housing is being proposed to meet the needs of the aging demographic and to assist the Town of Clarkstown achieve it's goals of providing affordable housing opportunities throughout the town.*

Comment 3.9-4 (Andrea Gannis, Resident, Omni Park Condominiums, Public Hearing September 26, 2007): How many school children will be here if these are one bedrooms? The Applicant is unsure if they will be rentals or owned units. The development should be 100% purchased, not rentals. Every single low income or couple in Rockland County will want to move in. Not a mother or father with one child, but as many as they can possibly squeeze in.

> ***Response 3.9-4***: *Refer to Response 3.9-3.*

Comment 3.9-5 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Check setbacks on site plan, they appear not to match bulk table.

> ***Response 3.9-5***: *The setbacks of the preferred Garage Parking Alternative have been confirmed by the project engineer and match the bulk requirements of the Town of Clarkstown M-2 zone.* This comment is no longer relevant. Plans for the preferred alternative will be submitted to the Town of Clarkstown Building Plans Examiner to insure they meet the *bulk requirements of the Town of Clarkstown M-2 zone*, under it's special use permit which allows Senior Housing, as part of the FEIS public hearing process.

Comment 3.9-6 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): A variance will be required for enclosed parking.

> ***Response 3.9-6***: *The preferred alternative of affordable Senior citizen housing will be developed under a special use permit of the MF-2 zone, where no garage parking is required, thus no variance will be needed. . Subject to Planning Board approval the applicant is willing to make this preferred alternative the proposed project.*

Comment 3.9-7 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Has applicant obtained approval from 0 & R for parking and dumpsters located within easement?.

> ***Response 3.9-7***: *There are no dumpsters or parking proposed in the O& R easement under the preferred alternative. Orange and Rockland utilities will be notified of the scheduled public hearing on the FEIS which includes the plans for the Preferred Alternative, allowing a chance for comment on the preferred alternative site plan.*

Comment 3.9-8 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Parking in 0 & R easement has parking within 20 feet of a lot line. (table 19, col. 8, item 6(F)

> ***Response 3.9-8***: *. The Preferred Senior Housing Alternative eliminates the parking which was within 20 feet of a lot line.*

Comment 3.9-9 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Opaque fencing shall be installed as per table 19, col. 8, item 6(o).

> ***Response 3.9-9***: *Per the zoning regulations stipulated in Table 19, Col. 8, Item 6(O), opaque fencing, six foot high is required along the northern property boundary. The adjoining property owner to the north, Wide World Auto, has an existing chain link fence for security purposes along the boundary between the two properties. Landscape screening in combination with the existing fence in this area would achieve the same objectives as a 6 foot high opaque fence. This landscaping will be shown on the Landscape plan to be submitted prior to preliminary site plan approval. Provision of the Landscape Screening along the Wide World Auto fence will remain as part of the Preferred Senior Housing Alternative site plan.*

Comment 3.9-10 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Location of useable open space shall be approved by Planning Board and shown on site plan.

> ***Response 3.9-10***: *The previous site plan required and provided 56,092 square feet of usable open space. The Preferred Senior Housing Alternative has a total disturbance area which is 0.6 acres or 26,136 square feet less than the previous alternative. This area is available for use as additional open space. However, development of the project under the special use permit for senior housing in the MF-2 zone does not include a requirement for a specified amount of usable open space, thus no calculations are provided on the site plan. ,*

Comment 3.9-11 (Charles Maneri, Building Plans Examiner, Town of Clarkstown Building Department, July 11, 2007): Landscape, lighting and building elevation plans shall be submitted.

> ***Response 3.9-11***: *Landscape, Lighting and Building elevations will be submitted prior to preliminary site plan approval.*

Comment 3.9-12 (Rudolph Yacyshyn, Vice Chairman Clarkstown Planning Board, Public Hearing, September 26, 2007): If this is going to be a rental property, then he [the Applicant] will be able to be engaged [in maintaining the drainage facilities.] If it passes on to a homeowners association, be it a townhouse type of situation such as I reside in wherein we are a subdivision, or whether it's a condominium association, you are dealing with people who are unit owners who may not have the financial wherewithal in order to engage in anything later on. That's why it's important to determine what the ultimate status of this is going to be…Historically, the board has been very interested in the kind of ownership and/or other arrangements that are coming out of multi-family units, and I strongly suggest we take that into consideration in the beginning of this and not at the end.

> ***Response 3.9-12***: *The Preferred Senior Housing Alternative will be owned by the partnership between the Hyenga Lake, LLC and the RHAC, which will designate a management agent to be responsible for the maintenance needs of the project. Stormwater maintenance will be the responsibility of the Hyenga Lake-RHAC partnership. .*

Comment 3.9-13 (Robert Geneslaw, Planning Consultant, Public Hearing, September 26, 2007): If the applicant wants to keep the alternative of for sale or rental in his analysis of impacts he should include both alternatives. Based on the elements that are typically in an Environmental Impact Statement, the school impacts may be different, and the real property tax impacts may be different, and if they are the same, the applicant can demonstrate that with facts rather than supposition.

> ***Response 3.9-13.*** . A revised Fiscal Analysis for the preferred Senior Housing Alternative has been included in FEIS Section 3.8, and will be included for comment at the public hearing to be held on this FEIS.

Comment 3.9-14 Mr. Tanler, President of the Board of Managers of the Conklin Park Condominium, Public Hearing, September 26, 2007): My strongest plea would be that you don't sell us

out by making these rental properties, because renters do not take care of their property the way homeowners do. If you put 80 renters in there you are not going to have a very happy situation.

Response 3.9-14: *Refer to Response 3.9-13 .*

Comment 3.9-15 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): In the Executive Summary, page 1-1, the DEIS states that "to maintain the relative affordability of these units, a variance from the Zoning Board of Appeals shall be requested regarding enclosed parking per the zoning regulations." If the ZBA does not grant the variance, how will the affordability factor be affected? The Board may wish to request that the project sponsor provide information beyond that shown on page 4-4, one with enclosed parking and the other without, and to describe the cost differences in grading, construction, or other elements; and the effect on affordability.

Response 3.9-15: *The preferred alternative of affordable Senior citizen housing will be developed under a special use permit of the MF-2 zone, where no garage parking is required, thus no variance will be needed. No Garage Parking is proposed.*

Comment 3.9-16 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The applicant intends to request a variance from the zoning requirement of Table 19 that one half of all parking spaces shall be enclosed. It is this Department's contention that the Zoning Ordinance is to be upheld, and to simply state that costs would be kept lower if no parking is enclosed and to cite similar projects nearby that have no enclosed parking (and may have been constructed prior to that requirement) is not justification for a variance in this case. Residents may value the convenience of carports and the ability to retain the value of their vehicles by protecting them from the elements.

Response 3.9-16: *The preferred alternative of affordable Senior citizen housing will be developed under a special use permit of the MF-2 zone, where no garage parking is required, thus no variance will be needed.*

Comment 3.9-17 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The Town shall ensure that all proposed grades for streets and driveways are compliant with the Town Code.

Response 3.9-17: *Comment Noted.*

Comment 3.9-18 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): The County Planning Department believes that to properly evaluate environmental impacts, the design for the new construction should adhere to the zoning regulations of the municipality. New construction should not require variances nor be given any reductions in order to be constructed. This should apply to all requirements for yards, floor area ratio, bulk standards, parking and buffers. The site plan evaluated in the DEIS proposes to have open parking spaces whereas the ordinance requires at least 50 percent of the required spaces to be covered. An area variance will also be requested from the Zoning Board of Appeals. As the lot is not irregularly shaped and local conditions do not justify such a variance, we strongly believe that the final proposed DEIS should evaluate a design that can be accommodated by the site with no variances.

Response 3.9-18: *The preferred alternative of affordable Senior citizen housing will be developed under a special use permit of the MF-2 zone, where no garage parking is required, thus no variance will be needed.*

Comment 3.9-19 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): No lighting shall shine into any adjacent property or public right-of-way. All lighting shall be directed on site.

Response 3.9-19: *A Lighting Plan will be submitted, prior to preliminary site plan approval which will show that all lighting will be directed on site.*

3.10 CONSTRUCTION

Comment 3.10-1 (Elizabeth Moore, South Central Avenue, Public Hearing September 26, 2007): All of the construction is going to affect my home. Some houses were built a few doors away, and during construction my whole house was shaking.

> ***Response* 3.10-1:** *Similar to the previous project, under the preferred Senior Housing Alternative, it is not anticipated that blasting will be required , based on a review of the soil survey and the anticipated depth to bedrock. However, if required, blasting would be conducted in accordance with Chapter 220, Quarrying and Blasting, of the Code of the Town of Clarkstown, which would serve to minimize impacts to the maximum extent practical.*

Comment 3.10-2 (John Nugent, Omni Park, Public Hearing September 26, 2007): How long will this project take?

> ***Response 3.10-2*:** *Similar to the previous project, under the preferred Senior Housing Alternative, the road and residences are expected to be built over a 12 to 18 month period after all approvals and permits are received.*

Comment 3.10-3 (Letter, Robert Geneslaw, AICP, Planning Consultant, October 31, 2007): Executive Summary, page 1-3 refers to removal of excess soil material by approximately 1,810 trucks. Since the site has been utilized for a variety of purposes over its period of habitation, will soil testing of the material to be exported be undertaken and how will disposition be determined if undesirable material is found?

> ***Response 3.10-3*:** As shown in Table 1 in the Introduction**, t***he Preferred Senior Housing Alternative reduces the amount of excess cut material by approximately half, this will result in half as many necessary construction trips to transport the excess fill off site.*
>
> *A Phase 1 Environmental Site Assessment Report (ESA) was conducted on the project site by Team Environmental Consultants, dated March 21, 2006. (included in DEIS Appendix M). The ESA states, (Page 4), "None of the documented former owners on record appear to have been an industrial concern that would be expected to have utilized the property for the storage, usage, or disposal of industrial chemicals or hazardous materials.*
>
> *According to the site and regulatory interviews, the subject parcel has historically been utilized for residential purposes. The subject property was operated as a seasonal bungalow colony from the time of initial development in the 1930's until the mid-1980's. No Site or regulatory information as to historic use f the property for industrial or manufacturing purposes i.e., activities that would be expected to have routinely produced regulated hazardous materials or waste products) was available during the performance of the Phase 1 ESA."*
>
> *The ESA concludes, " Based upon the site setting, availability of a municipal water supply, review of available information, performance of site/regulatory interviews, and findings of the property walk-through inspection, no significant and immediate*

environmental liability issues associated with the property were identified. No additional site investigations are recommended at this time.

Based upon these conclusions, the soils to be removed from the site do not require testing, thus no testing is anticipated.

Comment 3.10-4 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): It is stated that material deliveries and heavy trucking will access the site via the NYS Thruway and Route 59. What is the additional impact if the DOT prohibits access from Route 59?

***Response 3.10-4*:** *Similar to the previous project, under the preferred Senior Housing Alternative, direct access to the site from the existing access point on NYS Route 59 will only be necessary to deliver the materials necessary for construction of the culvert and construction of the access road from Pipetown Hill Road. Upon completion of the culvert and the Pipetown Hill Road access, a stabilized construction access from Pipetown Hill Road will be utilized for construction access.*

Comment 3.10-5 (Letter, Dennis P. Letson, P.E. Deputy Director, Town of Clarkstown Department of Environmental Control, October 31, 2007): The previous sections of the document indicate 1810 truckloads of material to be removed from the site, equaling 3620 trips. This impact should be discussed, particularly in light of the potential to use Pipetown Hill Road.

Response 3.10-5: *Excess material will be transported off-site by approximately 1,810 trucks. This represents an average of approximately 9 trucks per day during the first nine months of construction, when the majority of the grading will occur. Upon completion of the culvert, it is anticipated that most of the construction trips would travel to and from the site via NYS Route 59 to South Central Avenue to Pipetown Hill Road. If necessary, a flag man will be provided to insure a smooth traffic flow on Pipetown Hill Road during construction. Excess material will be transported off site during non-peak traffic hours when additional traffic capacity is available. The Preferred Senior Housing Alternative reduces the amount of excess cut material by approximately half, this will result in half as many necessary construction trips to transport the excess fill off site.*

Comment 3.10-6 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): All construction activity shall adhere to the noise and odor requirements of the Town's Codes.

Response 3.10-6: *All construction activity will adhere to the noise and odor requirements of the Town's Codes.*

Comment 3.10-7 Robert Jackson, Member Clarkstown Planning Board, Public Hearing, November 7, 2007): They are going to remove quite a bit of fill, dirt, and such, a lot of trucks going out. Is there any way it could be done through Route 59, or would all access have to be out on Pipetown Road?

Response 3.10-7: *The proposed project will result in construction activity taking place. It is anticipated that the trucking at the inception of the project, prior to construction of the culvert, will use the existing access from NYS Route 59. Upon completion of the culvert access from Pipetown Hill Road, it is anticipated that a stabilized rough grade of the proposed site access*

from Pipetown Hill Road will serve as access for the project during the remainder of construction. All construction vehicles will use this access for ingress and egress. Construction vehicles and employees will park on-site at all times possible. Construction material storage, equipment staging and soil stockpiling will occur on graded stabilized areas of the site. The Preferred Alternative reduces the amount of excess cut material by approximately half, this will result in half as many necessary construction trips to transport the excess fill off site.

The heaviest volume of construction traffic is expected to occur at the beginning of the construction as site clearing and rough grading is conducted, and when asphalt and building materials are transported to the site.

Based upon engineering estimates for the Preferred Alternative, a total of approximately 29,718 cubic yards of material will be cut and approximately 7,604 cubic yards will be filled. The balance, or approximately 22,114 cubic yards, will be removed from the site. Excess material will be transported off-site by approximately 1,027 trucks. This represents an average of less than 5 trucks per day during the first nine months of construction, when the majority of the grading will occur. Upon completion of the culvert, it is anticipated that most of the construction trips would travel to and from the site via NYS Route 59 to South Central Avenue to Pipetown Hill Road. If necessary, a flag man will be provided to insure a smooth traffic flow on Pipetown Hill Road during construction. Excess material will be transported off site during non-peak traffic hours when additional traffic capacity is available.

4.0 ALTERNATIVES

Comment 4.0-1 (Letter, Salvatore Corallo, Commissioner of Planning, Rockland County Department of Planning, November 5, 2007): Section 4.0 of the DEIS addresses a No Action alternative and one other alternative for access which does not include the second access driveway leading from Pipetown Hill Road. Figure 4-2 also addresses a Covered Parking (carport) alternative. An additional alternative should be added and analyzed that disturbs less ground space and eliminates all construction activities in the steepest sloped areas and wetlands. A cluster development of the site should also be considered as an alternative so that more land could be conserved, providing some space for passive recreation.

> ***Response 4.0-1:*** *The applicant has prepared the Preferred Senior Housing Alternative, described in the introduction and shown in FEIS Figures 1 through 4, which results in overall disturbance of 4.6 acres, a reduction of 0.6 acres with a similar reduction in disturbance to steep slope areas of 0.2 acres, when compared to the previously proposed project. This Senior Housing alternative also results in a reduction of 16,886 cubic yards of cut and fill material. Development under the special use permit for Senior Housing in the MF-2 zone does not require garage parking thus, no variance is necessary.*
>
> *In the Preferred Senior Housing Alternative approximately 4.6 acres would be graded to accommodate the proposed 107 residential units, driveways and parking facilities, lawns and landscaped areas. The is a reduction in disturbance of 0.6 acres compared to the previous proposal discussed in the DEIS. The impervious area of the Preferred Senior Housing Alternative is 2.83 acres, a minimal reduction of 0.02 acres compared to the previous proposal. Cut and fill amounts would be significantly reduced as shown in Table 1. Total slope disturbance would be reduced from 5.2 acres to 4.6 acres, and steep slope disturbance (≥ 15 percent) would be marginally reduced by 0.02 acres compared to the previous proposal. Similar to the previous proposal, there would be no wetland disturbance as a result of construction of the Senior Affordable Housing alternative. Table 1 provides a quantitative comparison of the Senior Affordable Housing alternative and the previous proposal discussed in the DEIS.*
>
> *Impacts to community services and traffic would be reduced based upon the Senior Affordable Housing alternative. Impacts to the school district would be reduced due to the change in the demographic nature of the proposed project. Construction traffic impacts would also be reduced, due to the reduction in cut and fill amounts.*
>
> *Based upon discretion of the Planning Board, the applicant is willing to make this improved Preferred Alternative the project proposed for construction.*

Table 1 Alternative Impact Comparisons				
Area of Concern	***80 Units Townhouse DEIS***	***No Action***	***Alternate Access NYS Route 59***	***107 Units Affordable Senior Housing***
Land Use				
Impervious Surfaces (acres)	2.85	1.65	2.72	2.83
Total Project Cut (cubic yards)	43,200	0	42,878	29,718
Total Project Fill (cubic yards)	4,200	0	2,557	7,604
Net Cut to be exported (cubic yards)	39,000	0	40,321	22,114
Residential Units				
Residential Units (Total)	80	28	80	107
Natural Resources				
Total Site Area (acres)	12.4	12.4	12.4	12.4
Total Area of Disturbance (acres)	5.2	5.2	5.2	4.6
Woodland Disturbance (acres)	0.88	0	0.88	0.75
Wetland Disturbance (acres)	0.03	0	0.03	0
Lawn/Already Disturbed (acres)	3.9	0	3.9	3.6
Steep Slope Disturbance (>15%) (acres)	1.36	0	1.33	1.33
Community Resources				
Population	142	58	142	129
Residential Trips (p.m. peak hour) to Pipetown Hill Road	62	0	0	47
Residential Trips (p.m. peak hour) to NYS Route 59	0	13	62	0
Water Demand / Sewage Flow (based on 110 gallons per bedroom, per day)	13,200	6,160	13,200	11,770
School-age Children	22	12	22	0
Notes: Estimates are approximate. Source: Atzl, Scatassa, & Zigler, P.C.; Tim Miller Associates, Inc., 2009.				

Appendix A

PUBLIC HEARING MINUTES
AND
TECHNICAL REVIEW COMMENTS

Appendix B

CORRESPONDENCE

930

Orange & Rockland
a conEdison, inc. company

Orange and Rockland Utilities, Inc.
390 West Route 59
Spring Valley NY 10977-5300
www.oru.com

845-577-2296

July 7, 2005

Mr. T. Atzl
Atzl, Scatassa & Zigler,
Land Surveyors, P.C.
234 North Main Street
New City, NY 10956

Re: Hyenga Lake Development Plan - Pipetown Road and Route 59
R/W file: 03-011, 05-007

Dear Mr. Atzl:

Our Engineering Department has reviewed the following drawings for the above mentioned project:

Drawing 1, Preliminary Site Plan, dated 12/07/2004, Revision 1, dated 01/17/2005
Drawing 2, Preliminary Site Development Plan, dated 04/09/2003, Revision 4, dated 01/17/2005
Drawing 3, Preliminary Grading Plan, dated 12/07/2004, Revision 1, dated 01/17/2005
Drawing 4, Preliminary Detail Sheet, dated 11/17/2004, Revision 1, dated 12/07/2004
Drawing 5, Existing Conditions Map, dated 01/17/2005, no revision

Comments follow:

Drawing 1 – This drawing indicates the location of two dumpsters in our easement. These are unacceptable and must be moved to locations outside the easement. The drawing also contains a note that all the existing buildings are to be demolished. Since parts of the existing buildings are within our right of way, extreme care must be taken when demolishing the buildings to keep all equipment and debris at least 20' laterally and vertically from the wires. We do not permit stockpiling of debris, materials or storage of equipment within the right of way. We require the posting of warning signs 20' laterally from any wires to advise equipment operators of the presence of high voltage lines overhead. Suggested locations are adjacent to the towers, adjacent to the existing buildings, adjacent to the proposed buildings and at all underground infrastructure crossings. Refer to Drawing 4 for the Fire Lane Signs for the suggested size of the signs.

Drawing 2 – This drawing indicates the dumpsters located within our easement, these must be relocated outside of our easement. The drawing also needs to be revised to show a curb cut and gravel ramp into the right of way from the proposed road to Route 59 at the north end of the parking lot and another at the south end of the parking lot.

Drawing 3 – This drawing must be revised to show locations of dumpsters outside our easement. The details of the sanitary sewer lines and the storm water drainage lines under the parking lot are acceptable, but no other utilities are shown. We must review all facilities planned for the right of way before final acceptance and consent. Notes must be added to the drawings requiring the danger signs discussed above to be placed where facilities cross under or within 20' laterally of the high voltage wires above. The grade changes proposed reflect comments we have made in previous years and are acceptable to the extent shown. There appears to be a conflict involving Headwall, #23. The headwall appears to be at or near existing grade but the invert elevation is nearly 4' lower than what seems to be existing grade. Our standards do not permit grade changes within 50' of steel towers. This headwall is about 30' – 35' from the towers. Our Engineering Department suggests the creation of a catch basin just outside the curb line here to allow groundwater to enter the basin through the sides of porous vertical pipe and drop down to the culvert pipe going to the detention basin. Please review your options and propose a solution that does not violate our standards prohibiting grade changing within 50' of a tower.

Drawing 4 – No comments

Drawing 5 – This drawing depicts the existing buildings partially within our easement that are indicated on Drawing 1 to be completely demolished. The comments about Drawing 1 apply to this drawing as well.

Before we can grant consent to the improvements in our easement, we will need you to provide us with revised drawings addressing the above comments and showing all the improvements within the right of way. We can, at this time however, conceptually approve the project based on you and the owner/developer satisfying our concerns prior to final municipal approvals.

Sincerely,

Maria McDonald

Maria McDonald
Real Estate Specialist

Cc: J. Haggarty, P. McGoldrick, K. McPartland, J. Nash, Jr., J. O'Brien, J. Tannhauser, A. Voltaire, Town of Clarkstown Building Inspector, Town of Clarkstown Planning Board, Strawtown Farms, LLC

JOHN COLLINS ENGINEERS, P.C. TRAFFIC • TRANSPORTATION ENGINEERS

===== 11 BRADHURST AVENUE • HAWTHORNE, N.Y. • 10532 • (914) 347-7500 • FAX (914) 347-7266 =====

October 29, 2007

Mrs. Shirley J. Thormann, Chairperson
Town of Clarkstown Planning Board
10 Maple Avenue
New City, NY 10956

RE: Hyenga Lake Development
Pipetown Hill Road
Town of Clarkstown, NY

Dear Chairperson Thormann:

We have received a copy of the review memorandum dated August 28, 2007 from John L. Sarna, P.E. which outlines several technical comments on the traffic studies for the project. We are hereby responding with the additional information requested as well as clarifications and additional responses as necessary. For ease of review, we have followed the same headings as outlined in the memorandum.

TRAFFIC IMPACT STUDY

Form

- No response necessary.

Description of Existing Road Network

- The descriptions of Pipetown Hill Road, Central Avenue and Pascack Road have been expanded to include the additional description on the functioning of these facilities. In addition, other than the site driveways, the intersections analyzed are all signalized intersection.

2008 No-Build Traffic Volumes

- At the time of the study we anticipated that 2008 would reflect a reasonable design year timeframe. As noted in the comments, if a longer term period was utilized such as 2010, the impact on the analysis would not be significant. This has been confirmed by conducting a sensitivity analysis with addition traffic growth applied for the area intersections. As summarized in the revised Level of Service Table, similar levels of service will be experienced at the area intersections.

Site Generated Traffic Volumes

- The information is acceptable. No further response necessary.

Arrival and Departure Distributions

- The distributions of site traffic are based on a review of existing traffic patterns even if there was a slight variation of 5% or 10% the results of the analysis would not be impacted.

- There is no proposal for use of Route 59 other than for emergency vehicles and the text will be corrected.

Traffic Analysis

- The Highway Capacity Software (HCS) was used properly. No further response necessary.

- The analyses for the intersection of Pipetown Hill Road and Central Avenue has been revised to reflect the steeper grade on the westbound approach, the overlapping signal phase for right turn movements and the 11 foot lane widths. The analysis does not result in any significant change in the results and the comparison between No-Build and Build conditions.

- A queuing analysis on the Pipetown Hill Road approach to Central Avenue has been completed with the revised signal timings. Based on the analysis, it appears that the two lanes can be

utilized. The revised signal timing and phasing were consistently used for the No-Build and Build conditions. The signal controller is being reviewed to ensure that the phasing combinations can be easily made. If not, the new controller will be installed to handle these revisions. The traffic signal is under the control of the Village of Spring Valley.

As discussed at the last meeting with the Planning Board, the Applicant will widen Pipetown Hill Road at the access to provide a separate left turn lane. Also, accident data for Pipetown Hill Road has been obtained and is summarized in Table A.

In summary, the above revisions have been incorporated into the Traffic Study and the overall conclusions are still consistent.

Sincerely,

JOHN COLLINS ENGINEERS, P.C.

Philip J. Grealy, Ph.D., P.E.

attachments
cc: A. Cuttignola
J. Sarna, P.E.

Federal Emergency Management Agency

Washington, D.C. 20472

DEC 2 6 2007

RECEIVED
JAN - 2 2008
LEONARD JACKSON ASSOCIATES
CONSULTING ENGINEERS

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 07-02-0980R

The Honorable Alexander J. Gromack
Chairman, Town of Clarkstown
Board of Supervisors
10 Maple Avenue
New City, NY 10956

Community: Town of Clarkstown, NY
Community No.: 360679

104

Dear Mr. Gromack:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) for your community, in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated July 12, 2007, Mr. Leonard Jackson, Leonard Jackson Associates requested that FEMA evaluate the effects that the proposed project along Pascack Brook would have on the flood hazard information shown on the effective FIRM. The proposed area of revision extends from just upstream of Pascack Road to just downstream of State Route 59. The proposed placement of a culvert will occur approximately 750 feet upstream of Pascack Road.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Jackson.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer model, dated December 7, 2007, based on updated topographic information, was used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the topographic work map entitled "Hyenga Lake," prepared by Leonard Jackson Associates, dated December 10, 2007, and the data listed below are received, a revision to the FIRM would be warranted.

As a result of updated topographic information and modeling, the Base (1-percent-annual chance) Flood Elevations (BFEs) for Pascack Brook decreased compared to the effective BFEs. The maximum decrease in BFE, 14.5 feet, occurred approximately 500 feet downstream of State Route 59.

As a result of the proposed project, the BFEs will decrease compared to the existing BFEs for Pascack Brook. The maximum decrease in BFE, 0.1 foot, will occur approximately 450 feet downstream of State Route 59.

As a result of the updated topographic information, modeling, and the proposed project, the BFEs will decrease compared to the effective BFEs for Pascack Brook. The maximum decrease in BFE, 14.5 feet, occurred approximately 500 feet downstream of State Route 59.

As a result of the updated topographic information and modeling, and the proposed project, the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, will decrease for Pascack Brook. The maximum decrease in SFHA width, 250 feet, will occur approximately 750 feet downstream of State Route 59.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM.

- Detailed application and certification forms, which were used in processing this request, must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)

  Form 2, entitled "Riverine Hydrology & Hydraulics Form"

  Form 3, entitled "Riverine Structures Form"

  Hydraulic analyses, for as-built conditions, of the base flood; the 10-percent, 2-percent, and 0.2-percent-annual-chance floods, together with a topographic work map showing the revised conditions floodplain boundaries, must be submitted with Form 2.

- Effective October 1, 2007, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is $4,800 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

  FEMA National Service Provider
  3601 Eisenhower Avenue
  Alexandria, VA 22304-6425

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM. Because the BFEs would change as a result of the project, a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

The basis of this CLOMR is, in whole or in part, channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in New York, New York, at (212) 680-3620. If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,

Mary Jo Mullen

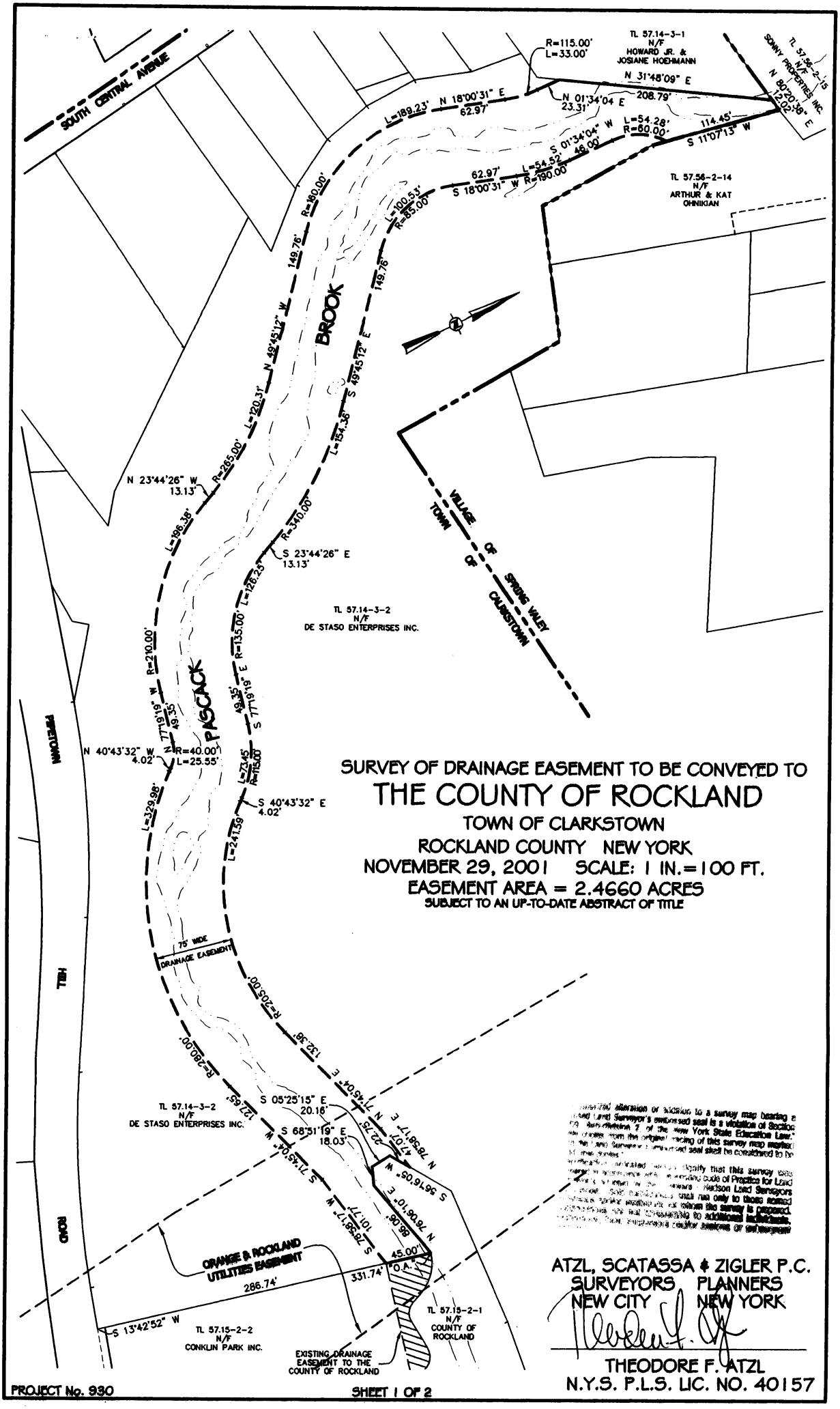
Mary Jo Mullen, P.E., Project Engineer
Engineering Management Branch
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Enclosures

cc: The Honorable George Darden
Mayor, Village of Spring Valley

Mr. Leonard Jackson, P.E.
Leonard Jackson Associates



SURVEY OF DRAINAGE EASEMENT TO BE CONVEYED TO

THE COUNTY OF ROCKLAND

TOWN OF CLARKSTOWN

ROCKLAND COUNTY NEW YORK

NOVEMBER 29, 2001 SCALE: 1 IN.=100 FT.

EASEMENT AREA = 2.4660 ACRES

SUBJECT TO AN UP-TO-DATE ABSTRACT OF TITLE

[illegible] alteration or addition to a survey map bearing a [illegible] Land Surveyor's embossed seal is a violation of Section [illegible] Subdivisions 2 of the New York State Education Law. [illegible] from the original tracing of this survey map marked [illegible] Land Surveyor's embossed seal shall be considered to be [illegible] copies.

[illegible] certify that this survey was [illegible] accordance with the minimum code of Practice for Land [illegible] adopted by the Hudson Land Surveyors [illegible] shall run only to those named [illegible] when the survey is prepared. [illegible] pertaining to additional individuals, [illegible] subsequent owners or mortgagees.

ATZL, SCATASSA & ZIGLER P.C.
SURVEYORS PLANNERS
NEW CITY NEW YORK

THEODORE F. ATZL
N.Y.S. P.L.S. LIC. NO. 40157

PROJECT No. 930

SHEET 1 OF 2

Schedule "A"

All that certain plot, piece or parcel of land situate, lying and being in the Town of Clarkstown, County of Rockland and State of New York. Being more fully bounded and described as follows:

BEGINNING at a point westerly line of lands now or formerly of Joseph & MaryEllen Seid (Tax Lot 57.15-2-2), said point being distant 286.74 feet as measured northerly along the westerly line of lands now or formerly of Joseph & MaryEllen Seid (Tax Lot 57.15-2-2) on a course of N13-42-52E from a point on the northerly right-of-way of Pipetown Hill Road located at the southwest corner of lands now or formerly of Joseph & MaryEllen Seid (Tax Lot 57.15-2-2); running thence thru lands now or formerly of De Staso Enterprises, Inc. (Tax Lot 57.14-3-2), the following fourteen (14) courses and distances:

1) S78-58-17W, a distance of 101.77 feet;
2) S71-45-04W a distance of 127.65 feet;
3) On a curve to the right having a radius of 280.00 feet, an arc length of 329.98 feet;
4) N40-43-32W, a distance of 4.02 feet;
5) On a curve to the left having a radius of 40.00 feet, an arc length of 25.55 feet;
6) N77-19-19W, a distance of 49.35 feet;
7) On a curve to the right having a radius of 210.00 feet, an arc length of 196.38 feet;
8) N23-44-26W, a distance of 13.13 feet;
9) On a curve to the left having a radius of 265.00 feet, an arc length of 120.31 feet;
10) N49-45-12W, a distance of 149.76 feet;
11) On a curve to the right having a radius of 160.00, an arc length of 189.23 feet;
12) N18-00-31E, a distance of 62.97 feet;
13) On a curve to the left having a radius of 115.00 feet, an arc length of 33.00 feet;
14) N1-34-04E, a distance of 23.31 feet; thence
15) N31-48-09E along the easterly line of lands now or formerly of Howard Jr. & Josiane Hoehmann (Tax Lot 57.14-3-1), a distance of 208.79 feet; thence
16) N80-20-38E along the southerly line of lands now or formerly of Sonny Properties, Inc. (Tax Lot 57.56-2-15), a distance of 12.02 feet; thence
17) S11-07-13W along the westerly line of lands now or formerly of Arthur & Kat Ohnikian (Tax Lot 57.56-2-14), a distance of 114.45 feet; running thence thru lands now or formerly of De Staso Enterprises Inc. (Tax Lot 57.14-3-2), the following fifteen (15) courses and distances:
18) On a curve to the left having a radius of 60.00 feet, an arc length of 54.28 feet;
19) S1-34-04W, a distance of 46.00 feet;
20) On a curve to the right having a radius of 190.00 feet, an arc length of 54.52 feet;
21) S18-00-31W, a distance of 62.97 feet;
22) On a curve to the left having a radius of 85.00 feet, an arc length of 100.53 feet;
23) S49-45-12E, a distance of 149.76 feet;
24) On a curve to the right having a radius of 340.00 feet, an arc length of 154.36 feet;
25) S23-44-26E, a distance of 13.13 feet;
26) On a curve to the left having a radius of 135.00 feet, an arc length of 126.25 feet;
27) S77-19-19E, a distance of 49.35 feet;
28) On a curve to the right having a radius of 115.00 feet, an arc length of 73.45 feet;
29) S40-43-32E, a distance of 4.02 feet;
30) On a curve to the left having a radius of 205.00 feet, an arc length of 241.59 feet;
31) N71-45-04E, a distance of 132.38 feet;
32) N78-58-17E, a distance of 47.07 feet; running thence along lands now or formerly of County of Rockland (Tax Lot 57.15-2-1), the following four (4) courses and distances:
33) S56-16-05W, a distance of 22.75 feet;
34) S5-25-15E, a distance of 20.16 feet;
35) S68-51-19E, a distance of 18.03 feet;
36) N76-06-10E, a distance of 86.06 feet; thence
37) S13-42-52W along the westerly line of lands now or formerly of Conklin Park, Inc. (Tax Lot 57.15-2-2), a distance of 45.00 feet to the point or place of BEGINNING.

SURVEY OF DRAINAGE EASEMENT TO BE CONVEYED TO
THE COUNTY OF ROCKLAND
TOWN OF CLARKSTOWN
ROCKLAND COUNTY NEW YORK
NOVEMBER 29, 2001

ATZL, SCATASSA & ZIGLER P.C.
SURVEYORS PLANNERS
NEW CITY NEW YORK

THEODORE F. ATZL
N.Y.S. P.L.S. LIC. NO. 40157

PROJECT No. 930

TIM
MILLER
ASSOCIATES, INC.

10 North Street, Cold Spring, New York 10516 *Phone (845) 265-4400* *Fax (845) 265-4418*

January 31, 2008

East Spring Valley Fire Department
10 Maple Avenue
New City, NY 10956

Re: Proposed Hyenga Lake - Multi-Family Development, Pipetown Hill Road
Town of Clarkstown, Rockland County, NY

Dear Chief:

Tim Miller Associates is preparing environmental documentation for a proposed multifamily residential project in the Town of Clarkstown. I have enclosed a site map for your reference. As shown on the site location map, the site is located on the north side of Pipetown Hill road south of NYS Route 59.

The proposed project consists of 80 to 88 units of Multifamily housing in 10 buildings plus a community center. Based on one to three bedrooms per home, we have projected a total future population of approximately 150 people, including 25 school age children.

As part of the environmental review process, we wish to include any concerns your office may have relative to this proposed project. We would appreciate your written response regarding the effect of the increased population on the area's facilities, and the ability of the East Spring Valley Fire Department to provide services to this property. Information which would be useful in that regard would include:

- your current service area/population served
- the number of emergency calls per year
- service ratio (emergency personnel to population served)
- your typical response time to a site in this location
- your current manpower and equipment levels
- any anticipated department staff or facility expansion or equipment procurement plans
- any overlap in jurisdiction with other police departments/jurisdictions, or backup service provided by neighboring communities

Your input is important. Should you not be able to provide written correspondence, I can be reached by telephone at the above number during the weekdays.

Thank you for your assistance in this matter. Please do not hesitate to call me should you have any questions or need additional information.

Sincerely,

Ann Cutignola
Senior Planner
TIM MILLER ASSOCIATES, INC.

LJA Leonard Jackson Associates Consulting Engineers
26 FIREMENS MEMORIAL DRIVE • POMONA, NEW YORK 10970 • (845) 354-4382 FAX (845) 354-4401

February 26, 2008

Tim Miller Associates, Inc.
10 North Street,
Cold Spring, NY 10516

Att: Ann Cutignola

Re: **Hyenga Lake – Response to FEIS comments**
LJA # 03151

Dear Ms. Cutignola:

We were requested by you to response to comment 3.2-11 of the FEIS. The following is the response:

Comment 3.2-11: The proposed pond will have a depth of approximately 10.5 feet to the spillway. The narrative should explain the volume of the pond and the relationship to classification as a dam based on height and volume detained.

Response 3.2-11:
The Hyenga Lake project detention & water quality basin does not require a dam permit from the DEC for the following reasons.

1. The height of the berm to the toe of slope is approximately 10.5 feet.
2. The total storage volume in the water quality/ detention basin is 124,886 gallons. Refer to the attached Water Quality/ Detention Basin Volume Calculations.

A permit would be required only if other criteria were also met. For your convenience here are the DEC criteria regarding dam permits as indicated in Section ECL-15-0503. (Copy Attached)

- A Dam Permit is required if $H \geq 15$ feet and volume > 1,000,000 gallons.
- A Dam Permit is not required if $H \geq 15$ feet and volume $\leq$ 1,000,000 gallons.
- A Dam Permit is required if volume $\geq$ 3,000,000 gallons and $H \geq 6$ ft.
- A Dam Permit is not required if volume $\geq$ 3,000,000 gallons and $H < 6$ ft.

Your response to comment 3.2-15 of the FEIS is satisfactory.

We hope you find this information helpful.

Very truly yours,

LEONARD JACKSON ASSOCIATES
Sonny Kong, P.E.

P:\Word-Files\2003\03151\Miller 2-26-08.doc

LEONARD JACKSON ASSOCIATES
26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Water Quality/ Detention Basin Volume Calculations

Project: **Hyenga Lake**
Location: **Town of Clarkstown, NY**
JOB # 03151

By: MS
Date: 26-Feb-08

Contour Elev. (ft)	Contour Area Proposed (ft^2)	Contour Area Average (ft^2)	Contour Area Proposed (ac)	Contour Area Average (ac)	Depth (ft)	Total Volume (ft^3)	Total Volume (ac-ft)	Cumulative Total Volume (ac-ft)
367.5	3		0.0001					
		223		0.0051	0.5	111	0.0026	0.0026
368	442		0.0101					
		999		0.0229	2	1997	0.0458	0.0484
370	1555		0.0357					
		2404		0.0552	2	4807	0.1104	0.1588
372	3252		0.0747					
		4324		0.0993	2	8648	0.1985	0.3573
374	5396		0.1239					
		6640		0.1524	2	13280	0.3049	0.6621
376	7884		0.1810					
		9276		0.2129	1.8	16696	0.3833	1.0454
377.8	10667		0.2449					

TOTAL VOLUME WITHIN WATER QUALITY/ DETENTION BASIN $= 16{,}696\ ft^3 \times 7.48\ \frac{Gal.}{ft^3}$

$= 124{,}886$ Gallons

$= 0.12 \times 10^6$ Gallons

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Outdoor Recreation
Animals, Plants, Aquatic Life
Chemical & Pollution Control
Energy and Climate
Lands and Waters
Education
Permits and Licenses
Permits
Protection of Waters Program
Protection of Waters: Do I Need A Permit?
Construction, Reconstruction or Repair of Dams and other Impounding Structures
Public Involvement and News
Regulations and Enforcement
Publications, Forms, Maps
About DEC

Construction, Reconstruction or Repair of Dams and other Impounding Structures

Regulated Activities

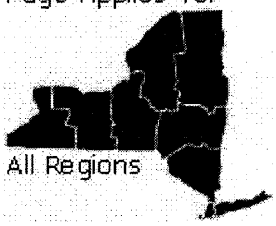
A Protection Of Waters Permit is required for:

Constructing, reconstructing, repairing, or modifying dams and water impounding structures that permanently or temporarily impound water as a result of a structure placed across a watercourse or overland drainage way or which receive water from an external source such as drainage diversion or pumping of ground water.

Some examples of activities requiring this permit are:

- siting and constructing a new dam or water impounding structure (i.e.,

Page Applies To:



Contact for this Page:

NYS DEC
Division of Environmental Permits
4th Floor
625 Broadway
Albany, NY 12233-1750

518-402-9167
email us

concrete, earthen, stone and wooden structures);

- reconstruction or modification (i.e., refacing, anchoring, breaching, or removal of an existing structure);
- repairs or maintenance which may affect the structural integrity or functional capability of a dam or impounding structure.

Exempt Activities

The most common impoundment related activities not needing a Protection of Waters
Permit for a Dam or Other Impoundment Structure are constructing or repairing a dam or structure used for impounding water that satisfies any one of the following criteria:

- maximum height is 6 feet or less (maximum height is measured as the height from the downstream (outside) toe of the dam at its lowest point to the highest point at the top of the dam);
- maximum impounding capacity is one million gallons or less (maximum impounding capacity is measured as the volume of water impounded when the water level is at the top of the dam);
- maximum height is between 6 feet and 15 feet and the maximum impounding capacity is less than 3 million gallons.

Is Your Project Minor or Major?

Review time frames, procedures and requirements for public notice for applications are different for Minor and Major projects under the Uniform Procedures Act requirements (6NYCRR Part 621). Generally, Minor projects have shorter review time frames and require less public review.

The only *Minor* Dam and Water Impoundment Structure projects are those confined to repairing existing structures contained in DEC's inventory of dams. (Contact DEC Dam Safety Unit at 625 Broadway, 4th Floor, Albany, NY 12233-3507, phone (518) 402-8127 to determine if a structure is included in the dam inventory.)

All other activities are considered *Major* Dam projects for purposes of review and public notice as required by the Uniform Procedures Act. For additional information, see Time Frames.

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JOHN COLLINS ENGINEERS, P.C. TRAFFIC • TRANSPORTATION ENGINEERS

===== 11 BRADHURST AVENUE • HAWTHORNE, N.Y. • 10532 • (914) 347-7500 • FAX (914) 347-7266 =====

March 5, 2008

Ms. Ann Cutignola
Tim Miller Associates
10 North Street
Cold Spring, NY 10516

RE: Hyenga Lake Development
Pipetown Hill Road
Town of Clarkstown, NY

Dear Ann:

Enclosed is a copy of the updated Traffic Impact Study which incorporates the comments from the Town's consultants. This report can be included in the FEIS appendix for the project. Also enclosed is a full size copy of our Conceptual Access Improvement Plan for Pipetown Hill Road.

If you have any questions, please do not hesitate to contact us.

Sincerely,
JOHN COLLINS ENGINEERS, P.C.

Philip J. Grealy, Ph.D., P.E.

765.letter.Cutignola

Appendix C

REVISED TRAFFIC ANALYSIS

JOHN COLLINS ENGINEERS, P.C. TRAFFIC • TRANSPORTATION ENGINEERS

11 BRADHURST AVENUE • HAWTHORNE, N.Y. • 10532 • (914) 347-7500 • FAX (914) 347-7266

TRAFFIC IMPACT STUDY

****

HYENGA LAKE DEVELOPMENT

PIPETOWN HILL ROAD

VILLAGE OF SPRING VALLEY/

TOWN OF CLARKSTOWN, NEW YORK

JOB NO. 765

MARCH 30, 2007

REVISED MARCH 3, 2008

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SECTION I

INTRODUCTION

This study addresses the Town's request to study additional area intersections and also incorporates the information from our previous evaluations of this site which were covered in our September 5, 2003, June 2, 2004 and May 17, 2006 letters. This report also includes the revisions recommended by the Town's Traffic Consultant as previously responded to in our October 29, 2007 letter.

A. PROJECT DESCRIPTION AND LOCATION (Figure No.1)

The Hyenga Lake project is a proposed 80 multi-family dwelling unit development (see Section III–B for discussion of 88 unit alternative) with access via a driveway connection to Pipetown Hill Road. An emergency access to NYS Route 59 via the Wide World Auto property is also being provided. The site location is shown on Figure No. 1. A design year of 2010 is considered in this evaluation.

B. SCOPE OF STUDY

This study has been prepared to evaluate the potential traffic impacts of the proposed development on the roadway system in the area. As part of the study, detailed turning movement traffic counts were collected at various intersections in the area which were requested to be studied by the Town of Clarkstown. The Existing Traffic Volumes were

then projected to a future design year utilizing a background growth factor. This growth factor was also used to account for traffic from other potential developments in the area to obtain the 2010 No-Build Traffic Volumes.

Estimates of the traffic which is expected to be generated by the proposed development were computed based on information published by the Institute of Transportation Engineers (ITE). The Site Generated Traffic Volumes were then assigned to the roadway network based on an arrival and departure distribution which was developed based on a review of existing traffic patterns in the area. The Site Generated Traffic Volumes were combined with the design year No-Build Traffic Volumes to obtain the Build Traffic Volumes for each of the intersections.

A detailed capacity analysis was conducted at each of the intersections utilizing the procedures outlined in the 2000 Highway Capacity Manual. The Existing, No-Build and Build Traffic Volumes were all analyzed for each of the peak hours to identify Levels of Service and operating conditions. Where necessary, based on the results of the analysis, recommendations for improvements were made.

SECTION II

EXISTING ROADWAY AND TRAFFIC CONDITIONS

A. DESCRIPTION OF EXISTING ROADWAY NETWORK

The proposed development is served by several area roadways and a description of each of these follows:

1. NYS Route 59 – is a roadway under jurisdiction of the NYSDOT. In the site vicinity, the roadway traverses in an east-west direction. The roadway originates to the east at U.S. Route 9W. From this point, the roadway generally traverses in a westerly direction through the Town of Clarkstown toward Suffern where it connects to NYS Route 17. This roadway generally parallels the NYS Thruway providing local and commercial access to the area. The speed limit is 45 miles per hour.

2. Pipetown Hill Road - is a two way town maintained roadway with a single travel lane in each direction. Pipetown Hill Road connects South Central Avenue to Pascack Road providing residential access to the multifamily developments in the area. The posted speed limit is 30 miles per hour.

3. Pascack Road – is County Road 35 south of Route 59 and with a single travel lane in each direction. Pascack Road runs north-south and provides residential access from Spring Valley to Nanuet. The posted speed limit is 30 miles per hour.

4. South Central Avenue - is County Road 37 south of NYS Route 59 with a single travel lane in each direction. Access from NY Route 59 to Pipetown Hill Road is via a signalized intersection with South Central Avenue. The posted speed limit is 30 miles per hour.

B. 2006 EXISTING TRAFFIC VOLUMES (Figures No. 2 and 3)

Several area intersections were requested to be studied. These included the following signalized intersections.

- Pipetown Hill Road and Pascack Road
- Pipetown Hill Road and South Central Avenue
- Pascack Road and Forman Drive

Previous traffic counts in the area were collected during August 2003, May 2004 and May 2006. These were updated with new counts on March 13, 14 and April 11 and 12 of 2007. The turning movement traffic volumes for the Weekday AM (7:45-8:45 AM) and PM (4:45-5:45 PM) Peak Hours were identified for each intersection and are shown on Figures No. 2 and 3.

SECTION III

EVALUATION OF FUTURE TRAFFIC CONDITIONS

A. 2010 NO-BUILD TRAFFIC VOLUMES (Figures No. 4 and 5)

The Existing Traffic Volumes were increased by a background growth factor of 2% per year to the 2010 Design Year. This factor was used to account for normal growth and other potential development traffic. The resulting 2010 No-Build Traffic Volumes were shown on Figures No. 4 and 5 for the Weekday AM and PM Peak Hours, respectively.

B. SITE GENERATED TRAFFIC VOLUMES (Tables No. 1 and 1A)

The site generated traffic volumes were computed for the 80 unit development and for an 88 unit alternate development based on information published by the Institute of Transportation Engineers as contained in their report entitled Trip Generation, 7th Edition, 2003. Tables No.1 and 1A summarizes the hourly trip generation rates and corresponding site generated traffic volumes for each of the development plans. As can be seen from these tables, the 88 unit alternate plan will result in slightly higher traffic generation.

C. ARRIVAL AND DEPARTURE DISTRIBUTIONS (Figures No. 6 and 7)

The anticipated arrival and departure distributions for the site generated traffic volumes were developed based upon a review of existing traffic patterns in the area and the resulting distributions are shown on Figures No. 6 and 7. It should be noted that for the purpose of this analysis all site traffic is expected to use the Pipetown Hill Road access.

It should be noted that the distributions of site traffic are based on a review of existing traffic patterns however, even if there was a slight variation of 5% or 10%, the results of the analysis would not be impacted.

D. 2010 BUILD TRAFFIC VOLUMES (Figures No. 8, 9, 10 and 11)

The Site Generated Traffic Volumes shown in Table No. 1 were added to the roadway network based on the arrival and departure distributions. The resulting Site Generated Traffic Volumes are shown on Figures No. 8 and 9. These Site Generated Traffic Volumes were combined with the 2010 No-Build Traffic Volumes to obtain the 2010 Build Traffic Volumes which are shown on Figures No. 10 and 11 for the AM and PM peak hours, respectively.

E. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis

  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the 2000 Highway Capacity Manual, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis

  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the 2000 Highway Capacity Manual. The procedure is based on total elapsed time from when a

vehicle stops at the end of the queue until the vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "D" of this report.

F. TRAFFIC ANALYSIS RESULTS AND RECOMMENDATIONS (Table No. 2)

Utilizing the procedures described above as outlined in the 2000 Highway Capacity Manual, each of the intersections was reanalyzed. Table No. 2 summarizes the Levels of Service for the intersections for each of the peak hours. As can be seen from a review of this table, under the Build conditions, the Levels of Service will be comparable to the No-Build condition with relatively minor increases in average vehicle delays. In addition, at the intersection of Pipetown Hill Road and South Central Avenue, the traffic signal timings should be modified to accommodate the future traffic volumes regardless of the proposed project.

A queuing analysis on the Pipetown Hill Road approach to Central Avenue has been completed with the revised signal timings. Based on the analysis, it appears that the two lanes can be utilized. The revised signal timing and phasing were consistently used for

the No-Build and Build conditions. The traffic signal is under the control of the Village of Spring Valley.

G. SUMMARY AND CONCLUSIONS

Based on the analysis results, the proposed access plan will allow traffic to access the roadway network without any significant negative impact on the surrounding intersections. Note that the final design of the driveway connection to Pipetown Hill Road should be detailed to ensure that the maximum sight distances are provided. Drawing CP-1 shows the conceptual access improvements on Pipetown Hill Road.

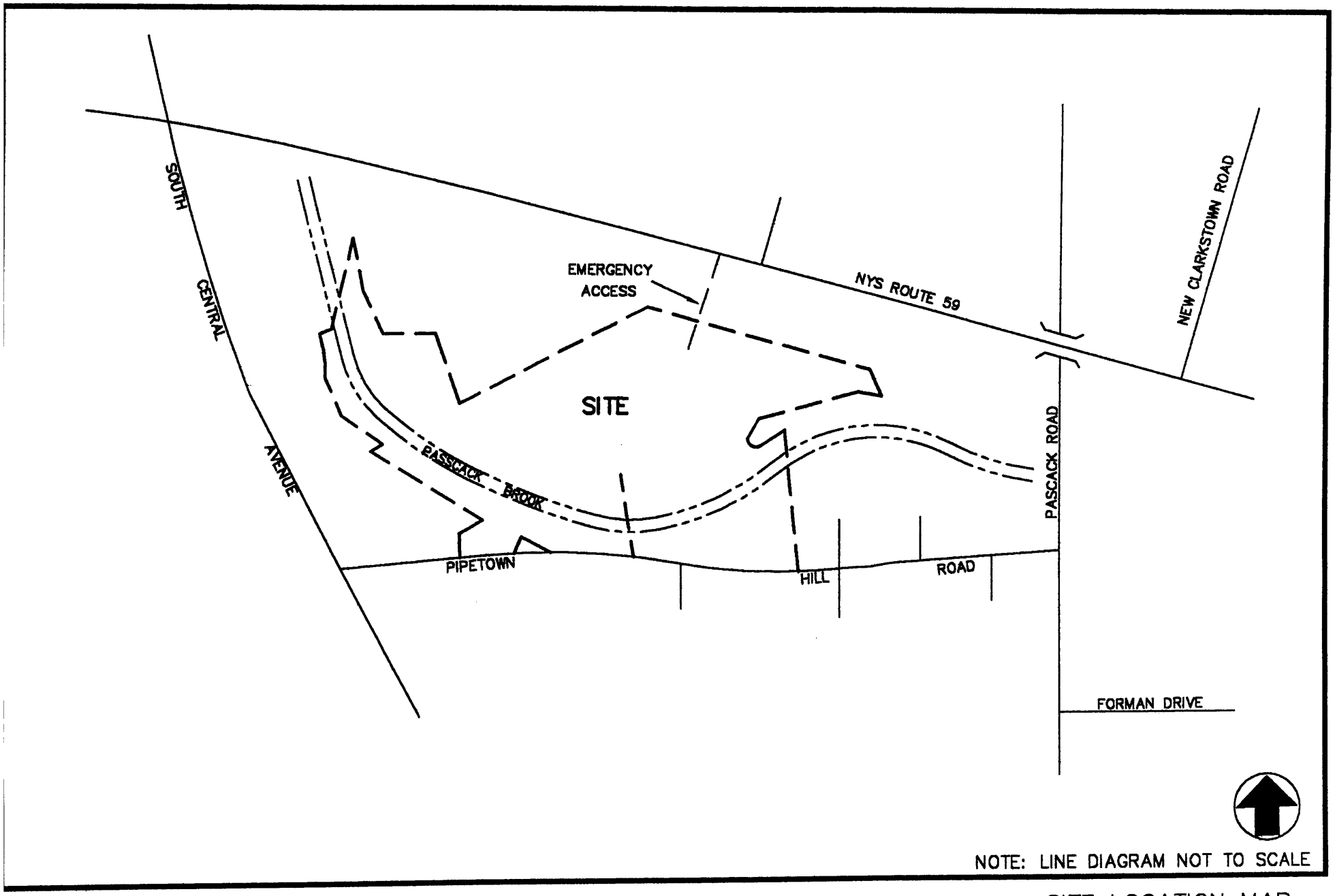
Respectfully Submitted,

JOHN COLLINS ENGINEERS, P.C.

Philip J. Grealy, Ph.D., P.E.

APPENDIX "A"

FIGURES

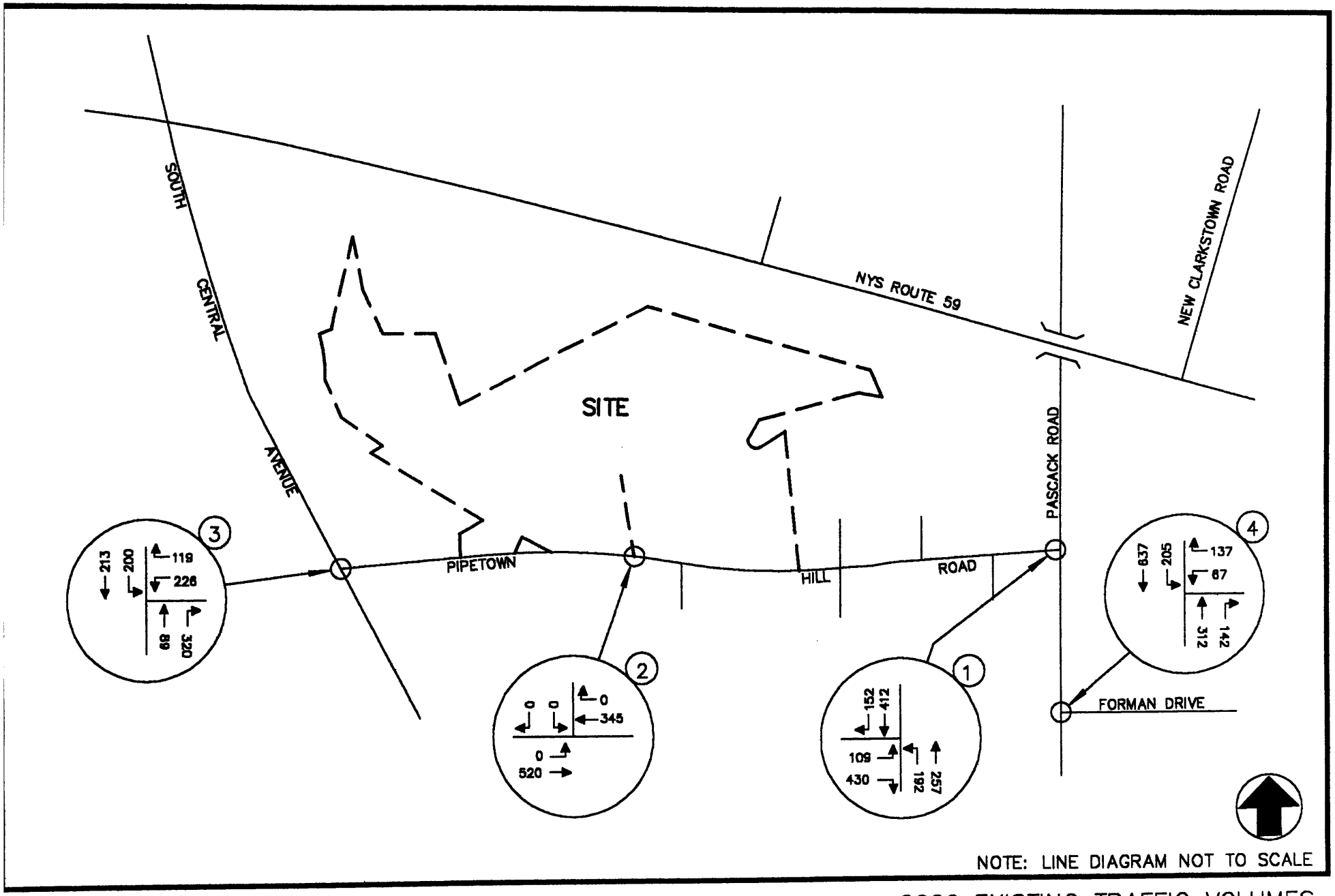


SITE LOCATION MAP

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 1

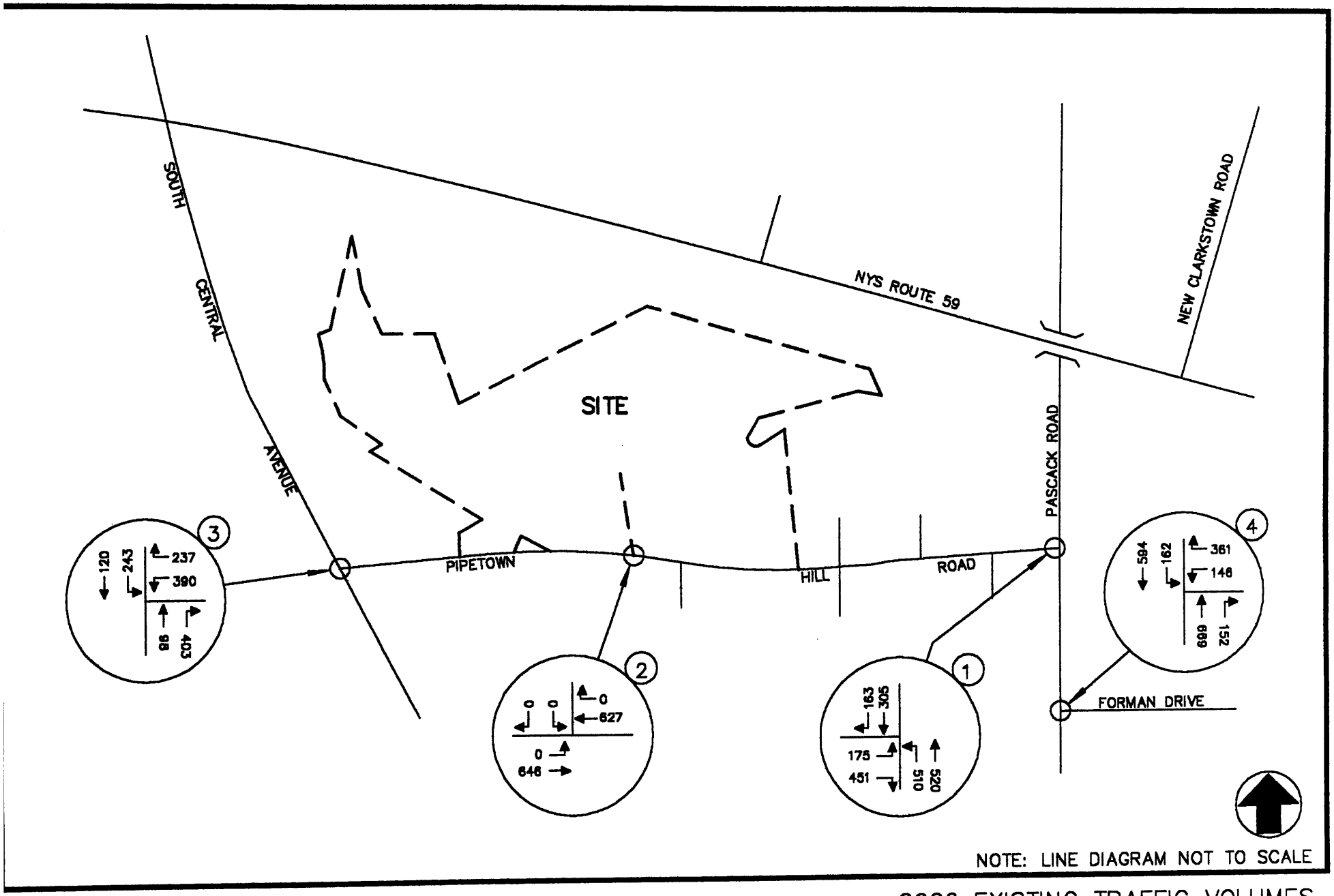


HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2006 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 2

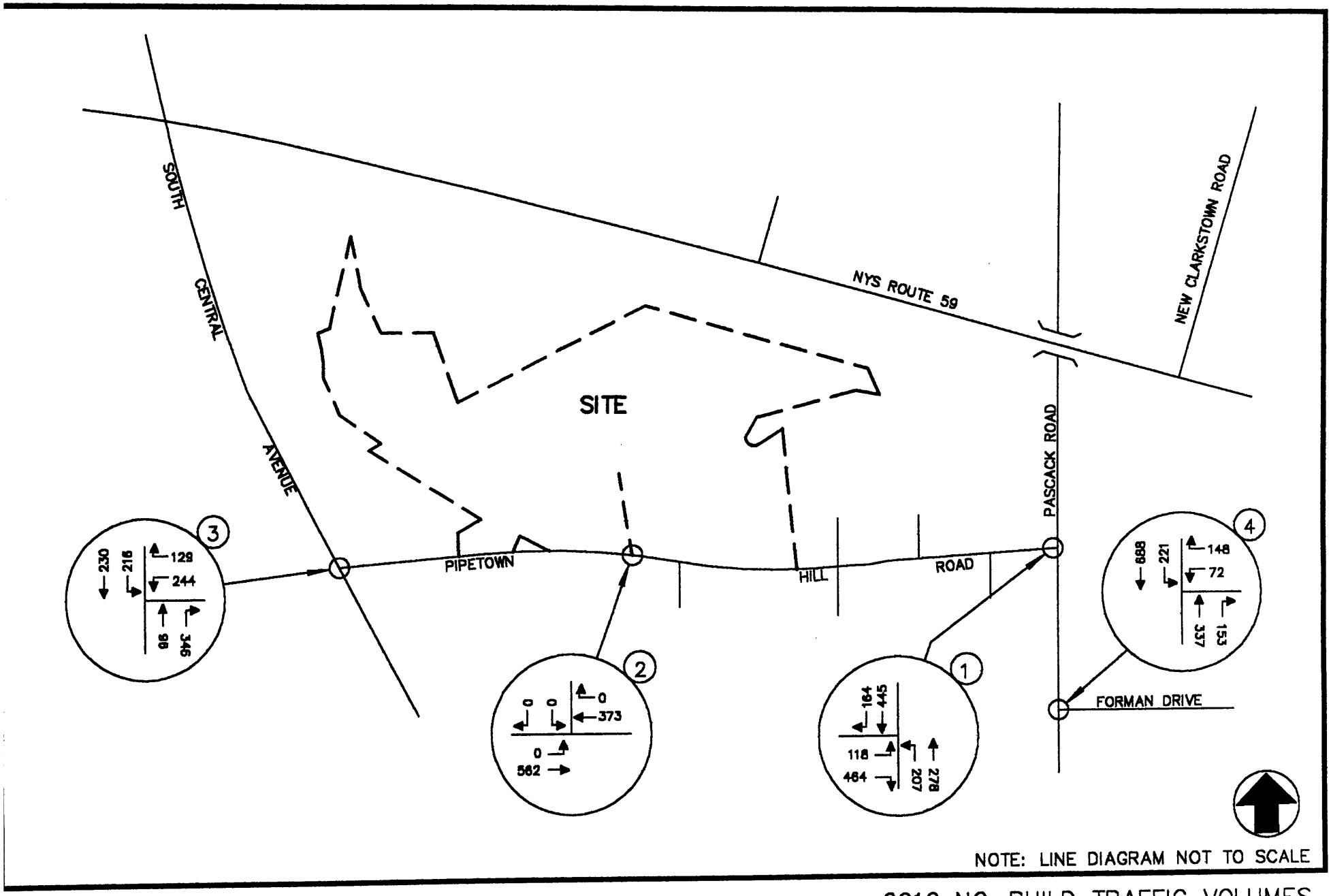


HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2006 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO.3

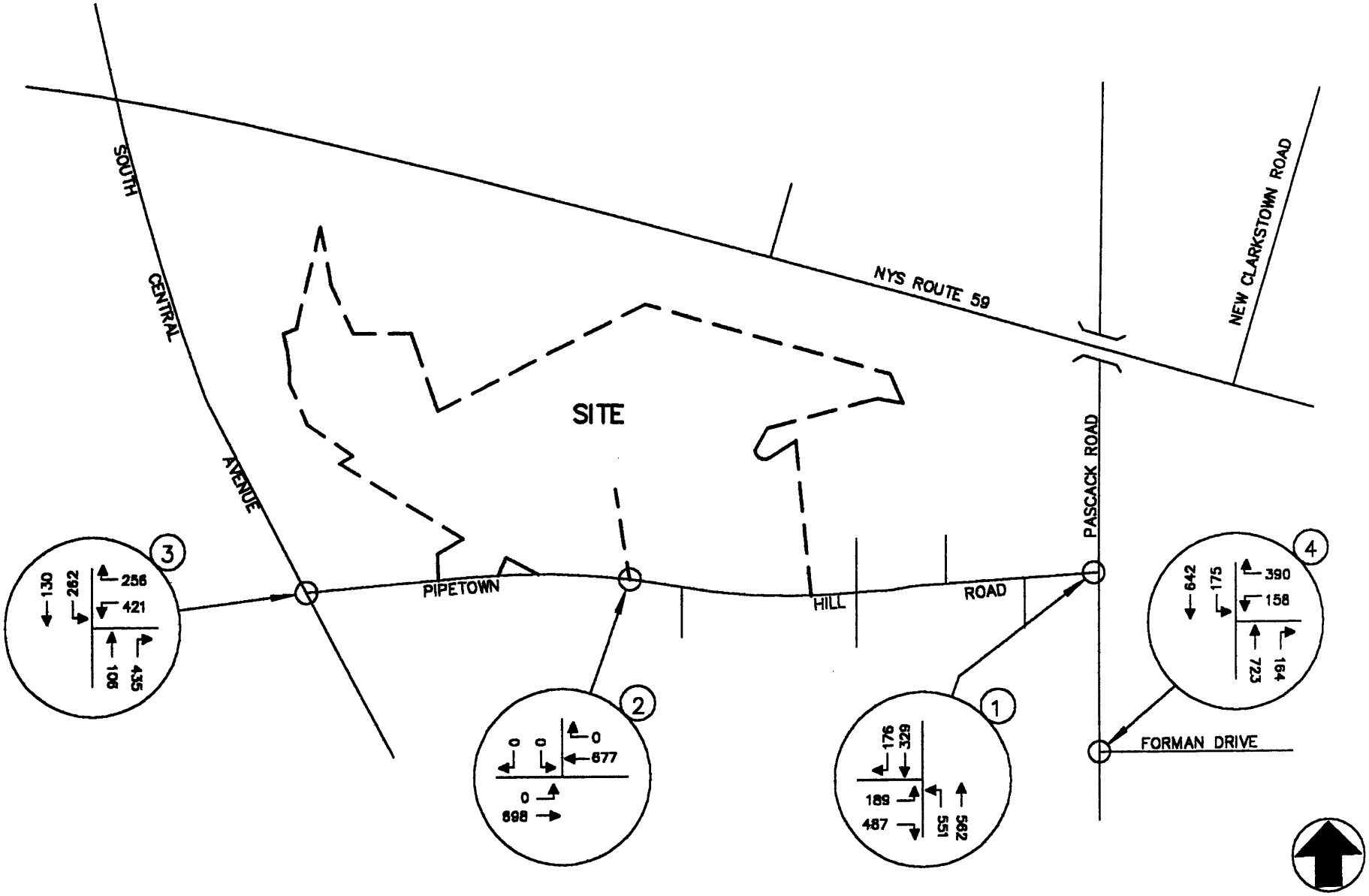


HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2010 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 4



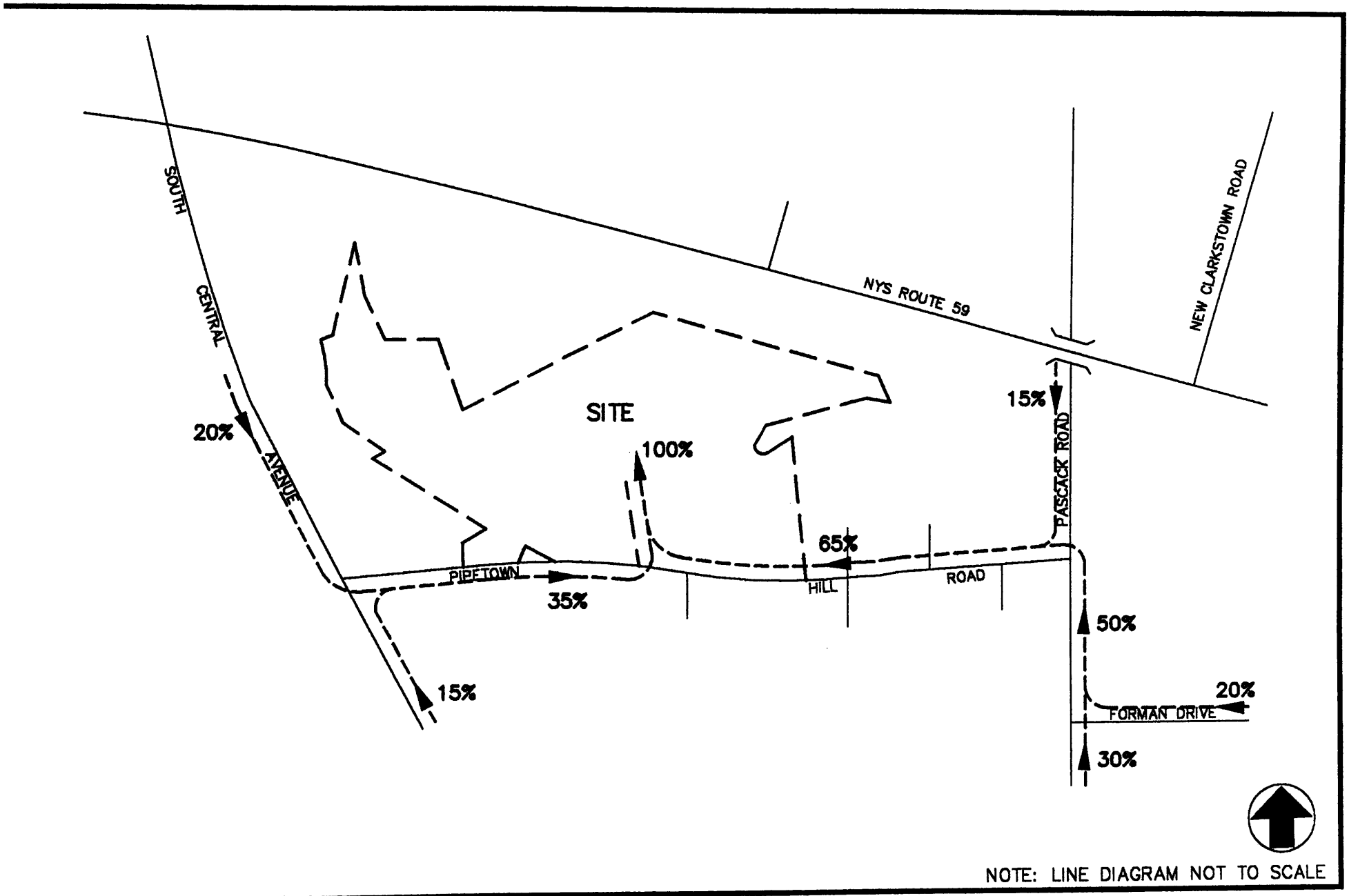
NOTE: LINE DIAGRAM NOT TO SCALE

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2010 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO.5

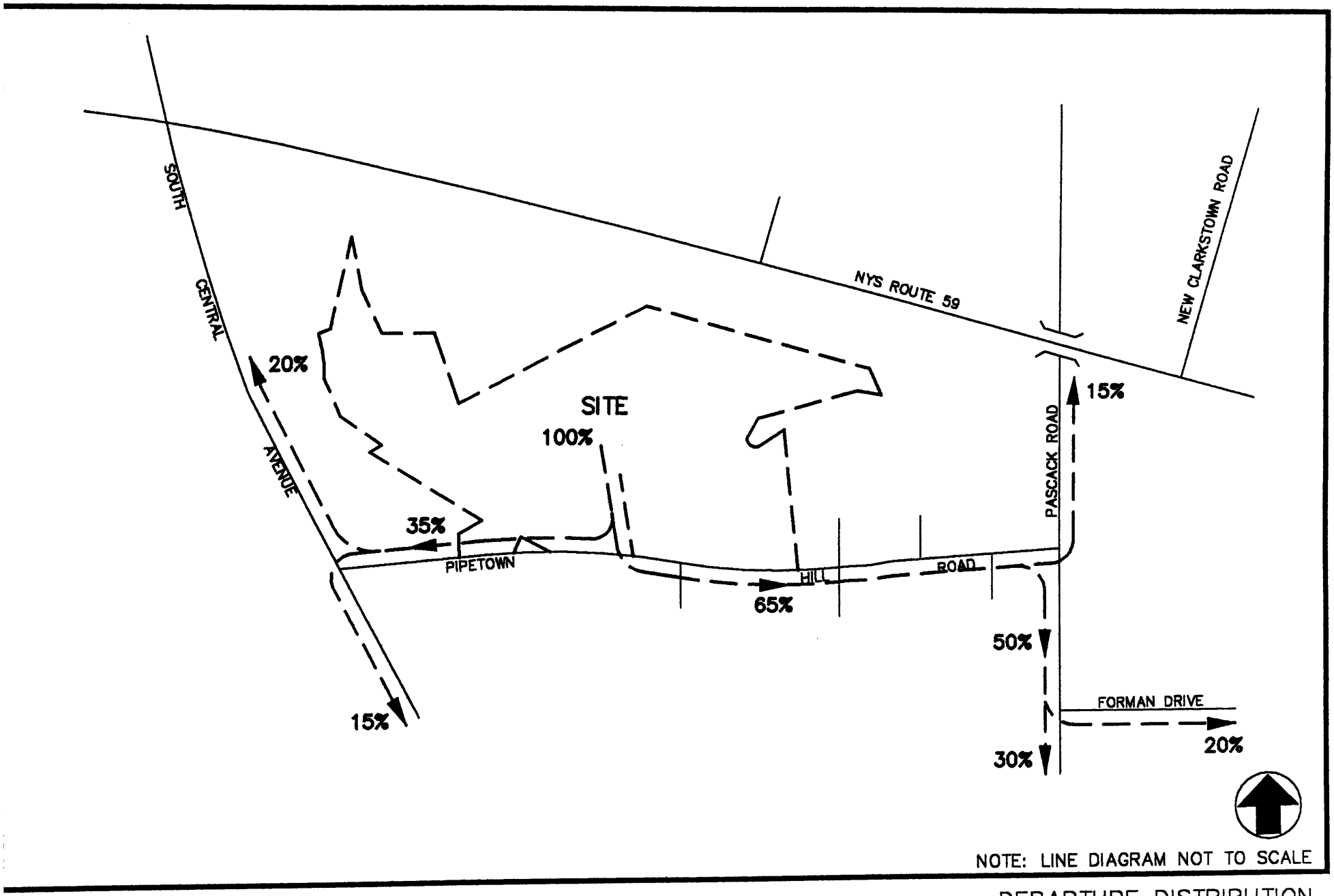


ARRIVAL DISTRIBUTION

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 6

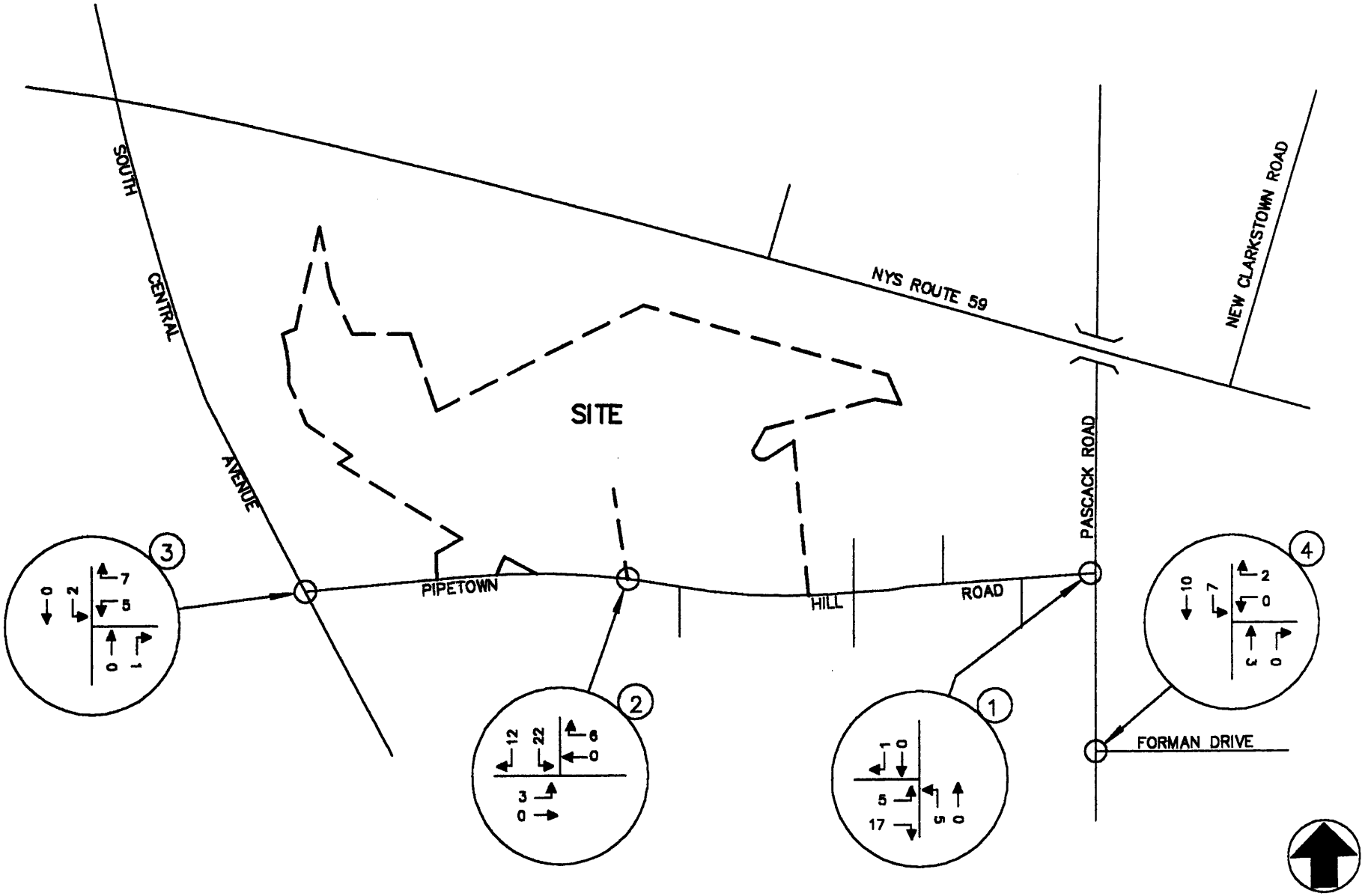


DEPARTURE DISTRIBUTION

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO.7



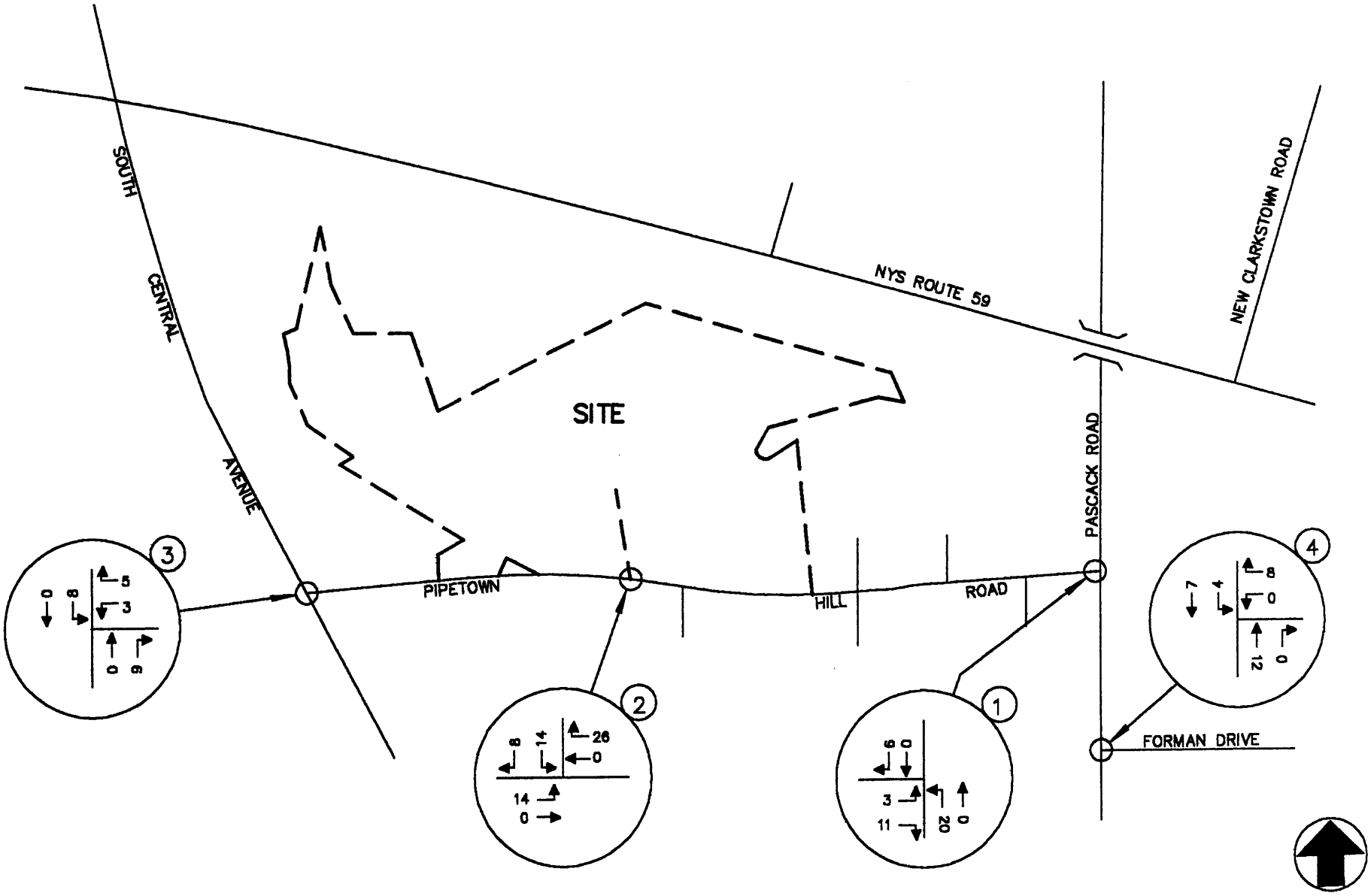
NOTE: LINE DIAGRAM NOT TO SCALE

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 8



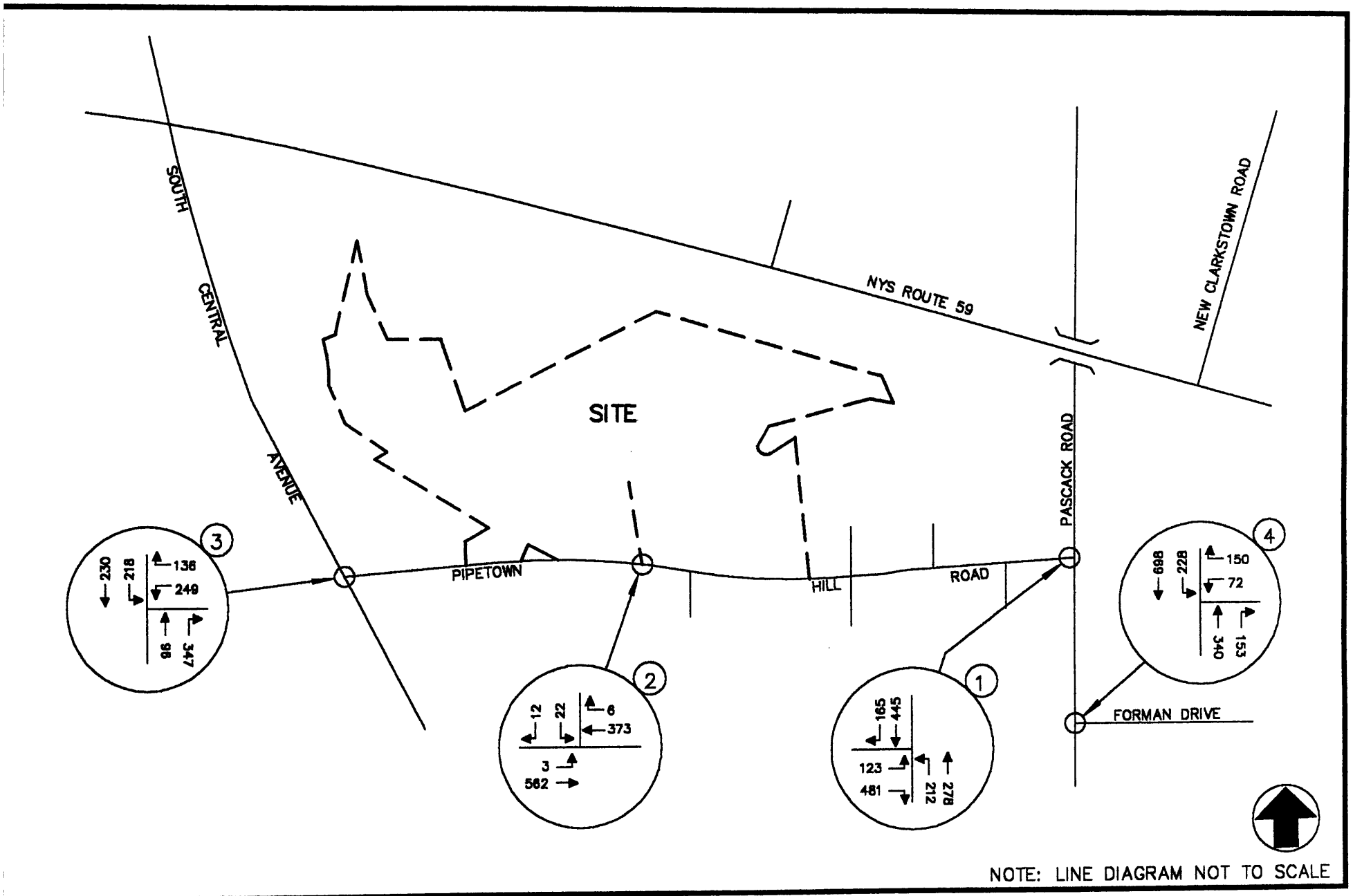
NOTE: LINE DIAGRAM NOT TO SCALE

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO. 9



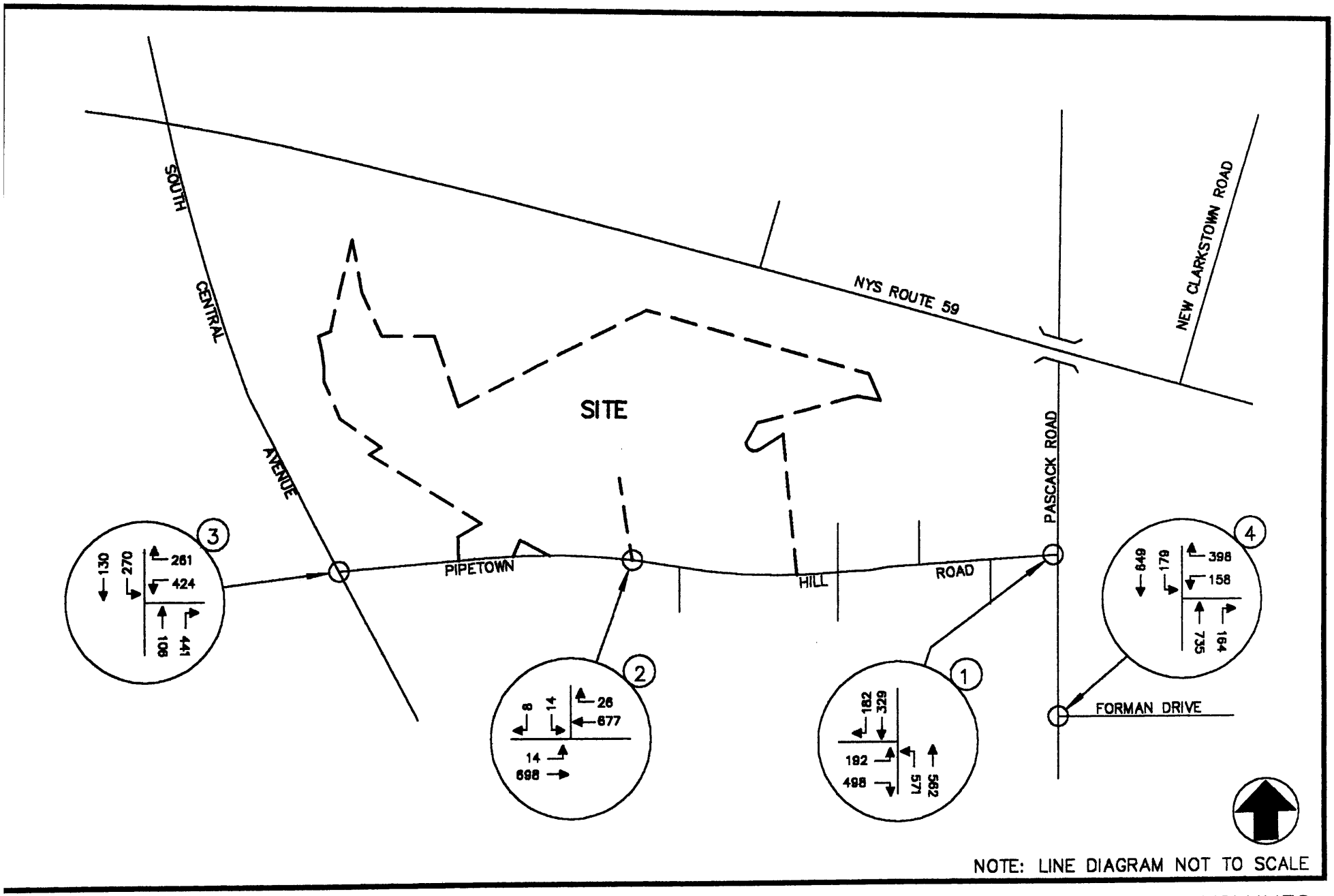
NOTE: LINE DIAGRAM NOT TO SCALE

HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2010 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO.10



HYENGA LAKE
SPRING VALLEY/CLARKSTOWN, NEW YORK

2010 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE, NEW YORK

PROJECT NO. 765 DATE: OCTOBER 2007 FIG. NO.11

APPENDIX "B"

TABLES

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

HYENGA LAKE	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
80 APARTMENT DWELLING UNITS				
PEAK AM HOUR	0.11	9	0.43	34
PEAK PM HOUR	0.50	40	0.27	22

NOTES:

1) * THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 6TH EDITION, 1997. ITE LAND USE CODE - 220 - APARTMENT.

TABLE NO. 1A

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

HYENGA LAKE	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
88 APARTMENT DWELLING UNITS				
PEAK AM HOUR	0.11	9	0.43	37
PEAK PM HOUR	0.49	43	0.26	23

NOTES:

1) * THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 6TH EDITION, 1997. ITE LAND USE CODE - 220 - APARTMENT.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE

				2006 EXISTING				2010 NO-BUILD				2010 BUILD			
				AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	PIPETOWN HILL ROAD & PASCACK ROAD	**SIGNALIZED**													
		NB	L	B[14.9]	0.58	C[26.3]	0.83	B[18.0]	0.66	D[39.0]	0.92	B[18.7]	0.68	D[46.2]	0.95
			T	A[9.2]	0.27	A[5.3]	0.44	B[18.5]	0.40	A[5.6]	0.48	A[9.3]	0.29	A[5.6]	0.48
		SB	TR	C[28.5]	0.80	D[35.5]	0.82	C[33.3]	0.86	D[42.3]	0.91	C[33.4]	0.86	D[43.6]	0.90
		EB	L	C[24.0]	0.23	D[41.4]	0.68	C[24.1]	0.25	D[44.8]	0.72	C[24.2]	0.27	D[45.6]	0.74
			R	C[20.9]	0.67	B[15.0]	0.60	C[22.8]	0.72	B[16.2]	0.64	C[23.8]	0.74	B[16.5]	0.66
		OVERALL		C[21.2]	-	C[22.0]	-	C[25.4]	-	C[27.2]	-	C[24.3]	-	C[29.5]	-
2	PIPETOWN HILL ROAD & SITE ACCESS DRIVEWAY	**UNSIGNALIZED**													
		SB	LR	-	-	-	-	-	-	-	-	C[17.9]	0.12	D[32.0]	0.15
		EB	LT	-	-	-	-	-	-	-	-	A[8.2]	0.00	A[9.4]	0.02
3	PIPETOWN HILL ROAD & SOUTH CENTRAL AVENUE	**SIGNALIZED**													
		NB	TR	D[40.7]	0.88	F[87.5]	1.09	D[51.7]	0.95	F[118.9]	1.17	D[52.4]	0.96	F[124.2]	1.19
		SB	L	D[45.2]	0.84	F[110.5]	1.11	E[73.3]	0.98	F[140.1]	1.20	E[76.6]	0.99	F[154.1]	1.23
			T	B[11.5]	0.28	B[10.4]	0.15	B[11.7]	0.30	B[10.5]	0.17	B[11.7]	0.30	B[10.5]	0.17
		WB	L	B[17.2]	0.42	C[24.6]	0.72	B[17.7]	0.45	C[27.4]	0.77	B[17.9]	0.46	C[27.7]	0.78
			R	A[8.5]	0.17	B[10.2]	0.35	A[8.6]	0.19	B[10.5]	0.38	A[8.7]	0.20	B[10.6]	0.38
		OVERALL		C[28.3]	-	E[56.3]	-	D[37.1]	-	E[72.5]	-	C[37.8]	-	E[78.3]	-
	W/SIGNAL TIMING IMPROVEMENTS	NB	TR	-	-	-	-	C[22.4]	0.71	D[36.6]	0.90	C[22.6]	0.71	D[38.0]	0.91
		SB	L	-	-	-	-	B[14.2]	0.57	D[45.9]	0.88	B[14.3]	0.57	D[52.6]	0.92
			T	-	-	-	-	A[7.0]	0.23	A[7.3]	0.14	A[7.0]	0.23	A[7.3]	0.14
		WB	L	-	-	-	-	C[31.4]	0.66	E[74.0]	1.03	C[32.0]	0.68	E[75.9]	1.03
			R	-	-	-	-	B[13.6]	0.23	B[15.9]	0.45	B[13.0]	0.25	B[16.0]	0.46
		OVERALL		-	-	-	-	B[19.0]	-	D[42.3]	-	B[19.2]	-	D[44.3]	-
4	FORMAN DRIVE & PASCACK ROAD	**SIGNALIZED**													
		NB	TR	B[13.8]	0.53	C[29.8]	0.91	B[14.5]	0.58	D[43.9]	0.99	B[14.6]	0.58	D[47.7]	1.00
		SB	L	B[11.2]	0.36	B[16.1]	0.40	B[12.2]	0.41	B[18.4]	0.45	B[12.5]	0.42	B[19.0]	0.47
			T	A[7.8]	0.57	A[6.8]	0.52	A[8.4]	0.61	A[7.3]	0.56	A[8.6]	0.62	A[7.3]	0.57
		WB	L	C[30.4]	0.21	C[33.8]	0.49	C[30.5]	0.23	C[34.7]	0.54	C[30.5]	0.23	C[34.7]	0.54
			R	C[21.7]	0.28	D[37.0]	0.80	C[21.9]	0.31	D[43.5]	0.87	C[22.0]	0.31	D[45.9]	0.88
		OVERALL		B[12.3]	-	C[23.7]	-	B[13.0]	-	C[30.7]	-	B[13.1]	-	C[32.8]	-

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR THE KEY APPROACH MOVEMENTS.

TABLE A

85 Rockland
Pipetown Hill Road

NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
48725 - 48059		06/01/05	5:20 PM	traffic signal	I	2 - 1	daylight	dry	clear	non-reportable	turning improper
		05/22/06	9:00 AM	none	none	2 - 0	daylight	dry	clear	sideswipe	backing unsafely
		10/30/06	9:30 AM	none	none	2 - 0	daylight	dry	clear	rear end	following too closely
		02/13/07	10:05 PM	none	PDO	2 - 0	dark-road lighted	snow/ice	snow	head on	unsafe speed
Node: 48059	Pascack RD CO22	04/08/04	7:55 PM	traffic signal	PDO	2 - 0	n/a	dry	cloudy	non-reportable	non-reportable
		05/31/04	7:40 AM	traffic signal	PDO & I	2 - 2	dusk	wet	rain	left turn	failure to yield right of way
		09/30/04	9:53 AM	traffic signal	PDO	2 - 0	daylight	dry	cloudy	left turn	unknown
		12/04/04	1:00 PM	traffic signal	I	2 - 1	daylight	dry	clear	rear end	following too closely
		12/07/04	6:07 PM	traffic signal	I	3 - 1	dark-road lighted	wet	rain	other	passing or lane usage improperly
		12/27/04	10:33 AM	traffic signal	PDO	2 - 0	daylight	wet	clear	rear end	unknown
		07/14/05	1:57 PM	traffic signal	I	2 - 1	daylight	dry	clear	rear end	following too closely
		05/02/06	2:10 PM	traffic signal	none	2 - 0	daylight	snow/ice	rain	right angle	pavement slippery
		03/14/06	10:10 AM	traffic signal	none	2 - 0	daylight	dry	clear	rear end	following too closely
		05/30/06	2:53 PM	traffic signal	I	3 - 1	daylight	dry	clear	other	following too closely
		10/11/06	8:30 PM	traffic signal	none	2 - 0	dark-road lighted	wet	rain	head on	turning improper
		10/20/06	11:33 AM	traffic signal	PDO	2 - 0	daylight	wet	cloudy	right turn	unsafe speed
		11/01/06	9:40 AM	traffic signal	none	2 - 0	daylight	dry	clear	rear end	following too closely
Node: 48724	S Central Avenue	09/14/05	8:25 PM	traffic signal	I	2 - 2	dark-road lighted	wet	rain	rear end	driver inattention
		11/26/06	1:45 PM	traffic signal	PDO	2 - 0	daylight	dry	clear	left turn	failure to yield right of way
48724 - 48725		03/08/05	1:26 PM	none	I	2 - 1	daylight	snow/ice	snow	rear end	pavement slippery
		01/18/06	10:37 PM	none	none	1 - 0	dark-road lighted	snow/ice	cloudy	other	pavement slippery

Accident data obtained from the New York State Department of Transportation Records Access Office for the latest three year period (January 1, 1994 through December 31, 2007)

* PDO = PROPERTY DAMAGE ONLY I = INJURY F= FATALITY

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
ALBANY, N.Y. 12232
www.nysdot.gov

ASTRID C. GLYNN
COMMISSIONER

ELIOT SPITZER
GOVERNOR

September 17, 2007

Philip J. Grealy
John Collins Engineers, P.C.
11 Bradhurst Avenue
Hawthorne NY 10532

RE: Freedom of Information Law Request **FMO-07-002354**
Accident Data
Pipetown Hill Rd from South Central Ave to Pascack Rd
Clarkstown, Rockland Co

Dear Dr. Grealy:

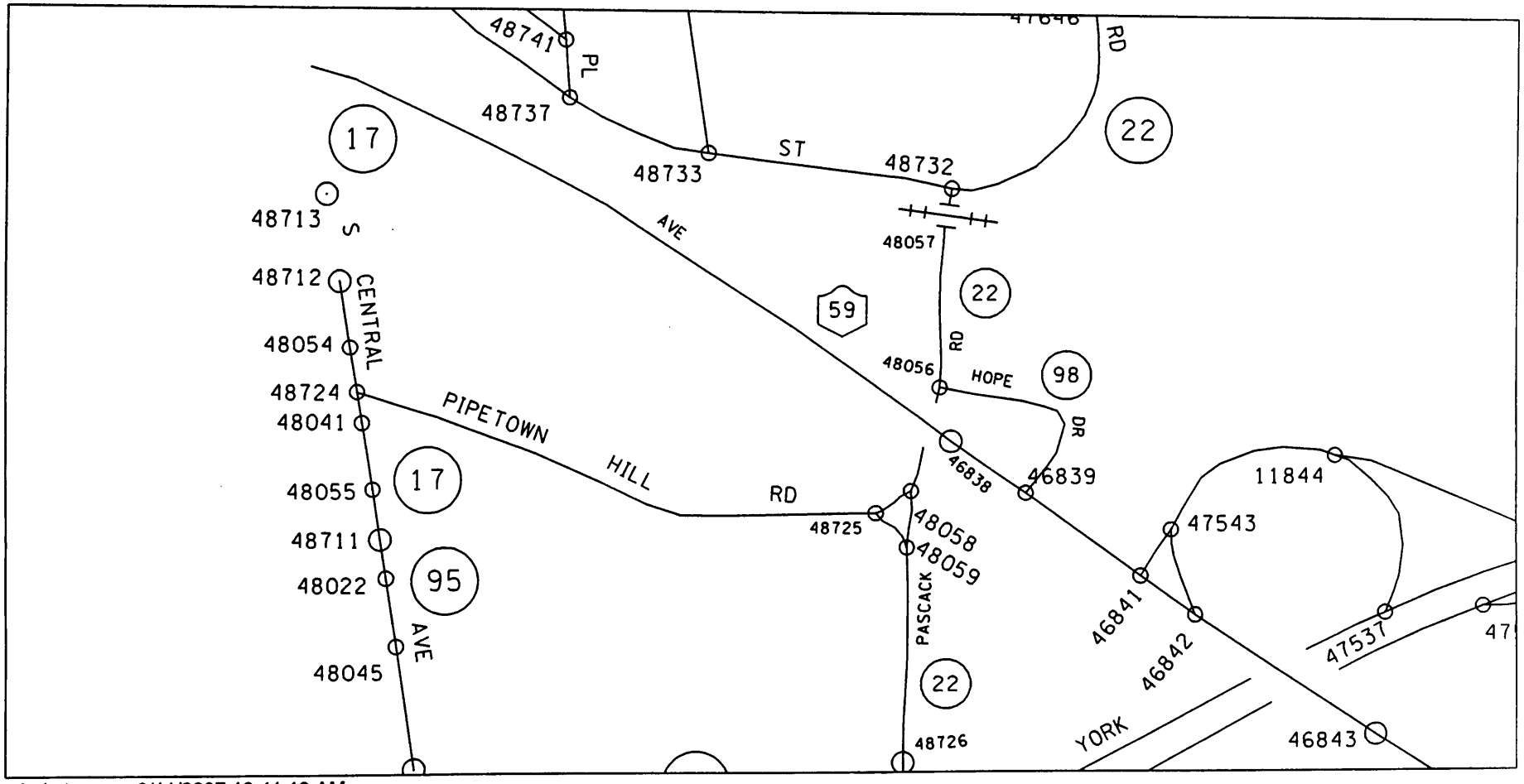
This correspondence is in reference to your September 7, 2007 Freedom of Information Law (FOIL) request and will acknowledge receipt of your check in the amount of $60.00.

Enclosed are the records you requested.

Please indicate the FOIL request number when corresponding on this subject.

Sincerely,

John B. Dearstyne
Records Access Officer



tclarkstn.mun 9/11/2007 10:41:13 AM

Program: clas4400

NYSDOT Safety Information Management System
Summary Report By Segment And/Or Intersection
All Accidents (Links & Nodes)
Complete Accident Data From NYSDMV Is Only Available thru 31-MAR-2007

REGN/CNTY: 85 ROCKLAND
STREET: PIPETOWN HILL RD

MUNICIPALITY: 50 T CLARKSTOWN
LINKS:48725 - 48059 THRU 48725 - 48724

DATES: APR-01-2004 - MAR-31-2007

FROM NODE	TO NODE	DESCRIPTION	NUMBER OF ACCIDENTS TOTAL	FTL	INJ	PDO	N/R	WET ROAD **	FIXED OBJ **	PED & BIKE **	TRUCK *** **	LIGHT DWN/DSK **	CONDITION DAY **	NIGHT **
48725	48059	UNKNOWN	4	0	1	1	2	0	0	0	0	0	1	1
48059		PASCACK RD CO22	13	0	5	4	4	4	0	0	0	1	6	1
48724		S CENTRAL AVE CO17	2	0	1	1	0	1	0	0	0	0	1	1
48724	48725	UNKNOWN	2	0	1	0	1	0	0	0	0	0	1	0
		TOTAL	21	0	8	6	7	5	0	0	0	1	9	3

** Excludes Non-Reportables *** Excludes Pickups & Vans

NYSDOT Safety Information Management System
Accident Verbal Description Report
All Accidents (Links & Nodes)
Complete Accident Data From NYSDMV Is Only Available thru 31-MAR-2007

Regn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Link: 48725 - 48059 ***

JUN-01-2005 WED 05:20PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2005-31496029
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: UNKNOWN Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3111 State of Registration: NY
Num of Occupants: 2 Driver's Age: 46 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors:TURNING IMPROPER NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3631 State of Registration: NY
Num of Occupants: 2 Driver's Age: 40 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

MAY-22-2006 MON 09:00AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31937007
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: SIDESWIPE Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 OTHER Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: PARKED Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

Veh: 2 OTHER Registered Weight: UNKNOWN State of Registration: UNKNOWN
Num of Occupants: 1 Driver's Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: UNKNOWN Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: ENTERING PARKED POSITION Second Event: NOT APPLICABLE
Apparent Factors:BACKING UNSAFELY UNKNOWN

OCT-30-2006 MON 09:30AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31959963
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT/ GRADE Light Condition: DAYLIGHT

Regn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Link: 48725 - 48059 (Continued) ***

Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 OTHER Registered Weight: UNKNOWN State of Registration: UNKNOWN
Num of Occupants: 0 Driver's Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:FOLLOWING TOO CLOSELY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 26 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

FEB-13-2007 TUE 10:05PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2007-32096955
Accident Class: PROPERTY DAMAGE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: HEAD ON Weather: SNOW
Road Surface Condition: SNOW/ICE Road Char.: CURVE AND GRADE Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3215 State of Registration: NY
Num of Occupants: 3 Driver's Age: 25 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4045 State of Registration: NY
Num of Occupants: 1 Driver's Age: 28 Sex: FEMALE Citation Issued: YES
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:UNSAFE SPEED PAVEMENT SLIPPERY

*** Node: 48059 PASCACK RD CO22 ***

APR-08-2004 THU 07:55PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2004-31190258
Accident Class: PROPERTY DAMAGE Police Agency: NOT ENTERED Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: UNKNOWN Weather: CLOUDY
Road Surface Condition: DRY Road Char.: CURVE AND LEVEL Light Condition: UNKNOWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3179 State of Registration: NY

Regn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

Num of Occupants: 1 Driver's Age: 20 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors:UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3252 State of Registration: NY
Num of Occupants: 1 Driver's Age: 54 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:UNKNOWN UNKNOWN

MAY-31-2004 MON 07:40AM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: AB Case: 2004-31198728
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: RAIN
Road Surface Condition: WET Road Char.: STRAIGHT AND LEVEL Light Condition: DUSK
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2864 State of Registration: NY
Num of Occupants: 2 Driver's Age: 36 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors:FAILURE TO YIELD RIGHT OF WAY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2533 State of Registration: NY
Num of Occupants: 3 Driver's Age: 21 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:UNKNOWN UNKNOWN

SEP-30-2004 THU 09:53AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2004-31280261
Accident Class: PROPERTY DAMAGE Police Agency: NOT ENTERED Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: CLOUDY
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2504 State of Registration: NY
Num of Occupants: 1 Driver's Age: 24 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2864 State of Registration: NY

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

Num of Occupants: 1 Driver's Age: 61 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors:UNKNOWN UNKNOWN

DEC-04-2004 SAT 01:00PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2004-31321449
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4344 State of Registration: NY
Num of Occupants: 1 Driver's Age: 70 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:FOLLOWING TOO CLOSELY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2497 State of Registration: NY
Num of Occupants: 3 Driver's Age: 45 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors:NOT APPLICABLE UNKNOWN

DEC-07-2004 TUE 06:07PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2004-31319253
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 3
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: OTHER Weather: RAIN
Road Surface Condition: WET Road Char.: STRAIGHT AND LEVEL Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3208 State of Registration: NY
Num of Occupants: 1 Driver's Age: 22 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: COLLISION WITH MOTOR VEHICLE
Apparent Factors:UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3838 State of Registration: NY
Num of Occupants: 1 Driver's Age: 38 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors:NOT APPLICABLE UNKNOWN

Veh: 3 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

Num of Occupants: 1 Driver's Age: 31 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:PASSING OR LANE USAGE IMPROPERLY FAILURE TO KEEP RIG

DEC-27-2004 MON 10:33AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2004-31340087
Accident Class: PROPERTY DAMAGE Police Agency: NOT ENTERED Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: WET Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2728 State of Registration: NY
Num of Occupants: 1 Driver's Age: 24 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors:UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3975 State of Registration: NY
Num of Occupants: 1 Driver's Age: 16 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:UNKNOWN UNKNOWN

JUL-14-2005 THU 01:57PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2005-31561951
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3194 State of Registration: NY
Num of Occupants: 1 Driver's Age: 27 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors:FOLLOWING TOO CLOSELY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2270 State of Registration: NY
Num of Occupants: 1 Driver's Age: 39 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STARTING IN TRAFFIC
Apparent Factors:NOT APPLICABLE UNKNOWN

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

MAR-02-2006 THU 02:10PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31719506
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: RIGHT ANGLE Weather: SLEET/HAIL/FREEZING RAIN
Road Surface Condition: SNOW/ICE Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 36 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN Second Event: NOT APPLICABLE
Apparent Factors:PAVEMENT SLIPPERY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 48 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

MAR-14-2006 TUE 10:10AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31740397
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 24 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 58 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING Second Event: NOT APPLICABLE
Apparent Factors:DRIVER INATTENTION NOT APPLICABLE

MAY-30-2006 TUE 02:53PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2006-31796696
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 3
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: OTHER Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Regn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2593 State of Registration: NY
Num of Occupants: 1 Driver's Age: 19 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2519 State of Registration: NY
Num of Occupants: 1 Driver's Age: 25 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: COLLISION WITH MOTOR VEHICLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

Veh: 3 CAR/VAN/PICKUP Registered Weight: 2905 State of Registration: NY
Num of Occupants: 1 Driver's Age: 41 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING Second Event: NOT APPLICABLE
Apparent Factors:FOLLOWING TOO CLOSELY NOT APPLICABLE

OCT-11-2006 WED 08:30PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31941801
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: HEAD ON Weather: RAIN
Road Surface Condition: WET Road Char.: STRAIGHT AND LEVEL Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 4 Driver's Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 17 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN Second Event: NOT APPLICABLE
Apparent Factors:TURNING IMPROPER PASSING OR LANE USA

OCT-20-2006 FRI 11:33AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31960075
Accident Class: PROPERTY DAMAGE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: RIGHT TURN (AGAINST OTHER CAR) Weather: CLOUDY
Road Surface Condition: WET Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48059 PASCACK RD CO22 (Continued) ***

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3606 State of Registration: NY
Num of Occupants: 1 Driver's Age: 19 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN Second Event: NOT APPLICABLE
Apparent Factors:UNSAFE SPEED PAVEMENT SLIPPERY

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: MA
Num of Occupants: 1 Driver's Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

NOV-01-2006 WED 09:40AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31960613
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Driver's Age: 19 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NJ
Num of Occupants: 1 Driver's Age: 43 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

*** Node: 48724 S CENTRAL AVE CO17 ***

SEP-14-2005 WED 08:25PM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: CC Case: 2005-31589616
Accident Class: INJURY Police Agency: SPRING VALLEY VILLAGE PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: RAIN
Road Surface Condition: WET Road Char.: STRAIGHT AT HILLCREST Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2296 State of Registration: NY
Num of Occupants: 2 Driver's Age: 42 Sex: MALE Citation Issued: NO

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Node: 48724 S CENTRAL AVE C017 (Continued) ***

Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors:UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3098 State of Registration: NY
Num of Occupants: 1 Driver's Age: 61 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:DRIVER INATTENTION VIEW OBSTRUCTED/LIM

NOV-26-2006 SUN 01:45PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-32003995
Accident Class: PROPERTY DAMAGE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Condition: DRY Road Char.: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2045 State of Registration: NY
Num of Occupants: 1 Driver's Age: 22 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN Second Event: NOT APPLICABLE
Apparent Factors:FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 9900 State of Registration: NY
Num of Occupants: 2 Driver's Age: 46 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:NOT APPLICABLE NOT APPLICABLE

*** Link: 48724 - 48725 ***

MAR-08-2005 TUE 01:26PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2005-31414535
Accident Class: INJURY Police Agency: CLARKSTOWN TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: REAR END Weather: SNOW
Road Surface Condition: SNOW/ICE Road Char.: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 6778 State of Registration: NY
Num of Occupants: 1 Driver's Age: 52 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:PAVEMENT SLIPPERY FOLLOWING TOO CLOSE

Reqn/Cnty: 85 ROCKLAND Municipality: 50 T CLARKSTOWN Dates: APR-01-2004 - MAR-31-2007
Street: PIPETOWN HILL RD Links:48725 - 48059 Thru 48725 - 48724

*** Link: 48724 - 48725 (Continued) ***

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2585 State of Registration: NY
Num of Occupants: 1 Driver's Age: 49 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors:NOT APPLICABLE UNKNOWN

JAN-18-2006 WED 10:37PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2006-31680971
Accident Class: NON-REPORTABLE Police Agency: CLARKSTOWN TOWN PD Num of Veh: 1
Type of Accident: COLLISION WITH FENCE Traffic Control: NONE
Manner of Collision: OTHER Weather: CLOUDY
Road Surface Condition: SNOW/ICE Road Char.: STRAIGHT AT HILLCREST Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NJ
Num of Occupants: 1 Driver's Age: 25 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: YES School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD Second Event: NOT APPLICABLE
Apparent Factors:PAVEMENT SLIPPERY NOT APPLICABLE

TOTAL NUMBER OF ACCIDENTS PRINTED: 21

ABSENCE OF NODE OR LINK WITHIN A SPECIFIED ROADWAY SECTION + TIME PERIOD INDICATES NO ACCIDENTS FOUND

*** END OF REPORT ***

APPENDIX "C"

CAPACITY ANALYSIS

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMEX1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	109		430				192	257			412	152
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
WB Left					SB	Left				
Thru						Thru		A		
Right						Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	27.0						10.0	38.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	516	1719	0.23	0.30	24.0	C		
							21.5	C
R	718	1538	0.67	0.47	20.9	C		
Westbound								
Northbound								
L	367	1719	0.58	0.59	14.9	B		
T	1066	1810	0.27	0.59	9.2	A	11.6	B
Southbound								
TR	785	1860	0.80	0.42	28.5	C	28.5	C

Intersection Delay = 21.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMEX1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	175		451				510	520			305	163
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
WB Left					SB	Left				
Thru						Thru		A		
Right						Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	15.0						29.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	287	1719	0.68	0.17	41.4	D		
							22.4	C
R	837	1538	0.60	0.54	15.0	B		
Westbound								
Northbound								
L	684	1719	0.83	0.72	26.3	C		
T	1307	1810	0.44	0.72	5.3	A	15.7	B
Southbound								
TR	633	1839	0.82	0.34	35.5	D	35.5	D

Intersection Delay = 22.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMNB1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	118		464				207	278			445	164
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru						Thru		A		
Right	A					Right				
Peds						Peds				
WB Left					SB	Left				
Thru						Thru		A		
Right						Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	27.0						10.0	38.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	516	1719	0.25	0.30	24.1	C		
							23.0	C
R	718	1538	0.72	0.47	22.8	C		
Westbound								
Northbound								
L	348	1719	0.66	0.59	18.0	B		
T	764	1810	0.40	0.42	18.5	B	18.3	B
Southbound								
TR	785	1860	0.86	0.42	33.3	C	33.3	C

Intersection Delay = 25.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMNB1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	189		487				551	562			329	176
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
WB Left					SB	Left				
Thru						Thru		A		
Right						Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	15.0						29.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	287	1719	0.73	0.17	44.8	D		
							24.2	C
R	837	1538	0.65	0.54	16.2	B		
Westbound								
Northbound								
L	666	1719	0.92	0.72	39.0	D		
T	1307	1810	0.48	0.72	5.6	A	22.1	C
Southbound								
TR	633	1839	0.89	0.34	42.3	D	42.3	D

Intersection Delay = 27.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMB1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	123		481				212	278			445	165
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
WB Left					SB	Left				
Thru						Thru		A		
Right						Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	27.0						10.0	38.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	516	1719	0.27	0.30	24.2	C		
							23.9	C
R	718	1538	0.74	0.47	23.8	C		
Westbound								
Northbound								
L	348	1719	0.68	0.59	18.7	B		
T	1066	1810	0.29	0.59	9.3	A	13.4	B
Southbound								
TR	785	1860	0.86	0.42	33.4	C	33.4	C

Intersection Delay = 24.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMB1
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & PASCACK RD
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	0	0	1	1	0	0	1	0
LGConfig	L		R				L	T			TR	
Volume	192		498				571	562			329	182
Lane Width	12.0		12.0				12.0	12.0			14.0	
RTOR Vol			0									0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru						Thru	A	A		
	Right	A					Right				
	Peds						Peds				
WB	Left					SB	Left				
	Thru						Thru		A		
	Right						Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		15.0						29.0	31.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	287	1719	0.74	0.17	45.6	D		
							24.6	C
R	837	1538	0.66	0.54	16.5	B		
Westbound								
Northbound								
L	664	1719	0.95	0.72	46.2	D		
T	1307	1810	0.48	0.72	5.6	A	26.1	C
Southbound								
TR	633	1837	0.90	0.34	43.6	D	43.6	D

Intersection Delay = 29.5 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2007
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & SITE ACCESS
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765AMB2
East/West Street: PIPETOWN HILL ROAD
North/South Street: SITE ACCESS DRIVEWAY
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	562			373	6
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	3	624			414	6
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				22		12
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				24		13
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						37	
C(m) (vph)	1123						315	
v/c	0.00						0.12	
95% queue length	0.01						0.39	
Control Delay	8.2						17.9	
LOS	A						C	
Approach Delay							17.9	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.2

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2007
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & SITE ACCESS
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765PMB2
East/West Street: PIPETOWN HILL ROAD
North/South Street: SITE ACCESS DRIVEWAY
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	698			677	26
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	15	775			752	28
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		8
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				15		8
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	15						23	
C(m) (vph)	824						156	
v/c	0.02						0.15	
95% queue length	0.06						0.50	
Control Delay	9.4						32.0	
LOS	A						D	
Approach Delay							32.0	
Approach LOS							D	

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK AM HOUR
Project ID: 765AMEX3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				226		119		89	320	200	213	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green		25.0					5.0	21.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.42	0.38	17.2	B		
							14.2	B
R	757	1427	0.17	0.53	8.5	A		
Northbound								
TR	515	1618	0.88	0.32	40.7	D	40.7	D
Southbound								
L	263	1736	0.84	0.47	45.2	D		
T	859	1828	0.28	0.47	11.5	B	27.8	C

Intersection Delay = 28.3 (sec/veh) Intersection LOS = C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2006 EXISTING TRAFFIC VOLUMES
Project ID: 765AMEX3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				226		119		89	320	200	213	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				63		33		25	89	56	59	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				251		132		455		222	237	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.782			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK PM HOUR
Project ID: 765PMEX3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				390		237		98	403	243	120	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green		25.0					5.0	21.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.72	0.38	24.6	C		
							19.2	B
R	757	1427	0.35	0.53	10.2	B		
Northbound								
TR	513	1613	1.09	0.32	87.5	F	87.5	F
Southbound								
L	243	1736	1.11	0.47	110.5	F		
T	859	1828	0.15	0.47	10.4	B	77.5	E

Intersection Delay = 56.3 (sec/veh) Intersection LOS = E

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2006 EXISTING TRAFFIC VOLUMES
Project ID: 765PMEX3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				390		237		98	403	243	120	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				108		66		27	112	68	33	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				433		263		557		270	133	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.804			0.000	
Peds Bikes	0			0			0					
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK AM HOUR
Project ID: 765AMNB3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				244		129		96	346	216	230	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green		25.0					5.0	21.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.45	0.38	17.7	B		
							14.6	B
R	757	1427	0.19	0.53	8.6	A		
Northbound								
TR	515	1618	0.95	0.32	51.7	D	51.7	D
Southbound								
L	245	1736	0.98	0.47	73.3	E		
T	859	1828	0.30	0.47	11.7	B	41.5	D

Intersection Delay = 37.1 (sec/veh) Intersection LOS = D

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 765AMNB3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				244		129		96	346	216	230	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				68		36		27	96	60	64	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				271		143		491		240	256	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.782			0.000	
Peds Bikes	0			0			0					
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK PM HOUR
Project ID: 765PMNB3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				421		256		106	435	262	130	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left				
	Thru						Thru		P		
	Right						Right		P		
	Peds						Peds				
WB	Left		P			SB	Left	P	P		
	Thru						Thru	P	P		
	Right		P				Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	P			
Green			25.0					5.0	21.0		
Yellow			3.0					3.0	3.0		
All Red			2.0					2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.77	0.38	27.4	C		
							21.0	C
R	757	1427	0.38	0.53	10.5	B		
Northbound								
TR	513	1613	1.17	0.32	118.9	F	118.9	F
Southbound								
L	243	1736	1.20	0.47	140.1	F		
T	859	1828	0.17	0.47	10.5	B	97.2	F

Intersection Delay = 72.5 (sec/veh) Intersection LOS = E

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 765PMNB3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				421		256		106	435	262	130	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				117		71		29	121	73	36	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				468		284		601		291	144	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.804			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK AM HOUR
Project ID: 765AMB3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				249		136		96	347	218	230	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green		25.0					5.0	21.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.46	0.38	17.9	B		
							14.7	B
R	757	1427	0.20	0.53	8.7	A		
Northbound								
TR	515	1618	0.96	0.32	52.4	D	52.4	D
Southbound								
L	244	1736	0.99	0.47	76.6	E		
T	859	1828	0.30	0.47	11.7	B	43.2	D

Intersection Delay = 37.8 (sec/veh) Intersection LOS = D

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765AMB3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				249		136		96	347	218	230	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				69		38		27	96	61	64	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				277		151		493		242	256	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.783			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK PM HOUR
Project ID: 765PMB3
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				424		261		106	441	270	130	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left					NB Left				
Thru					Thru		P		
Right					Right		P		
Peds					Peds				
WB Left		P			SB Left	P	P		
Thru					Thru	P	P		
Right		P			Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right	P			
Green		25.0				5.0	21.0		
Yellow		3.0				3.0	3.0		
All Red		2.0				2.0	2.0		

Cycle Length: 66.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	604	1595	0.78	0.38	27.7	C		
							21.2	C
R	757	1427	0.38	0.53	10.6	B		
Northbound								
TR	513	1613	1.19	0.32	124.2	F	124.2	F
Southbound								
L	243	1736	1.23	0.47	154.1	F		
T	859	1828	0.17	0.47	10.5	B	107.5	F

Intersection Delay = 76.9 (sec/veh) Intersection LOS = E

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765PMB3
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				424		261		106	441	270	130	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				118		73		29	123	75	36	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				471		290		608		300	144	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.806			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		
Duration	0.25											

Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK AM HOUR
Project ID: 765AMNB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES
N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				244		129		96	346	216	230	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green		18.0					7.0	30.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	410	1595	0.66	0.26	31.4	C		
							25.2	C
R	612	1427	0.23	0.43	13.6	B		
Northbound								
TR	693	1618	0.71	0.43	22.4	C	22.4	C
Southbound								
L	424	1736	0.57	0.60	14.2	B		
T	1097	1828	0.23	0.60	7.0	A	10.5	B

Intersection Delay = 19.0 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 765AMNB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				244		129		96	346	216	230	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				68		36		27	96	60	64	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				271		143		491		240	256	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.782			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK PM HOUR
Project ID: 765PMNB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES
N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				421		256		106	435	262	130	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left	P				SB	Left	P	P		
Thru						Thru	P	P		
Right	P					Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	P			
Green	20.0						6.0	29.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	456	1595	1.03	0.29	74.0	E		
							52.1	D
R	632	1427	0.45	0.44	15.9	B		
Northbound								
TR	668	1613	0.90	0.41	36.6	D	36.6	D
Southbound								
L	329	1736	0.88	0.57	45.9	D		
T	1045	1828	0.14	0.57	7.3	A	33.1	C

Intersection Delay = 42.3 (sec/veh) Intersection LOS = D

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 765PMNB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				421		256		106	435	262	130	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				117		71		29	121	73	36	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				468		284		601		291	144	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000	0.804			0.000		
Peds Bikes	0			0			0					
Buses				0		0		0		0	0	
%InProtPhase										0.0		
Duration	0.25											

Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK AM HOUR
Project ID: 765AMB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES
N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				249		136		96	347	218	230	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru		P		
Right						Right		P		
Peds						Peds				
WB Left		P			SB	Left	P	P		
Thru						Thru	P	P		
Right		P				Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green		18.0					7.0	30.0		
Yellow		3.0					3.0	3.0		
All Red		2.0					2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	410	1595	0.68	0.26	32.0	C		
							25.3	C
R	612	1427	0.25	0.43	13.0	B		
Northbound								
TR	693	1618	0.71	0.43	22.6	C	22.6	C
Southbound								
L	423	1736	0.57	0.60	14.3	B		
T	1097	1828	0.23	0.60	7.0	A	10.6	B

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK AM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765AMB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				249		136		96	347	218	230	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				69		38		27	96	61	64	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				277		151		493		242	256	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000	0.783				0.000	
Peds Bikes	0			0			0					
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.21

Analyst: R.H.
Agency: JCE
Date: MARCH 2008
Period: PEAK PM HOUR
Project ID: 765PMB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD

Inter.: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES
N/S St: SOUTH CENTRAL AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				424		261		106	441	270	130	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left				
	Thru						Thru		P		
	Right						Right		P		
	Peds						Peds				
WB	Left		P			SB	Left	P	P		
	Thru						Thru	P	P		
	Right		P				Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	P			
Green			20.0					6.0	29.0		
Yellow			3.0					3.0	3.0		
All Red			2.0					2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	456	1595	1.03	0.29	75.9	E		
							53.1	D
R	632	1427	0.46	0.44	16.0	B		
Northbound								
TR	668	1613	0.91	0.41	38.0	D	38.0	D
Southbound								
L	326	1736	0.92	0.57	52.6	D		
T	1045	1828	0.14	0.57	7.3	A	37.9	D

Intersection Delay = 44.3 (sec/veh) Intersection LOS = D

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: R.H.
Agency/Co.: JCE
Date Performed: MARCH 2008
Analysis Time Period: PEAK PM HOUR
Intersection: PIPETOWN HILL RD & S. CENTRAL
Area Type: All other areas
Jurisdiction:
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 765PMB3 (WITH TIMING CHANGE)
E/W St: PIPETOWN HILL ROAD N/S St: SOUTH CENTRAL AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				424		261		106	441	270	130	
% Heavy Veh				5		5		5	5	5	5	
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
PK 15 Vol				118		73		29	123	75	36	
Hi Ln Vol												
% Grade					8			0			-2	
Ideal Sat				1900		1900		1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Lane Width				11.0		11.0		12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow				471		290		608		300	144	
%InSharedLn												
Prop LTs								0.000		1.000	0.000	
Prop RTs						1.000		0.806			0.000	
Peds Bikes	0			0				0				
Buses				0		0		0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0		0.0	0.0	
Arriv. Type				3		3		3		3	3	
Unit Ext.				3.0		3.0		3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0		2.0	2.0	
Ext of g				2.0		2.0		2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMEX4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				67		137		312	142	205	637	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left				
	Thru						Thru	A			
	Right						Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru						Thru	A	A		
	Right	A					Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right		A		
Green		18.0						49.0	8.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	347	1736	0.21	0.20	30.4	C		
							24.6	C
R	535	1553	0.28	0.34	21.7	C		
Northbound								
TR	944	1733	0.53	0.54	13.8	B	13.8	B
Southbound								
L	625	1719	0.36	0.69	11.2	B		
T	1247	1810	0.57	0.69	7.8	A	8.6	A

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMEX4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2006 EXISTING TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				146		361		669	152	162	594	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru	A			
Right						Right	A			
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right		A		
Green	17.0						51.0	7.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	328	1736	0.49	0.19	33.8	C		
							36.1	D
R	500	1553	0.80	0.32	37.0	D		
Northbound								
TR	1000	1764	0.91	0.57	29.8	C	29.8	C
Southbound								
L	452	1719	0.40	0.70	16.1	B		
T	1267	1810	0.52	0.70	6.8	A	8.8	A

Intersection Delay = 23.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMNB4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				72		148		337	153	221	688	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left				
	Thru						Thru	A			
	Right						Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru						Thru	A	A		
	Right	A					Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right		A		
Green		18.0						49.0	8.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	347	1736	0.23	0.20	30.5	C		
							24.8	C
R	535	1553	0.31	0.34	21.9	C		
Northbound								
TR	944	1733	0.58	0.54	14.5	B	14.5	B
Southbound								
L	603	1719	0.41	0.69	12.2	B		
T	1247	1810	0.61	0.69	8.4	A	9.4	A

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMNB4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2010 NO-BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				158		390		723	164	175	642	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left					NB Left				
Thru					Thru	A			
Right					Right	A			
Peds					Peds				
WB Left	A				SB Left	A	A		
Thru					Thru	A	A		
Right	A				Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right		A		
Green	17.0					51.0	7.0		
Yellow	3.0					3.0	3.0		
All Red	2.0					2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	328	1736	0.54	0.19	34.7	C		
							40.9	D
R	500	1553	0.87	0.32	43.5	D		
Northbound								
TR	1000	1764	0.99	0.57	43.9	D	43.9	D
Southbound								
L	430	1719	0.45	0.70	18.4	B		
T	1267	1810	0.56	0.70	7.3	A	9.6	A

Intersection Delay = 30.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK AM HOUR
Project ID: 765AMB4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				72		150		340	153	228	698	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru	A			
Right						Right	A			
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right		A		
Green	18.0						49.0	8.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	347	1736	0.23	0.20	30.5	C		
							24.8	C
R	535	1553	0.31	0.34	22.0	C		
Northbound								
TR	944	1734	0.58	0.54	14.6	B	14.6	B
Southbound								
L	601	1719	0.42	0.69	12.5	B		
T	1247	1810	0.62	0.69	8.6	A	9.6	A

Intersection Delay = 13.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.2

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2007
Period: PEAK PM HOUR
Project ID: 765PMB4
E/W St: FORMAN DRIVE

Inter.: FORMAN DRIVE & PASCACK ROAD
Area Type: All other areas
Jurisd:
Year : 2010 BUILD TRAFFIC VOLUMES

N/S St: PASCACK ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	1	0	1	1	0
LGConfig				L		R		TR		L	T	
Volume				158		398		735	164	179	649	
Lane Width				12.0		12.0		12.0		12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left				
Thru						Thru	A			
Right						Right	A			
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru						Thru	A	A		
Right	A					Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right		A		
Green	17.0						51.0	7.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	328	1736	0.54	0.19	34.7	C		
							42.7	D
R	500	1553	0.88	0.32	45.9	D		
Northbound								
TR	1000	1765	1.00	0.57	47.7	D	47.7	D
Southbound								
L	425	1719	0.47	0.70	19.0	B		
T	1267	1810	0.57	0.70	7.3	A	9.9	A

Intersection Delay = 32.8 (sec/veh) Intersection LOS = C

APPENDIX "D"

STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period. The criteria are given in Exhibit 16-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 16-2

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (S/VEH)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

LEVEL OF SERVICE A describes operations with low control delay, up to 10 seconds per vehicle (s/veh). This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

LEVEL OF SERVICE B describes operations with control delay greater than 10 and up to 20 seconds per vehicle (s/veh). This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with Level of Service "A", causing higher levels of delay.

LEVEL OF SERVICE C describes operations with control delay greater than 20 and up to 35 seconds per vehicle (s/veh). These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LEVEL OF SERVICE D describes operations with control delay greater than 35 and up to 55 seconds per vehicle (s/veh). At Level of Service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LEVEL OF SERVICE E describes operations with control delay greater than 55 and up to 80 seconds per vehicle (s/veh). This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

LEVEL OF SERVICE F describes operations with control delay in excess of 80 seconds per vehicle (s/veh). This level is considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

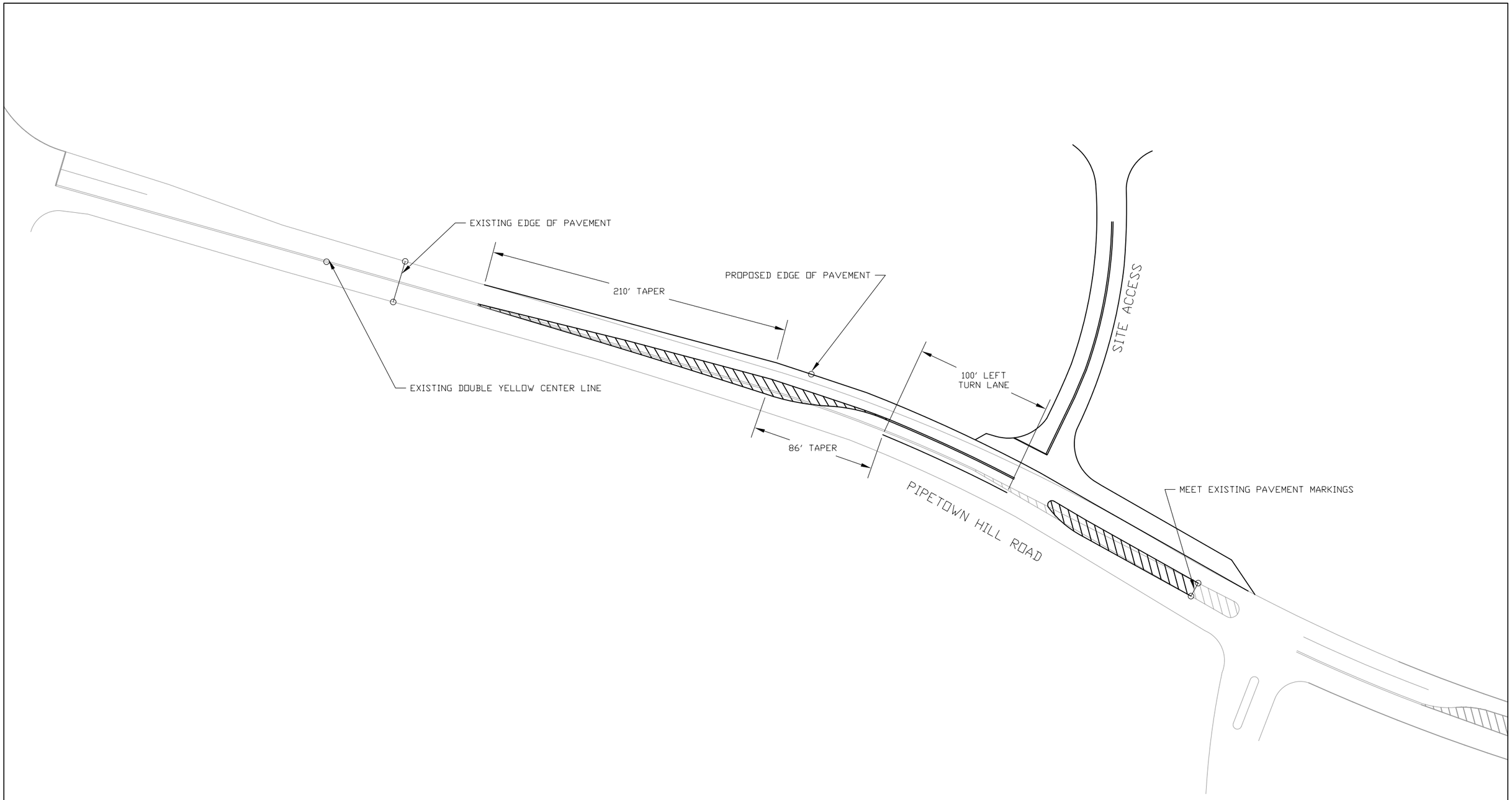
The Level of Service (LOS) for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Control delay is defined as the total elapsed time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. This total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to speed of vehicles in queue. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. The Level of Service Criteria are given in Exhibit 17-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 17-2

LEVEL OF SERVICE FOR CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	AVERAGE CONTROL DELAY (S/VEH)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.



NO.	REVISION	DATE	REVISED BY:

TITLE:
CONCEPTUAL ACCESS
IMPROVEMENT PLAN

NORTH

PROJECT:
HYENGA LAKE
PIPETOWN HILL ROAD
VILLAGE OF SPRING VALLEY
TOWN OF CLARKSTOWN, NEW YORK

DRAWING NO.
CP-1

ENGINEER:
JOHN COLLINS ENGINEERS, P.C.
11 BRADHURST AVENUE
HAWTHORNE N.Y. 10532

SHEET 1 OF 1	
PROJECT NO.	765
SCALE:	1"=30'
DATE:	2/29/08
DRAWN BY:	R.G.D.
CHECKED BY:	P.J.G.

Appendix D

Hydrologic Analysis Report

LJA | Leonard Jackson Associates **Consulting Engineers**

26 Firemens Memorial Drive . Pomona, New York 10970 . (845) 354-4382 . FAX (845) 354-4401

HYENGA LAKE

TOWN OF CLARKSTOWN, ROCKLAND COUNTY, NEW YORK

HYDROLOGIC ANALYSIS REPORT

DATE: 8/14/09
JOB #09038

LEONARD JACKSON ASSOCIATES

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LEONARD JACKSON ASSOCIATES

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HEC-1 Output Data

1. *Existing Conditions*
2. *Developed Conditions*

A. NARRATIVE REPORT

The Hyenga Lake site is a proposed adult senior housing project consisting of two three-story buildings and other related improvements situated in the Town of Clarkstown, in a pocket of land on the border with the Village of Spring Valley. The parcel is 12.4 acres and is located on the south side of NYS Route 59, approximately 1,000 feet west of Pascack Road.

The site is currently in used as a multi-family residence. The existing structures will be demolished for the proposed project. Site runoff generally drains from north to south and eventually to the Pascack Brook which runs through the site.

The type of soil present on the site is Wethersfield and the hydrologic soil group is C. The total disturbed area on site is 3.2 acres and the total impervious area consisting of buildings and pavement is 2.8 acres.

1. Water Quality Control

Based on the New York State Stormwater Management Design Manual, we have provided water quality treatment for the proposed Hyenga Lake project. The runoff from the new impervious areas is treated on site for water quality by means of a stormwater pond (Pocket Pond in accordance to the New York State Department of Environmental Conservation (NYSDEC) Stormwater Design Manual guidelines. The runoff from the proposed development is intercepted by catch basins and conveyed via storm drainage pipes to the stormwater management practice.

The objective of stormwater management practices is to trap coarse elements and is to remove pollutants prior discharging into water bodies that will deplete fresh water source and detrimental to wildlife habitat.

The site has been graded to maintain the natural topography. The site has also been developed to minimize the disturbance of the existing wooded area throughout the entire site.

Proposed roadway, parking lot and roof areas on site have been graded so that the impervious surfaces drain to the water quality basin via storm drainage pipes. The basin has been sized to provide water quality and channel protection volumes as required by the NYSDEC Phase II Stormwater Management Design manual. The basin includes a forebay, permanent pool, pond drain and trash rack, which are connected to an outlet structure where runoff is routed through a series of orifii. Pond maintenance will be accomplished via a 6-inch pond drain line.

The treated runoff from the water quality basin #1 located to the east of the site will discharge into the Pascack Brook.

Refer to Appendix A for water quality and channel protection volumes calculation provided for the project.

Summary Table #1 – Water Quality and Channel Protection Volumes

	Stormwater Management Practice	Water Quality Volume (WQv)		Channel Protection Volume (CPv)	
		Required (ac-ft)	Provided (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Pond #1	Pocket Pond (P-5)	0.278	0.290	0.406	0.420

2. Water Quantity Control

Peak flows attenuation has been provided for the project in the water quality/ detention basin. A point of interest (Pt. "A") was chosen to evaluate site runoff for pre- and post-development conditions. The point of interest, Pt. "A", is located on the easterly corner of the site. This point was selected to evaluate that there will be no increase in peak rates of runoff leaving the site after the proposed water quality/ detention basin.

The analysis indicates that the detention system proposed on site will yield no increase in peak rates of runoff for the 1, 2, 5, 25, and 100-year storm under developed conditions at the point of interest just before leaving the development.

Refer to the Summary Table #2 for a comparison of the peak discharges for both existing and developed conditions.

Summary Table #2 – Peak Discharges at the Point of Interest ("PT. "A") for Existing and Developed Conditions

	Storm Frequency (in years)					
Conditions	**1**	**2**	**5**	**10**	**25**	**100**
Pre-Development Discharges (cfs)	2.0	4.7	8.1	11.1	13.3	19.3
Post-Development Discharges (cfs)	0.4	2.4	7.2	11.0	13.3	19.2
Net Change:	**-1.6**	**-2.3**	**-0.9**	**-0.1**	**0**	**-0.1**
Peak water surface elevation in Basin #1	382.4	382.7	383.1	383.3	383.4	383.8
(Top of basin elevation : 385.0)						

3. Methodology

The points of interest (Pt."A") where discharges exit the site were chosen to evaluate site runoff for existing and developed conditions.

Under developed conditions, the hydrologic model was prepared at Pt. "A" which includes subarea, DEV-1. The runoff from DEV-1 contributes to Water Quality/ Detention Basin #1, by means of the proposed storm drainage collection system. The runoff collected in the basins is treated for water quality and is routed through a series of orifii prior to discharging into the Pascack Brook.

Under existing condition, the drainage area (EX-1) is similar to the drainage area in developed conditions and with the same point of interest, Pt. "A". The runoff from the entire site sheet flows from north to south into the Pascack Brook. The Pascack Brook will intercept the site runoff along its perimeter of approximately 1,000 feet. For the purpose of analyzing the peak rates of runoff from the site, the drainage areas for both existing and developed conditions have been made consistent since the runoff from the site will eventually drain into the Pascack Brook.

All drainage area delineations and any changes from existing to proposed conditions are indicated graphically on Drainage Area Maps in Appendix C.

Time of concentration calculations were tabulated under existing and proposed conditions. Corresponding rainfall intensities for the 25-year design storm were extracted from the available Rockland County Rainfall Intensity Curves.

Hydrologic analyses were prepared for existing and proposed conditions and utilized the SCS unit hydrographs. The SCS soil curve numbers were based on the soil types and soil covers present at the site utilizing TR-55 as a guide. The curve numbers are then incorporated into the Corps of Engineers Hydrological Computer Program, HEC-1 to derive the peak discharges of the 1, 2, 5, 10, 25 and 100-year storm frequencies. To establish these flows, the 1, 2, 5, 10, 25 and 100-year, 24-hour storm precipitation values were derived from available TP-40 information and incorporated in the HEC-1 models.

The analysis indicated that the detention systems proposed on site will yield no increase in peak rates of runoff for the 1, 2, 5, 25, and 100-year storm under developed conditions at the point of interest just before leaving the development.

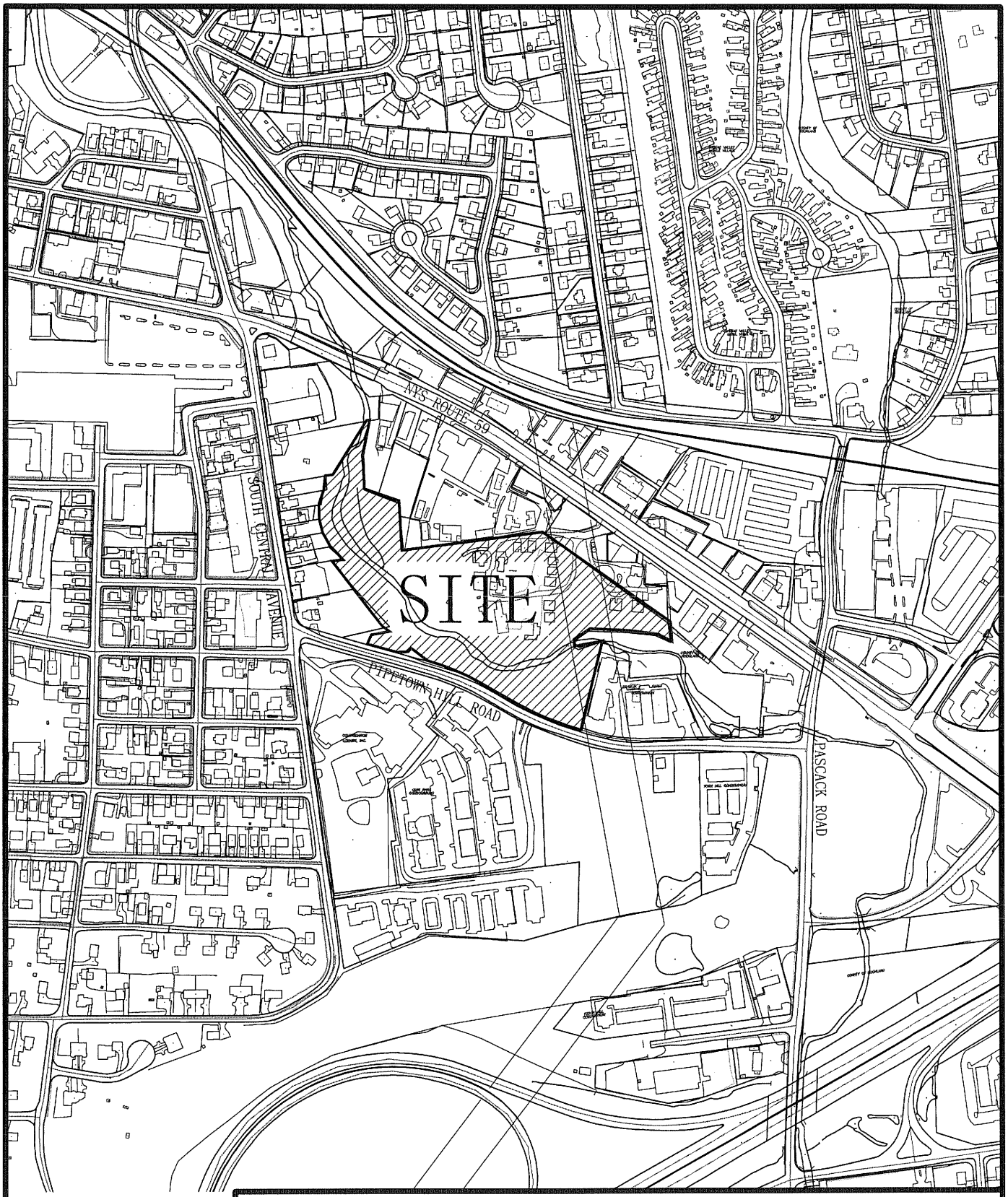
TABLE #3: EXISTING CONDITIONS DRAINAGE AREAS SUMMARY

				PEAK DISCHARGES (CFS) OF VARIOUS STORM FREQUENCIES (IN YEAR)					
BASIN AREA	AREA (SQ.MI.)	WEIGHTED CURVE No.	Tc (HOURS)	1 YR	2 YR	5 YR	10 YR	25 YR	100 YR
EX-1	4.64	83	0.24	2.0	4.7	8.1	11.1	13.3	19.3
PT. "A"	4.64			**2.0**	**4.7**	**8.1**	**11.1**	**13.3**	**19.3**

TABLE #4: DEVELOPED CONDITIONS DRAINAGE AREAS SUMMARY

				PEAK DISCHARGES (CFS) OF VARIOUS STORM FREQUENCIES (IN YEAR)					
BASIN AREA	AREA (SQ.MI.)	WEIGHTED CURVE No.	Tc (HOURS)	1 YR	2 YR	5 YR	10 YR	25 YR	100 YR
DEV-1	4.64	91	0.16	3.2	6.9	10.8	14.0	16.2	22.1
BASIN1	4.64			0.4	2.4	7.2	11.0	13.3	19.2
PT. "A"	4.64			**0.4**	**2.4**	**7.2**	**11.0**	**13.3**	**19.2**

Refer to Appendix A and the HEC-1 output data for the calculations and summary output in support of our analysis.



HYENGA LAKE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

VICINITY MAP

Job number:	Scale:	Drawn by:	Date:
09038	1"=500'	SK	8/14/09

APPENDIX A

LEONARD JACKSON ASSOCIATES
26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Water Quality Volume Calculations for Basin #1

Stormwater Management Practice: **Pocket Pond (P-5)**

Project: **Hyenga Lake** By: WA/SK

Location: **Town of Clarkstown** Date: 6-Aug-09
JOB # 09038 Revised:

NYSDEC Required Water Quality Volume (WQv): Sub-Area: *DEV-1*

Data:

P: 1.2 = 90% Rainfall Event Number from Figure #1
Rv: 0.6 = 0.05 + 0.009(I) (Min. Rv =0.2) Use Rv = 0.6
I: 60.6 = Impervious coverage percentage
A: 4.64 = Site Area to Basin (in acres)

WQv: **0.278** = Req'd Water Quality Volume (in ac-ft)

$$= \frac{(P)(Rv)(A)}{12}$$

Water Quality Volume Distribution in Pocket Pond (P-5)

Forebay Volume Requirements
Minimum Size: 10% of WQv = *0.0278* ac-ft
Minimum Depth: 4 ft.

Permanent Pool Volume Requirements (including Forebay Volumes) :
Minimum Size: 50% of WQv = *0.1392* ac-ft
Minimum Depth: 4 ft.

WQv-Extended Detention
Minimum Size: 50% of WQv = *0.1392* ac-ft

Chart : Forebay Storage Volume:

								1	2	1-2=3
Contour	Contour Area					Total	Total	Cumulative	Req'd Forebay	Net Volume
Elev. (ft)	Proposed (ft^2)	Average (ft^2)	Proposed (ac)	Average (ac)	Depth (ft)	Volume (ft^3)	Volume (ac-ft)	Total Volume (ac-ft)	Volume (ac-ft)	Provided (ac-ft)
377	4		0.0001							
		69		0.0016	1	69	0.0016	0.0016	0.0278	-0.0263
378	134		0.0031							
		284		0.0065	1	284	0.0065	0.0081	0.0278	-0.0197
379	434		0.0100							
		662		0.0152	1	662	0.0152	0.0233	0.0278	-0.0046
380	889		0.0204							
		1180		0.0271	1	1180	0.0271	0.0504	0.0278	0.0225
381	1470		0.0337							

Chart : Permanent Pool Storage Volume (including Forebay Volumes)

Contour Elev. (ft)	Contour Area Proposed (ft^2)	Contour Area Average (ft^2)	Contour Area Proposed (ac)	Contour Area Average (ac)	Depth (ft)	Total Volume (ft^3)	Total Volume (ac-ft)	Total Volume Forebay Provided (ac-ft)	1 Cumulative Total Volume (ac-ft)	2 Req'd Permanent Pool Volume (ac-ft)	1-2=3 Net Volume Provided (ac-ft)
377	38		0.0009								
		160		0.0037	1	160	0.0037	0.0016	0.0052	0.1392	-0.1340
378	281		0.0065								
		527		0.0121	1	527	0.0121	0.0065	0.0239	0.1392	-0.1153
379	772		0.0177								
		1192		0.0274	1	1192	0.0274	0.0152	0.0664	0.1392	-0.0728
380	1611		0.0370								
		2142		0.0492	1	2142	0.0492	0.0271	0.1426	0.1392	0.0034
381	2673		0.0614								

0.0923 (Sum of individual Permanent Pool Volume)

Balance of Water Quality Volume:

	(Total Req'd Volume)		*(Permanent Pool Cumulative Volume)*			
*Balance of Required Water Quality Volume =	0.2784	-	0.1426	=	0.1358	ac-ft.

Chart : Basin Volume (excluding Permanent Pool Volume)

Contour Elev. (ft)	Contour Area Proposed (ft^2)	Contour Area Average (ft^2)	Contour Area Proposed (ac)	Contour Area Average (ac)	Depth (ft)	Total Volume (ft^3)	Total Volume (ac-ft)	1 Cumulative Total Volume (ac-ft)	2 *Req'd Water Quality Volume (ac-ft)	1-2=3 Net Volume for Cp_v treatment (ac-ft)	
381	4143		0.0951								
		5050		0.1159	1	5050	0.1159	0.1159	0.1358	-0.0198	
382	5956		0.1367								
		6841		0.1570	1	6841	0.1570	0.2730	0.1358	0.1372	ok
383	7726		0.1774								
		8711		0.2000	1	8711	0.2000	0.4729	0.1358	0.3372	
384	9695		0.2226								
		10758		0.2470	1	10758	0.2470	0.7199	0.1358	0.5841	
385	11821		0.2714								

Permanent Pool Elevation (WQ_{PPE}) = 381.00 ft.

Determine WQv-Extended Detention Elevation:

		Elev. (ft.)	Cumulative Volume
Water Quality Basin Permanent Pool Elevation (WQ_{PPE}) =		381.00	(ac-ft)
Water Quality Storage Elevation Range:	High:	383.00	0.2730
	Low:	382.00	0.1159
		Diff. =	0.1570

Balance of required WQ Volume above permanent pool = **0.1358** ac-ft

Interpolated Volume Change = (Higher Cumulative Volume - Req'd WQ Volume over Permanent Pool)/Diff. In Volume in Range
Interpolated Volume Change = (0.2730 - 0.1358)/ 0.1570
Interpolated Volume Ratio = 0.8737

Interpolated Elevation Change = 383.00 - (0.8737 x 1.00)
Interpolated Elevation Change = 382.13 ft.

Orifice Invert = 382.13 ft.

Set Water Quality Volume Elevation (WQv-ED)= 382.20 ft.

Note: Total Storage at elevation: 382.20 is 0.1473 ac-ft, which is greater than req. WQ_v of: 0.1358 ac-ft. Ok

Compute the required WQ_v-ED orifice:

(Note: ED means extended detention.)

Balance of required WQv = 0.1358 ac-ft.
Average ED release rate = 0.1358 x 43560 ft^2/ac / (24 hr x 3600 sec/hr)
Average ED release rate = 0.07 cfs

Size WQv-ED orifice:

to release average of : 0.07

Qavg = **0.07** cfs

Average WQv-ED orifice rate is:
Average head (h) = $(WQ_{VE} - WQ_{PPE})/2$

$$\text{Average h} = \frac{382.20 - 381.00}{2}$$

Average h = 0.60 ft.

Use the orifice flow equation to calculate the required cross-sectional area and diameter for the WQV-ED orifice:

[Q=ca(sq. rt. (2gh))]

where:
c = 0.61
g = 32.2 sqrt(2gh) = 6.216
Average h = 0.60 a= 0.018 sq. ft. Based upon: [a=Q/c (sq. rt. (2gh))]

Resulting diameter of orifice based upon area = D = 0.152 ft. Based upon: [D = sq. rt. (4a/3.142)]
D = 1.819 in.

For Design, Use a **2** in. diameter hole.

Orifice centerline elevation = Orifice invert + (Orifice size in feet/2)
Orifice centerline elevation = 381.00 + 0.08

Orifice centerline elevation = 381.08 ft.

LEONARD JACKSON ASSOCIATES
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Channel Protection Storage Volume (Cp_V): Calculation:

Project: **Hyenga Lake** By: WA/SK

Location: **Town of Clarkstown** Date: 6-Aug-09
Revised: 0-Jan-00

		Sub-basin:	DEV-1
1. Unit Peak Discharge, q_u. . . . . =	(csm/in.)		651
Duration Time, T.....T =	(hr .)		24
Runoff, Q . . . . . =	(in.)		1.61
Drainage Area.....Am =	(mi^2)		0.0073
Drainage Area (in acres) = A_m x 640 = A =	(acres)		4.64
2. Find (q_o/q_i) from Figure 8.5.			0.022
(q_o/q_i = Peak outflow/Peak Inflow discharge)			
3. Calculate V_s/V_r			0.652
[$V_s/V_r = 0.683-1.43(q_o/q_i) + 1.64 (q_o/q_i)^2 -0.804 (q_o/q_i)^3$]			
			Total V_s
4. Solve for V_s	(ac-ft)	0.4061	**0.4061** (ac-ft)
[$V_s=Cp_v = (V_s/V_r) \times Q \times A/12$]	(cubic ft.)	17,689	17,689 (cubic ft.)
5. Compute Average Release Rate = Q_{AVG}		0.20	(cfs)
[$Q_{AVG} = V_s /T*3600$ sec/hr]			

Calculate Required Channel Protection Volume Elevation (Cp_V):

		Elev. (ft.)	Cumulative Volume	Actual WQ Volume Reserved	Net Volume
Water Quality Volume Elevation (WQ_{VE}) =		381.00	(ac-ft)	(ac-ft)	(ac-ft)
Channel Protection Storage Elevation Range:	High:	384.00	0.4729	0.2730	0.2000
	Low:	383.00	0.2730	0.2730	0.0000
		Diff. =	0.2000	0.0000	0.2000

Min. Channel Protection Volume required above Water Quality Volume = **0.4061** ac-ft

Interpolated Volume Change = (Higher Net Volume - Req'd Cp Volume over WQv)/Diff. In Volume in Range

Interpolated Volume Ratio = (0.2000 - 0.4061)/ 0.2000

Interpolated Volume Ratio = -1.0308

Interpolated Elevation Change = 384.00 - (-1.0308 x 1.00)

Interpolated Elevation Change = 385.03 ft.

Minimum Channel Protection Volume High Elevation = 385.03 ft.

Set Channel Protection Volume Elevation = 385.10 ft.

**Note: Total Storage at elevation: 385.10 is 0.4199 ac-ft, which is greater than req. Cp_V of: 0.4061 ac-ft.*

Compute the required Cp_V-ED orifice :

Required Cpv = 0.4061 ac-ft.

Average ED release rate = 0.4061 x 43560 ft^2/ac / (24 hr x 3600 sec/hr)

Average ED release rate = 0.20 cfs

*Size Cpv-ED orifice to release average of : 0.20 - 0.15 cfs

Qavg = **0.06** cfs

Average Cpv-ED orifice rate is:

Average head (h) = (WQ_{VE} - WQ_{PPE})/2

$$\text{Average h} = \frac{385.10 - 382.20}{2}$$

Average h = 1.45 ft.

*****Use the orifice flow equation to calculate the required cross-sectional area and diameter for the Cp_V-ED orifice:***

[Q=ca(sq. rt. (2gh))]

where:

c = 0.61

g = 32.2

Average h = 1.45

sqrt(2gh) = 9.663

a= 0.009 sq. ft. Based upon: [a=Q/c (sq. rt. (2gh))]

Resulting diameter of pipe based upon area = D = 0.110 ft. Based upon: [D = sq. rt. (4a/3.142)]

D = 1.318 in.

For Design, Use a **0** in. diameter orifice to route CPv

Note: CPv is not required at sites where the resulting diameter of the ED orifice is too small, to prevent clogging.

Orifice centerline elevation = Orifice invert + (Orifice size in feet/2)

Orifice centerline elevation = 382.20 + 0.00

Orifice centerline elevation = 382.20 ft.

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26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Project: **Hyenga Lake**
Location: **Town of Clarkstown**
JOB # 09038

By: WA/SK
Date: 14-Aug-09

Elevation versus Discharge (Routing in Basin #1)

Input:

Description

Discharge from Outlet Structure #1 in Detention Basin #1

Basin Information

1. Top of Basin	385.00	feet
2. Bottom of Basin	381.00	feet
Opening # 1 (WQv)		
3. Rectangular Opening Size (2"ϕ Equivalent)	1.80	inches
4. Area of Opening	0.023	ft^2
5. Invert	381.00	feet
Opening # 2		
6. Rectangular Opening Size	12.30	inches
7. Area of Opening	1.051	ft^2
8. Invert	382.20	feet
Opening # 3		
9. Rectangular Opening Size	12.30	inches
10. Area of Opening	1.051	ft^2
11. Invert	382.20	feet
Weir # 4		
12. Weir length	2.00	feet
13. Weir Invert	382.60	feet
Weir Information		
15. Weir length	10.00	feet
16. Weir Invert	383.75	feet

Pressure Flow Equation is used when area of opening is fully submerged

$Q = CA(2gH)^{0.5}$

Where:

A = Area (ft^2)
H = Headwater (ft) = Weir elev - centerline of opening
g = 32.2
C = 0.6

Weir Flow Equation is used for low flow conditions

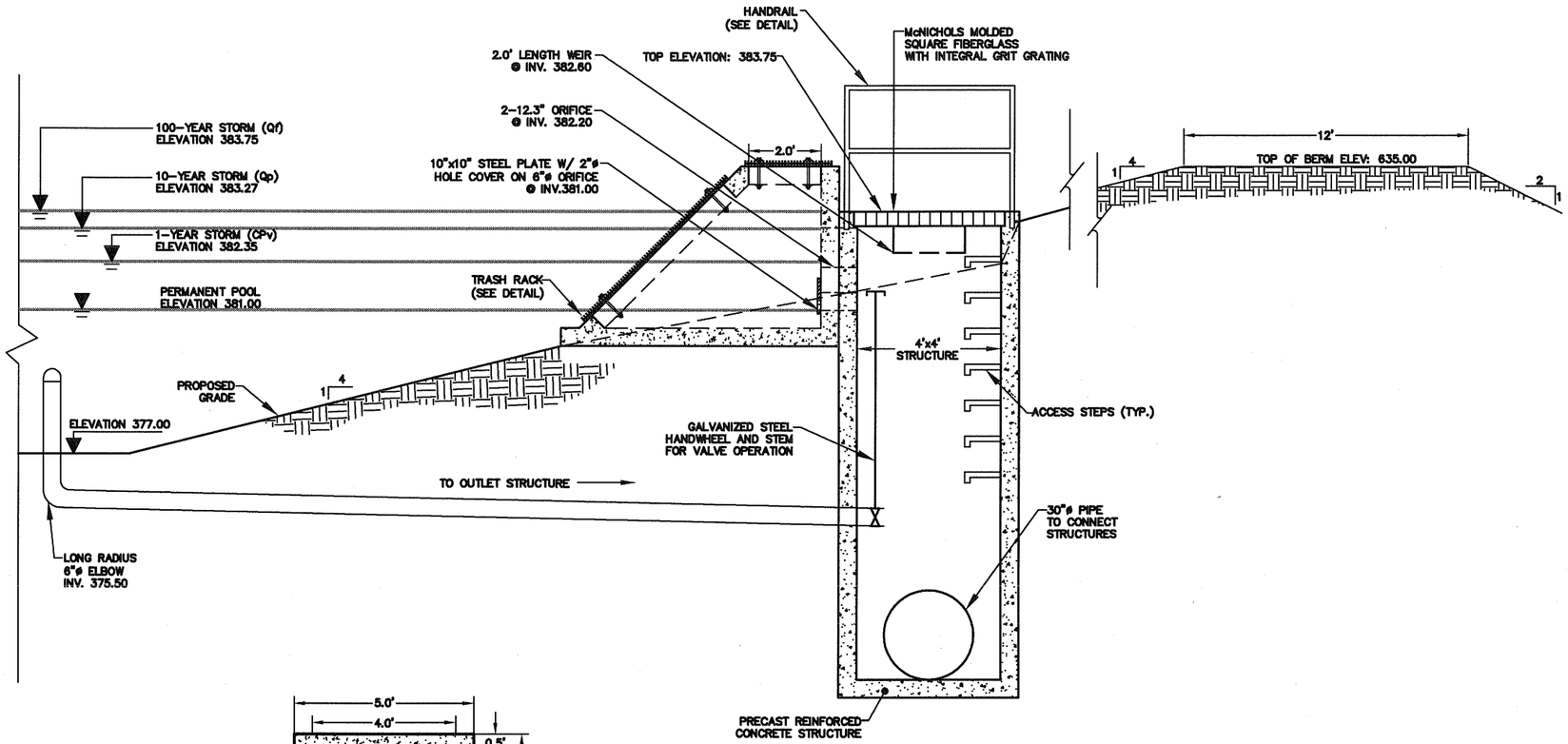
$Q = CLH^{3/2}$

Where:
C = 3
L = length of Weir
H = Headwater (ft)

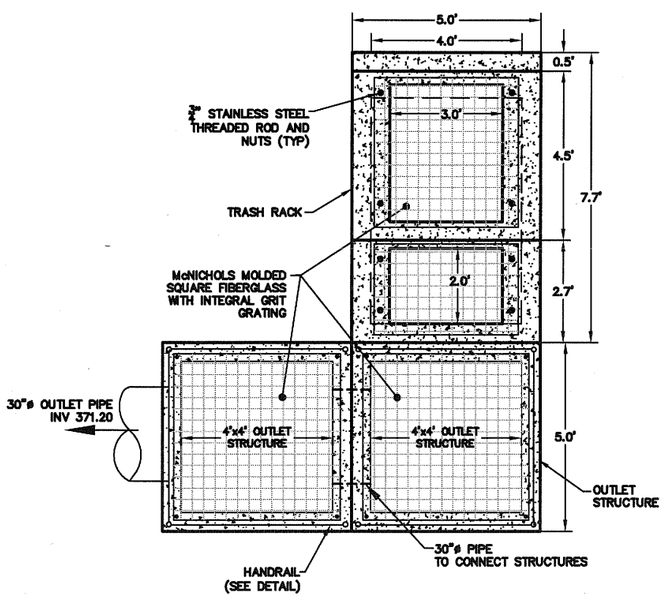
Output:

Field	1	2	3	4	5	6	7	8	9	10
SQ (cfs)	0.00	0.04	0.06	0.08	0.09	0.11	0.22	1.01	2.36	4.67
SQ (cfs)	7.61	11.65	14.65	17.69	23.44	31.84	41.92	53.37	66.02	79.75
SE (ft)	381.0	381.2	381.4	381.6	381.8	382.1	382.3	382.5	382.7	382.9
SE (ft)	383.1	383.3	383.5	383.7	383.9	384.2	384.4	384.6	384.8	385.0

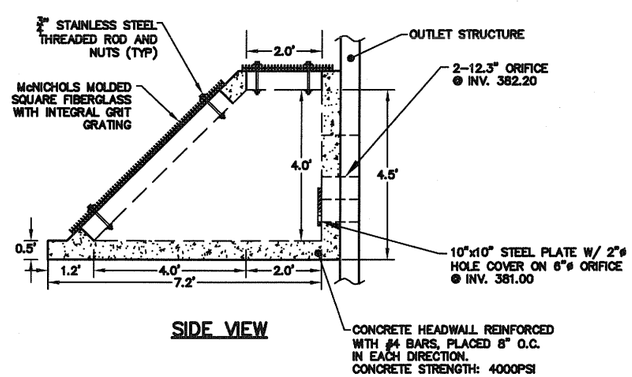
NOTE: 1) FOR RECTANGULAR OPENING, WEIR FLOW EQUATION IS UTILIZED FOR LOW FLOW CONDITIONS AND PRESSURE FLOW EQUATION IS UTILZED WHEN AREA OF OPENING IS FULLY SUBMERGED



SIDE VIEW

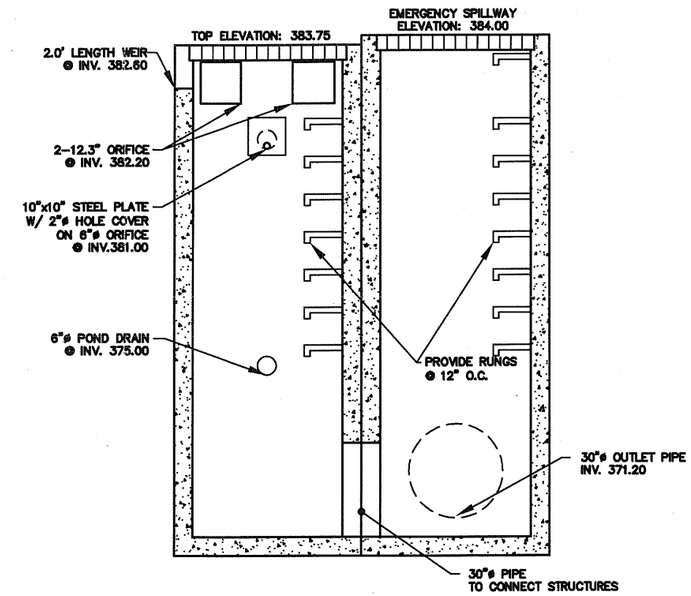


PLAN VIEW



SIDE VIEW

TRASH RACK DETAIL



OUTLET STRUCTURE DETAIL

OUTLET STRUCTURE (OS #1) AND SECTION THRU DETENTION BASIN AT WATER QUALITY BASIN 1

HYENGA LAKE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

OUTLET STRUCTURE (OS #1) & TRASH RACK DETAIL AT WATER QUALITY BASIN 1

Job number:	Scale:	Drawn by:	Date:
09038	1"=4'	WA	8/14/09

LEONARD JACKSON ASSOCIATES
26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Worksheet 3: Time of Concentration (Tc) Calculations

PROJECT: HYENGA LAKE | JOB #: 09038 | BY: SK
LOCATION: Town of Clarkstown | DATE: 6-Aug-09
Revised:

Mark One: Existing Developed

To Design Point: Basin #1
Time of Concentration thru Sub-Area: EX-1

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic or description of flow segments.

Sheet Flow:	Segment ID:	421.2-414.6			
1. Surface description (table 3-1).....		Dense grass			
2. Manning's Roughness Coeff., n (table 3-1).....		0.24			
3. Flow Length, ...(ft.)		150			
4. Two year, 24 hr rainfall, P_2.....(in.)		3.7			
5. Land Slope, S.....(ft./ft.)		0.044			
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,S^{0.4}}$	Compute T_t = ...(hr.)	0.22		=	**0.22** (hrs.)

Shallow Concentrated Flow:	Segment ID:	414.6-376.0			
1. Surface description (paved or unpaved).....		Unpaved			
2. Flow Length, L .....(ft.)		348			
3. Watercourse Slope, s.....(ft./ft.)		0.111			
4. Average Velocity, V (figure 3-1)..... (ft./s)		5.4			
6. $T_t = \frac{L}{3600\,V}$	Compute T_t = ...(hr.)	0.02		=	**0.02** (hrs.)

Open Channel Flow (California Method):

	(ft.)	(mi.)	
Flow Length, L:	*0*	*0.000*	
	(Start)	(End)	(Change in ft.)
Elevation Change:	*0.0*	*0.0*	*0.0*

$T_t = (11.9L^3/H)^{0.385}$

$T_t =$ **0.00**

= **0.00** (hrs.)

Total Tc = **0.24** (hrs.)
14.5 (min.)

LEONARD JACKSON ASSOCIATES
26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Worksheet 3: Time of Concentration (Tc) Calculations

PROJECT: HYENGA LAKE | JOB #: 09038 | BY: SK
LOCATION: Town of Clarkstown | DATE: 6-Aug-09
Revised:

Mark One: Existing **Developed**

To Design Point: Basin #1
Time of Concentration thru Sub-Area: DEV-1

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic or description of flow segments.

Sheet Flow:	Segment ID:	419.9-399.7			
1. Surface description (table 3-1).....		Dense grass			
2. Manning's Roughness Coeff., n (table 3-1).....		0.24			
3. Flow Length, ...(ft.)		55			
4. Two year, 24 hr rainfall, P_2.....(in.)		3.7			
5. Land Slope, S.....(ft./ft.)		0.367			
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,S^{0.4}}$	Compute T_t = ...(hr.)	0.04		=	**0.04** (hrs.)

Shallow Concentrated Flow:	Segment ID:				
1. Surface description (paved or unpaved).....		Unpaved			
2. Flow Length, L ..... (ft.)		0			
3. Watercourse Slope, s.....(ft./ft.)		0.000			
4. Average Velocity, V (figure 3-1)..... (ft./s)		0.0			
6. $T_t = \frac{L}{3600\,V}$	Compute T_t = ...(hr.)	0.00		=	**0.00** (hrs.)

Open Channel Flow (California Method):

	(ft.)	(mi.)		
Flow Length, L:	*908*	*0.172*		
	(Start)	(End)	(Change in ft.)	
Elevation Change:	*395.9*	*381.5*	*14.4*	
$T_t = (11.9L^3/H)^{0.385}$				
T_t =	**0.12**			= **0.12** (hrs.)

Total Tc = **0.16** (hrs.)
9.9 (min.)

LEONARD JACKSON ASSOCIATES
26 Firemens Memorial Drive
Pomona, NY 10970
845-354-4382

Worksheet 4: Runoff Curve Number and Runoff

Project: **HYENGA LAKE** By: SK Date: **6-Aug-09**
Location: **Town of Clarkstown** Revised:

Shade one: Existing Developed CN for Sub-basin: *EX-1* LJA# 09038

1. Runoff Curve Number (CN)

Soil name and (hydrologic group)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected / connected impervious area ratio)	CN Table 2-2	CN Figure 2.3	CN Figure 2.4	Area ☐ acres ☐ mi^2 ☐ %	Product of CN X AREA
WeB (C)	Lawn / Open Space - Fair Condition	79			3.335	263.47
	Woods - Fair Condition	73			0.200	14.60
	Impervious Area	98			1.109	108.68
				Totals =	4.644	386.75

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{386.75}{4.644} = 83$

Use CN = **83**

2. Runoff

Frequency. . . . . yr.
Rainfall, P (24 - hour) . . . . . in.
Runoff, Q . . . . . in.

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm # 1	Storm # 2	Storm # 3

LEONARD JACKSON ASSOCIATES
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Worksheet 4: Runoff Curve Number and Runoff

Project: **HYENGA LAKE** By: SK Date: **6-Aug-09**
Location: **Town of Clarkstown** Revised:

Shade one: Existing Developed CN for Sub-basin: *DEV-1* LJA# 09038

1. Runoff Curve Number (CN)

Soil name and (hydrologic group)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected / connected impervious area ratio)	CN Table 2-2	CN Figure 2.3	CN Figure 2.4	Area ☒ acres ☐ mi^2 ☐ %	Product of CN X AREA
WeB (C)	Lawn / Open Space - Fair Condition	79			1.828	144.41
	Impervious Area	98			2.816	275.97
				Totals =	4.644	420.38

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{420.38}{4.644} = 91$

Use CN = **91**

2. Runoff

Frequency. . . . . yr.
Rainfall, P (24 - hour) . . . . . in.
Runoff, Q . . . . . in.

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm # 1	Storm # 2	Storm # 3

APPENDIX B

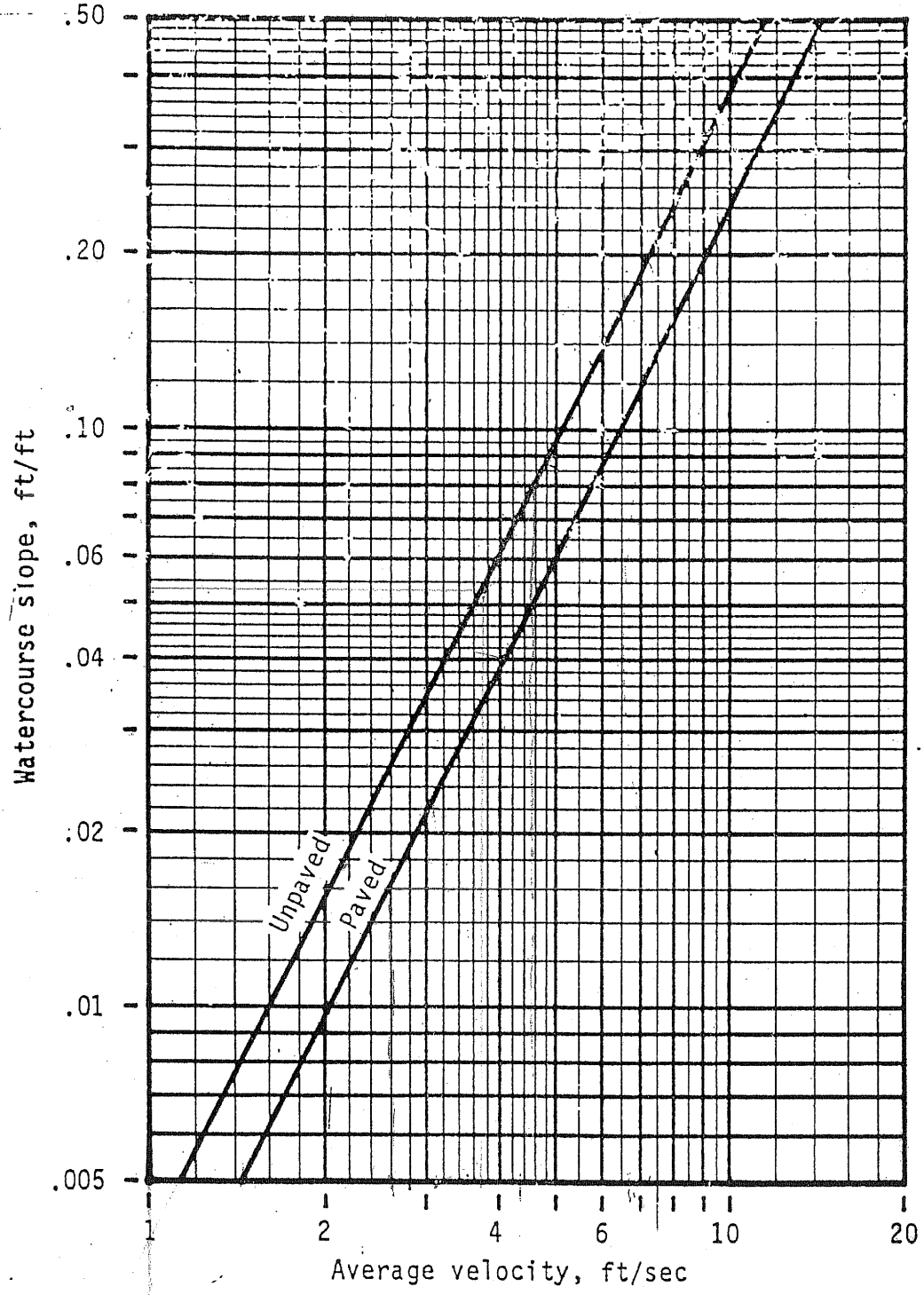


Figure 3-1.—Average velocities for estimating travel time for shallow concentrated flow.

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre R-10	38	61	75	83	87
1/3 acre R-15	30	57	72	81	86
1/2 acre R-20	25	54	70	80	85
1 acre R-40	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c.—Runoff curve numbers for other agricultural lands[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	[4]30	48	65	73
Woods—grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	[4]30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

[1]Average runoff condition, and $I_a = 0.2S$.

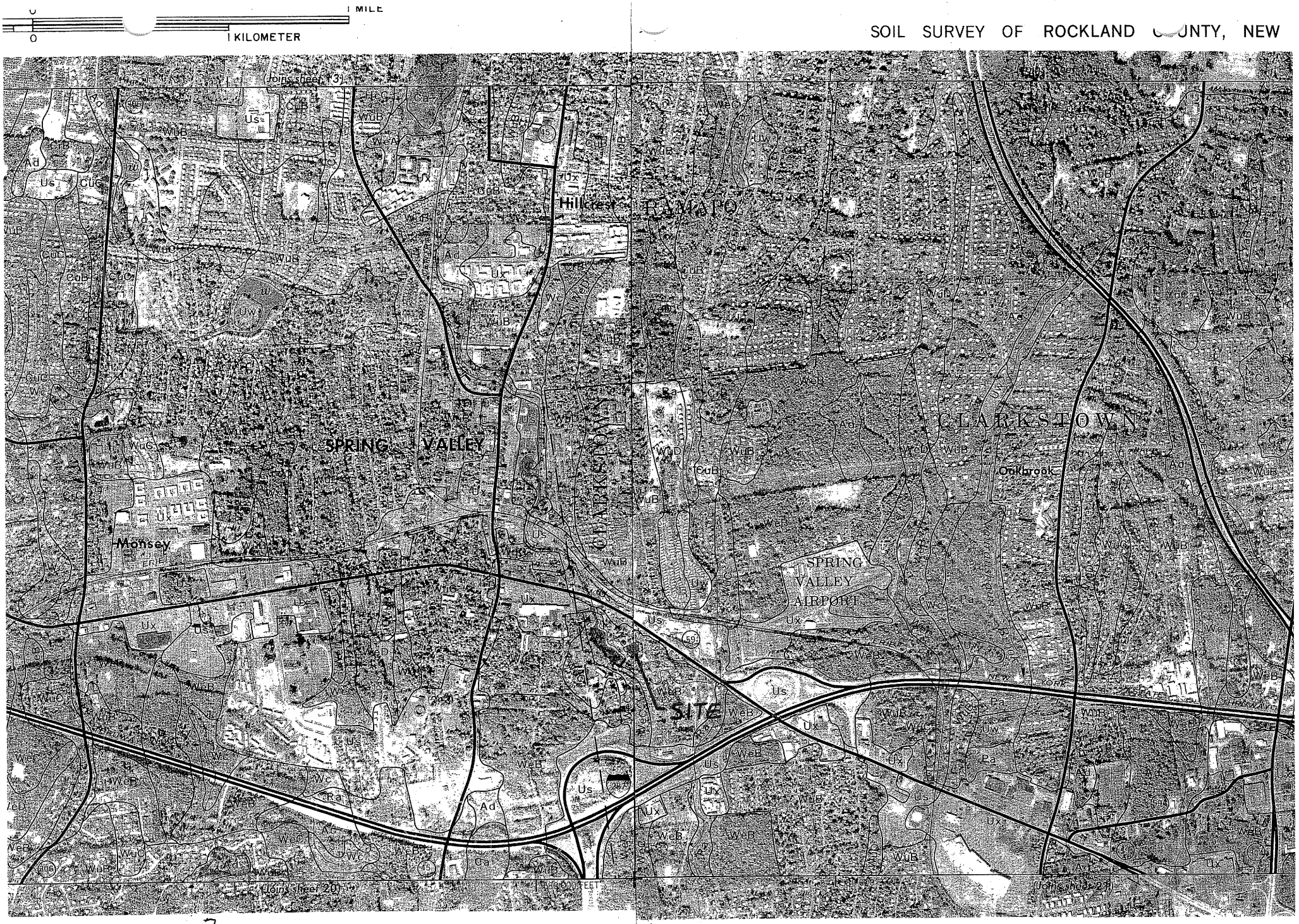
[2]*Poor:* <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

[3]*Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4]Actual curve number is less than 30; use CN = 30 for runoff computations.

[5]CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6]*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.



1 3/4 1/2 1/4 0
1 0.5 0

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
Pt*, Pv*. Pits												
Ra---------- Rippowam	C	Frequent----	Brief-----	Oct-May	0-1.5	Apparent	Sep-Jun	>60	---	High-----	High-----	High.
ReA, ReB, ReC, ReD---------- Riverhead	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
RuB*, RuC*, RuD*: Riverhead--------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
Urban land.												
Sa---------- Sloan	B/D	Occasional	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
Ur*, Us, Uw. Udorthents												
Ux*. Urban land												
Wa---------- Wallington	C	None--------	---	---	0.5-1.5	Perched	Jan-Apr	>60	---	High-----	High-----	Moderate.
Wc---------- Watchaug	B	None--------	---	---	1.5-2.5	Apparent	Nov-Apr	>60	---	High-----	Low------	High.
WeA, WeB, WeC, WeD---------- Wethersfield	C	None--------	---	---	1.5-2.5	Perched	Feb-Apr	>60	---	Moderate	Low------	Moderate.
WuB*, WuC*, WuD*: Wethersfield-----	C	None--------	---	---	1.5-2.5	Perched	Feb-Apr	>60	---	Moderate	Low------	Moderate.
Urban land.												
YaB, YaC, YaD----- Yalesville	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	Moderate.
YuB*, YuC*, YuD*: Yalesville-------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	Moderate.
Urban land.												

* See description of the map unit for composition and behavior characteristics of the map unit.

Section 4.2 Water Quality Volume (WQ_v)

The Water Quality Volume (denoted as the WQ_v) is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created at a site. Contour lines of the 90% rainfall event are presented in Figure 4.1.

The following equation can be used to determine the water quality storage volume WQ_v (in acre-feet of storage):

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

where:

WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number (see Figure 4.1)
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres (contributing area)

A minimum Rv of 0.2 will be applied to regulated sites. (tributary area)

Figure 4.1 90% Rainfall in New York State

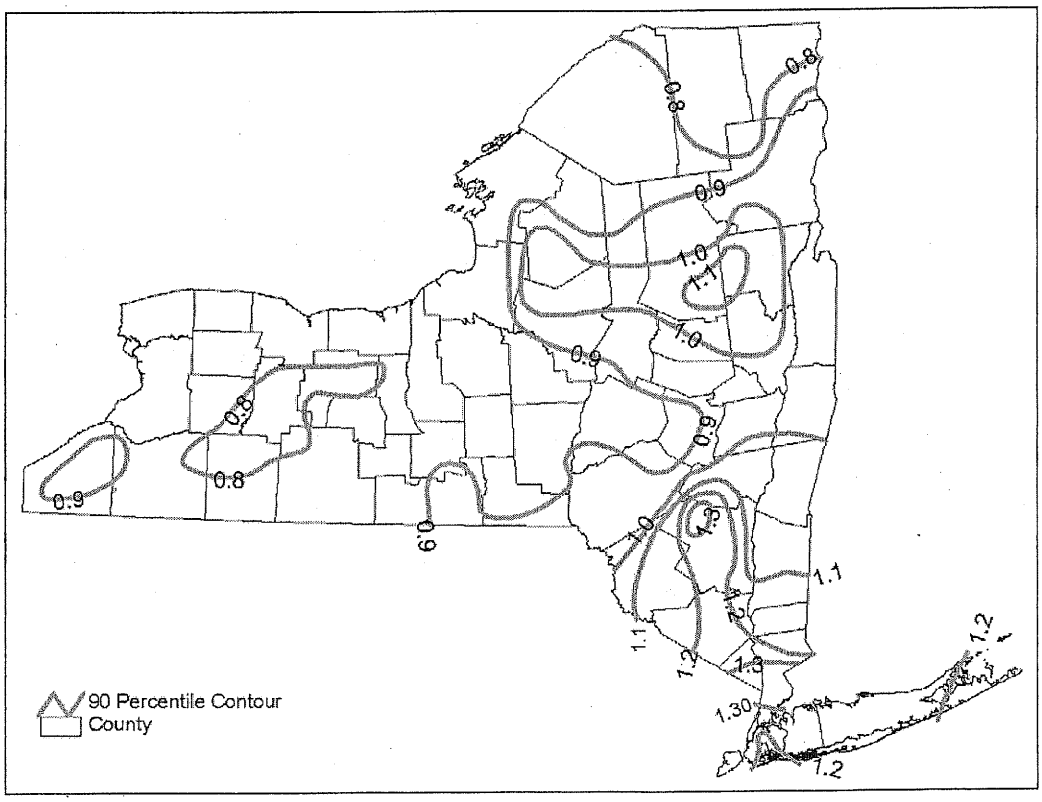
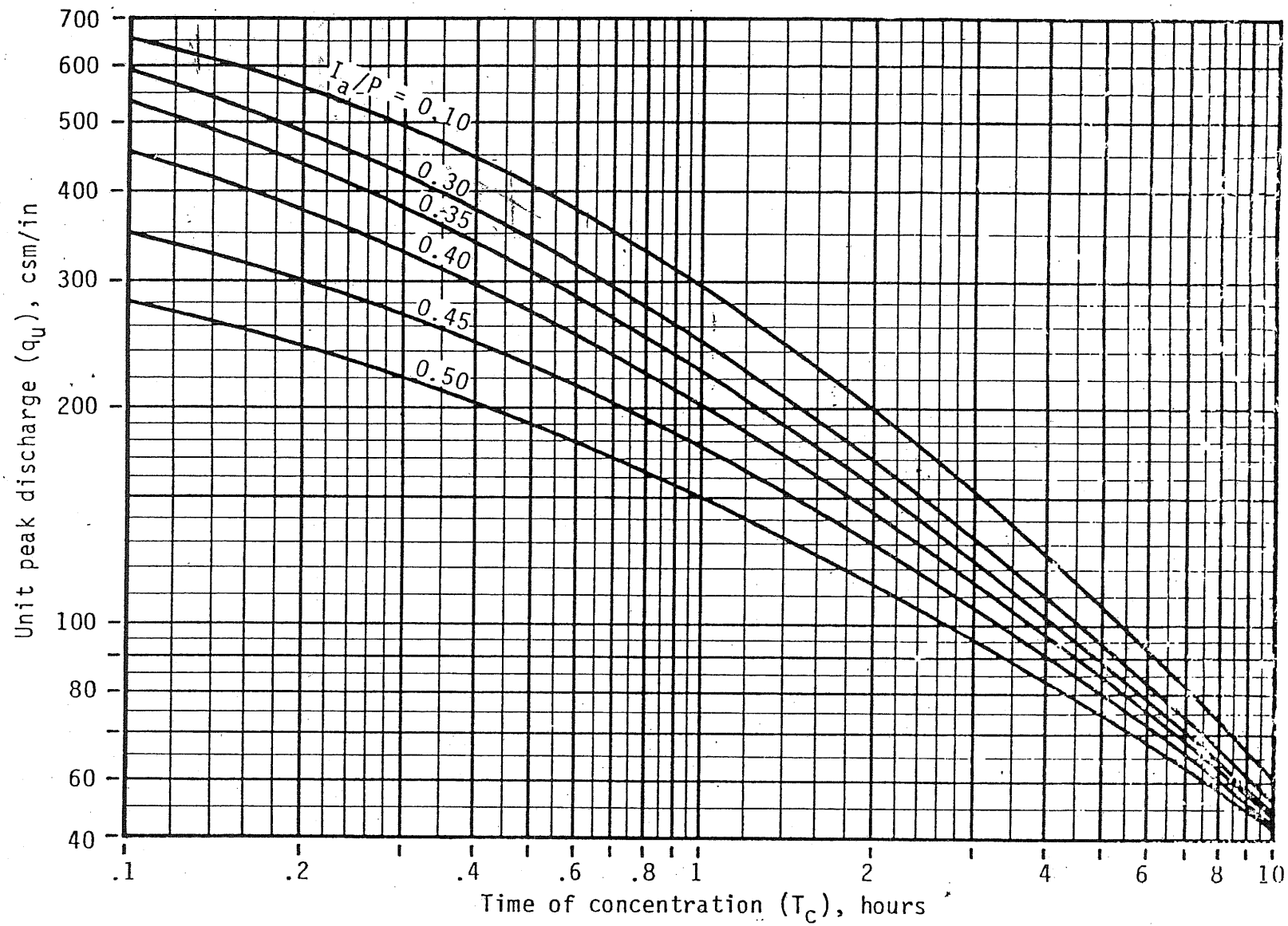


Exhibit 4-III: Unit peak discharge (q_u) for SCS type III rainfall distribution



Compute Stream Channel Protection Volume, (Cp_v) (see Section 4.3 and Appendix B)

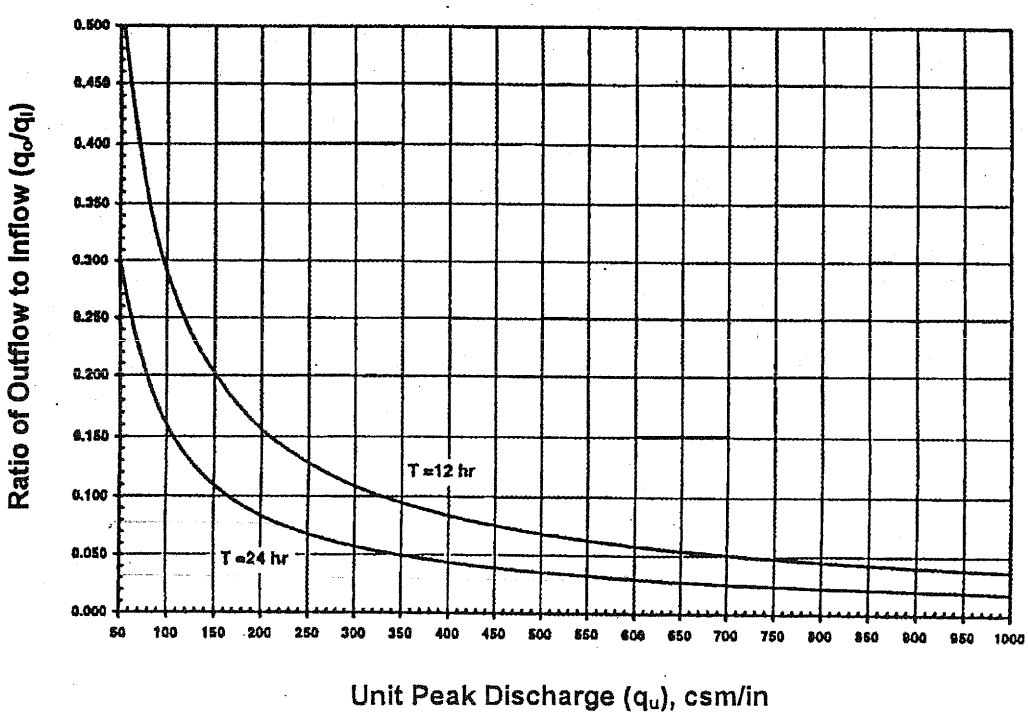
For stream channel protection, provide 24 hours of extended detention (T) for the one-year event.

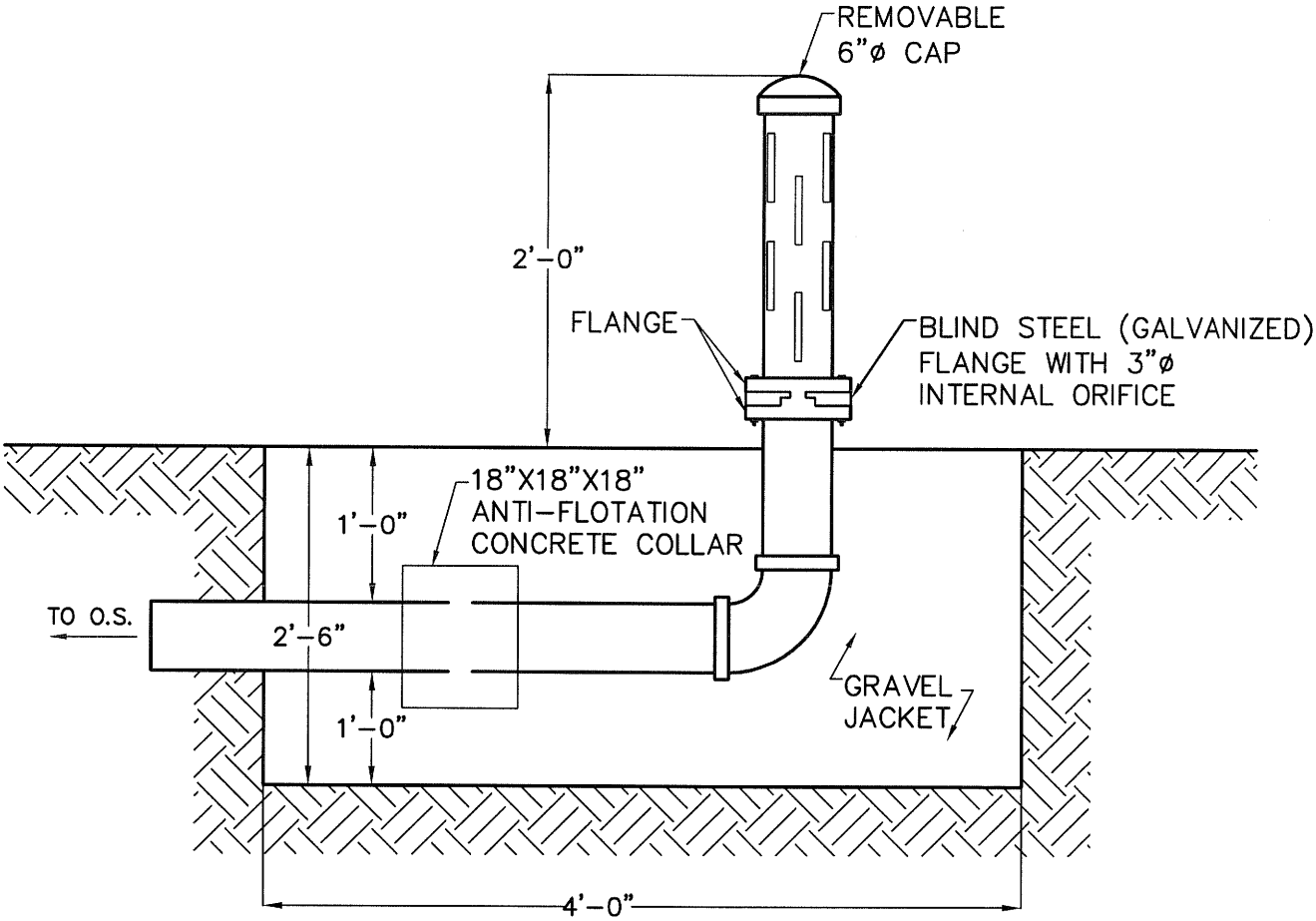
Compute Channel Protection Storage Volume

First, determine the value of the unit peak discharge (q_u) using TR-55 and Type II Rainfall Distribution

- Initial abstraction (Ia) for CN of 78 is 0.564: [Ia = (200/CN - 2)]
- Ia/P = (0.564)/ 2.3 inches = 0.245
- T_c = 0.35 hours
- Using the above data and Exhibit 4-II from TR-55 (NRCS, 1986), q_u = 570 csm/in (cubic feet per second per square mile per year)

Figure 8.5 Detention Time vs. Discharge Ratios (Source: MDE, 2000)





POND DRAIN DETAIL
(NYSDEC STANDARD)

N.T.S.

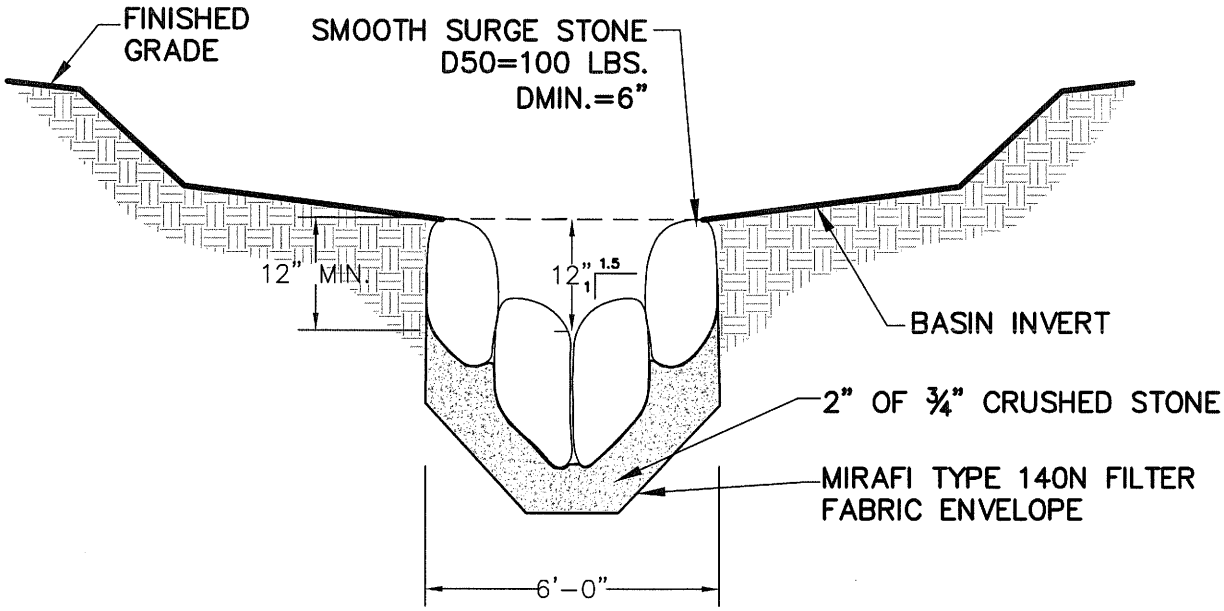
HYENGA LAKE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

POND DRAIN DETAIL

Job number:	Scale:	Drawn by:	Date:
09038	NTS	SK	8/14/09

P:\PROJECTS\09\09038\DWGSHEETS\3-C09038-DETAIL.dwg, POND DRAIN, 8/14/2009 3:16:22 PM, HP LaserJet 2430 PS.pc3, Letter, 1:1



TYPICAL SECTION:
PILOT CHANNEL

N.T.S.

HYENGA LAKE

TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

PILOT CHANNEL DETAIL

Job number:	Scale:	Drawn by:	Date:
09038	NTS	SK	8/14/09

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APPENDIX C

HEC-1 OUTPUT DATA

```
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              MAY   1991              *
 *            VERSION 4.0.1U            *
 *     Lahey F77L-EM/32 version 5.01    *
 *       Dodson & Associates, Inc.      *
 *  RUN DATE  08/12/09  TIME  18:24:32  *
 ****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*           609 SECOND STREET          *
*        DAVIS, CALIFORNIA 95616       *
*            (916) 551-1748            *
*                                      *
****************************************
```

HYENGA LAKE
(EXISTING CONDITIONS)

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
1                                          HEC-1 INPUT                                                    PAGE  1

  LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

    1           ID
    2           ID       HYDROLOGY FOR: HYENGA LAKE
    3           ID                      TOWN OF CLARKSTOWN, NY
    4           ID
    5           ID       ANALYSIS PREPARED BY: LEONARD JACKSON ASSOCIATES
    6           ID                             LJA #09038 PREPARED BY: SK
    7           ID                             DATE: 8/11/09
    8           ID                             REVISED:
    9           ID  ***************************************************************************
   10           ID  ANALYSIS PARAMETERS:
   11           ID
   12           ID  EXISTING CONDITIONS RUN
   13           ID  STORM RECURRENCE INTERVALS = 1-, 2-, 5-, 10-, 25- & 100-YEAR
   14           ID  HYDROGRAPH METHOD:            SCS
   15           ID  RAINFALL DISTRIBUTION:        SCS TYPE III
   16           ID  ***************************************************************************
   17           ID
                *DIAGRAM
   18           IT       6       0       0     300
   19           IO       3       0
   20           JR    PREC     2.5     3.3     4.2     5.0     5.6     7.2

   21           KK    EX-1
   22           KM  ********************************************
   23           KM  * SUBAREA EX-1
   24           KM  * DRAINAGE AREA = 4.64 ACRES = 0.0073 SQ.MI.
   25           KM  * TIME OF CONCENTRATION = 14.5 MIN.
   26           KM  * 0.24 HR x 0.6 (SCS LAG) = 0.145
   27           KM  * IMPERVIOUS AREA = 23.9%
   28           KM  * SCS CURVE NUMBER = 83
   29           KM  ********************************************
   30           BA  0.0073
   31           PB     1.0
   32           IN       6
   33           PC       0   0.001   0.002   0.003   0.004   0.005   0.006   0.007   0.008   0.009
   34           PC   0.010   0.011   0.012   0.013   0.014   0.015   0.016   0.017   0.018   0.019
   35           PC   0.020   0.021   0.022   0.023   0.024   0.026   0.027   0.028   0.029  0.0295
   36           PC   0.030   0.031   0.032   0.034   0.035   0.036   0.037   0.038   0.040   0.041
   37           PC   0.042   0.043   0.045   0.046   0.047   0.049   0.050   0.051   0.053   0.054
   38           PC   0.055   0.057   0.058   0.060   0.061   0.063   0.064   0.066   0.067   0.069
   39           PC   0.070   0.072   0.074   0.075   0.077   0.079   0.080   0.082   0.084   0.085
   40           PC   0.087   0.089   0.091   0.093   0.095   0.097   0.100   0.103   0.106   0.109
   41           PC   0.112   0.115   0.118   0.121   0.124   0.127   0.130   0.134   0.137   0.140
   42           PC   0.144   0.148   0.151   0.155   0.159   0.163   0.167   0.171   0.176   0.180
   43           PC   0.185   0.189   0.194   0.199   0.205   0.210   0.216   0.222   0.228   0.235
   44           PC   0.242   0.250   0.258   0.266   0.276   0.287   0.298   0.312   0.328   0.363
   45           PC   0.416   0.500   0.584   0.638   0.673   0.689   0.702   0.714   0.725   0.734
   46           PC   0.743   0.751   0.758   0.766   0.772   0.779   0.785   0.790   0.796   0.801
   47           PC   0.806   0.811   0.816   0.821   0.825   0.829   0.834   0.838   0.842   0.845
   48           PC   0.849   0.853   0.857   0.860   0.864   0.867   0.870   0.874   0.877   0.880
   49           PC   0.886   0.889   0.892   0.895   0.898   0.900   0.903   0.906   0.908   0.910
   50           PC   0.911   0.913   0.915   0.917   0.919   0.920   0.922   0.924   0.925   0.927
```

```
          51          PC   0.929   0.930   0.932   0.933   0.935   0.936   0.938   0.939   0.941   0.942
          52          PC   0.944   0.945   0.946   0.948   0.949   0.951   0.952   0.953   0.955   0.956
          53          PC   0.957   0.958   0.960   0.961   0.962   0.963   0.965   0.966   0.967   0.968
1                                                  HEC-1 INPUT                                                    PAGE  2

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          54          PC   0.969   0.971   0.972   0.973   0.974   0.975   0.976   0.977   0.978   0.979
          55          PC   0.981   0.982   0.983   0.984   0.985   0.986   0.987   0.988   0.989   0.990
          56          PC   0.991   0.992   0.993   0.994   0.995   0.996   0.997   0.998   0.999   1.000
          57          LS       1      83
          58          UD   0.145

          59          KK    PT.A
          60          KM  RUNOFF EX-1 AT POINT OF INTEREST 'PT.A'
          61          RT                        0
          62          ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21        EX-1
                V
                V
    59        PT.A

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                                                  ***************************************
 *                                       *                                                  *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                  *    U.S. ARMY CORPS OF ENGINEERS     *
 *               MAY   1991              *                                                  *    HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.0.1U             *                                                  *          609 SECOND STREET          *
 *     Lahey F77L-EM/32 version 5.01     *                                                  *       DAVIS, CALIFORNIA 95616       *
 *       Dodson & Associates, Inc.       *                                                  *           (916) 551-1748            *
 *  RUN DATE  08/12/09  TIME  18:24:32   *                                                  *                                     *
 *****************************************                                                  ***************************************


                                HYDROLOGY FOR: HYENGA LAKE
                                               TOWN OF CLARKSTOWN, NY

                                ANALYSIS PREPARED BY: LEONARD JACKSON ASSOCIATES
                                                      LJA #09038 PREPARED BY: SK
                                                      DATE: 8/11/09
                                                      REVISED:
                          ***************************************************************************
                          ANALYSIS PARAMETERS:

                          EXISTING CONDITIONS RUN
                          STORM RECURRENCE INTERVALS = 1-, 2-, 5-, 10-, 25- & 100-YEAR
                          HYDROGRAPH METHOD:           SCS
                          RAINFALL DISTRIBUTION:       SCS TYPE III
                          ***************************************************************************


   19 IO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN           6  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2    0  ENDING DATE
                       NDTIME        0554  ENDING TIME
                        ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.10 HOURS
                       TOTAL TIME BASE   29.90 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

      JP          MULTI-PLAN OPTION
                        NPLAN           1  NUMBER OF PLANS

      JR          MULTI-RATIO OPTION
                      RATIOS OF PRECIPITATION
                    2.50      3.30      4.20      5.00      5.60      7.20
```

```
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
 21 KK      *      EX-1  *
            *            *
            **************
                         *******************************************
                         * SUBAREA EX-1
                         * DRAINAGE AREA = 4.64 ACRES = 0.0073 SQ.MI.
                         * TIME OF CONCENTRATION = 14.5 MIN.
                         * 0.24 HR x 0.6 (SCS LAG) = 0.145
                         * IMPERVIOUS AREA = 23.9%
                         * SCS CURVE NUMBER = 83
                         *******************************************

 32 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN           6  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

 30 BA          SUBBASIN CHARACTERISTICS
                     TAREA        0.01  SUBBASIN AREA

                PRECIPITATION DATA

 31 PB                STORM        1.00  BASIN TOTAL PRECIPITATION

 33 PI            INCREMENTAL PRECIPITATION PATTERN
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.01      0.00      0.01      0.00      0.01      0.01      0.01      0.01      0.01
                    0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.03      0.05
                    0.08      0.08      0.05      0.03      0.02      0.01      0.01      0.01      0.01      0.01
                    0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.01      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

 57 LS          SCS LOSS RATE
                     STRTL        1.00  INITIAL ABSTRACTION
                    CRVNBR       83.00  CURVE NUMBER
                     RTIMP        0.00  PERCENT IMPERVIOUS AREA

 58 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        0.14  LAG

                                                        ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                9.       18.       12.        5.        2.        1.        0.        0.        0.

   TOTAL RAINFALL =    1.00, TOTAL LOSS =    1.00, TOTAL EXCESS =    0.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       0.      0.10                0.          0.          0.          0.
                        (INCHES)    0.000       0.000       0.000       0.000
                         (AC-FT)      0.          0.          0.          0.

                         CUMULATIVE AREA =    0.01 SQ MI

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     EX-1
                          FOR PLAN 1, RATIO = 2.50

   TOTAL RAINFALL =    2.50, TOTAL LOSS =    1.87, TOTAL EXCESS =    0.63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
```

```
+   (CFS)        (HR)
                                  (CFS)
+       2.      12.40                    0.          0.          0.          0.
                              (INCHES)     0.513       0.634       0.634       0.634
                               (AC-FT)        0.          0.          0.          0.

                               CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     EX-1
                            FOR PLAN 1, RATIO = 3.30

    TOTAL RAINFALL =    3.30, TOTAL LOSS =    2.08, TOTAL EXCESS =    1.22

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)        (HR)
                                  (CFS)
+       5.      12.30                    1.          0.          0.          0.
                              (INCHES)     1.021       1.217       1.217       1.217
                               (AC-FT)        0.          0.          0.          0.

                               CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     EX-1
                            FOR PLAN 1, RATIO = 4.20

    TOTAL RAINFALL =    4.20, TOTAL LOSS =    2.25, TOTAL EXCESS =    1.95

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)        (HR)
                                  (CFS)
+       8.      12.30                    1.          0.          0.          0.
                              (INCHES)     1.652       1.951       1.951       1.951
                               (AC-FT)        1.          1.          1.          1.

                               CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     EX-1
                            FOR PLAN 1, RATIO = 5.00

    TOTAL RAINFALL =    5.00, TOTAL LOSS =    2.35, TOTAL EXCESS =    2.65

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)        (HR)
                                  (CFS)
+      11.      12.30                    2.          1.          0.          0.
                              (INCHES)     2.236       2.645       2.645       2.645
                               (AC-FT)        1.          1.          1.          1.

                               CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     EX-1
                            FOR PLAN 1, RATIO = 5.60

    TOTAL RAINFALL =    5.60, TOTAL LOSS =    2.42, TOTAL EXCESS =    3.18

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)        (HR)
                                  (CFS)
+      13.      12.30                    2.          1.          1.          1.
                              (INCHES)     2.685       3.183       3.183       3.183
                               (AC-FT)        1.          1.          1.          1.

                               CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     EX-1
                            FOR PLAN 1, RATIO = 7.20

    TOTAL RAINFALL =    7.20, TOTAL LOSS =    2.54, TOTAL EXCESS =    4.66

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)        (HR)
                                  (CFS)
+      19.      12.30                    3.          1.          1.          1.
                              (INCHES)     3.890       4.660       4.660       4.660
                               (AC-FT)        2.          2.          2.          2.
```

```
                    CUMULATIVE AREA =    0.01 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
  59 KK   *      PT.A  *
          *            *
          **************
                RUNOFF EX-1 AT POINT OF INTEREST 'PT.A'

             HYDROGRAPH ROUTING DATA

  61 RT          TATUM OR STRADDLE-STAGGER ROUTING
                      NSTPS            0   NUMBER OF TATUM STEPS
                      NSTDL            0   NUMBER OF ORDINATES TO BE AVERAGED
                      LAG              0   NUMBER OF INTERVALS TO LAG HYDROGRAPH

                                                                  ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     PT.A
                         FOR PLAN 1, RATIO = 2.50

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                         (CFS)
+       2.     12.40                  0.          0.          0.          0.
                      (INCHES)     0.513       0.634       0.634       0.634
                       (AC-FT)        0.          0.          0.          0.

                       CUMULATIVE AREA =    0.01 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     PT.A
                         FOR PLAN 1, RATIO = 3.30

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                         (CFS)
+       5.     12.30                  1.          0.          0.          0.
                      (INCHES)     1.021       1.217       1.217       1.217
                       (AC-FT)        0.          0.          0.          0.

                       CUMULATIVE AREA =    0.01 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     PT.A
                         FOR PLAN 1, RATIO = 4.20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                         (CFS)
+       8.     12.30                  1.          0.          0.          0.
                      (INCHES)     1.652       1.951       1.951       1.951
                       (AC-FT)        1.          1.          1.          1.

                       CUMULATIVE AREA =    0.01 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     PT.A
                         FOR PLAN 1, RATIO = 5.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                         (CFS)
+      11.     12.30                  2.          1.          0.          0.
                      (INCHES)     2.236       2.645       2.645       2.645
                       (AC-FT)        1.          1.          1.          1.

                       CUMULATIVE AREA =    0.01 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     PT.A
                         FOR PLAN 1, RATIO = 5.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
```

```
                                        6-HR        24-HR        72-HR      29.90-HR
+   (CFS)        (HR)
                              (CFS)
+      13.      12.30                     2.           1.           1.           1.
                          (INCHES)     2.685        3.183        3.183        3.183
                           (AC-FT)        1.           1.           1.           1.

                          CUMULATIVE AREA =    0.01 SQ MI


       ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 7.20

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR      29.90-HR
+   (CFS)        (HR)
                              (CFS)
+      19.      12.30                     3.           1.           1.           1.
                          (INCHES)     3.890        4.660        4.660        4.660
                           (AC-FT)        2.           2.           2.           2.

                          CUMULATIVE AREA =    0.01 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                     VOLUME IN ACRE-FEET, TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION      AREA     PLAN              RATIO 1  RATIO 2  RATIO 3  RATIO 4  RATIO 5  RATIO 6
                                                            2.50     3.30     4.20     5.00     5.60     7.20

 HYDROGRAPH AT
+                  EX-1       0.007      1   FLOW         2.02     4.66     8.06    11.08    13.34    19.29
                                              TIME        12.40    12.30    12.30    12.30    12.30    12.30
                                              VOLUME       0.25     0.47     0.76     1.03     1.24     1.81

 ROUTED TO
+                  PT.A       0.007      1   FLOW         2.02     4.66     8.06    11.08    13.34    19.29
                                              TIME        12.40    12.30    12.30    12.30    12.30    12.30
                                              VOLUME       0.25     0.47     0.76     1.03     1.24     1.81


 *** NORMAL END OF HEC-1 ***
```

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*            VERSION 4.0.1U            *
*     Lahey F77L-EM/32 version 5.01    *
*       Dodson & Associates, Inc.      *
*  RUN DATE  08/14/09  TIME  15:44:00  *
****************************************
```

```
*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET         *
*      DAVIS, CALIFORNIA 95616      *
*          (916) 551-1748           *
*                                   *
*************************************
```

HYENGA LAKE
(DEVELOPED CONDITIONS)

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
1                                          HEC-1 INPUT                                                    PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

             1          ID
             2          ID       HYDROLOGY FOR: HYENGA LAKE
             3          ID                      TOWN OF CLARKSTOWN, NY
             4          ID
             5          ID       ANALYSIS PREPARED BY: LEONARD JACKSON ASSOCIATES
             6          ID                             LJA #09038 PREPARED BY: SK
             7          ID                             DATE: 8/11/09
             8          ID                             REVISED:
             9          ID  ******************************************************************************
            10          ID  ANALYSIS PARAMETERS:
            11          ID
            12          ID  EXISTING CONDITIONS RUN
            13          ID  STORM RECURRENCE INTERVALS = 1-, 2-, 5-, 10-, 25- & 100-YEAR
            14          ID  HYDROGRAPH METHOD:           SCS
            15          ID  RAINFALL DISTRIBUTION:       SCS TYPE III
            16          ID  ******************************************************************************
            17          ID
                        *DIAGRAM
            18          IT       6       0       0     300
            19          IO       3       0
            20          JR    PREC     2.5     3.3     4.2     5.0     5.6     7.2

            21          KK   DEV-1
            22          KM  *******************************************
            23          KM  * SUBAREA DEV-1
            24          KM  * DRAINAGE AREA = 4.64 ACRES = 0.0073 SQ.MI.
            25          KM  * TIME OF CONCENTRATION = 9.9 MIN.
            26          KM  * 0.16 HR x 0.6 (SCS LAG) = 0.099
            27          KM  * IMPERVIOUS AREA = 60.6%
            28          KM  * SCS CURVE NUMBER = 91
            29          KM  ******************************************
            30          KO               1                      21       1
            31          BA  0.0073
            32          PB     1.0
            33          IN       6
            34          PC       0   0.001   0.002   0.003   0.004   0.005   0.006   0.007   0.008   0.009
            35          PC   0.010   0.011   0.012   0.013   0.014   0.015   0.016   0.017   0.018   0.019
            36          PC   0.020   0.021   0.022   0.023   0.024   0.026   0.027   0.028   0.029  0.0295
            37          PC   0.030   0.031   0.032   0.034   0.035   0.036   0.037   0.038   0.040   0.041
            38          PC   0.042   0.043   0.045   0.046   0.047   0.049   0.050   0.051   0.053   0.054
            39          PC   0.055   0.057   0.058   0.060   0.061   0.063   0.064   0.066   0.067   0.069
            40          PC   0.070   0.072   0.074   0.075   0.077   0.079   0.080   0.082   0.084   0.085
            41          PC   0.087   0.089   0.091   0.093   0.095   0.097   0.100   0.103   0.106   0.109
            42          PC   0.112   0.115   0.118   0.121   0.124   0.127   0.130   0.134   0.137   0.140
            43          PC   0.144   0.148   0.151   0.155   0.159   0.163   0.167   0.171   0.176   0.180
            44          PC   0.185   0.189   0.194   0.199   0.205   0.210   0.216   0.222   0.228   0.235
            45          PC   0.242   0.250   0.258   0.266   0.276   0.287   0.298   0.312   0.328   0.363
            46          PC   0.416   0.500   0.584   0.638   0.673   0.689   0.702   0.714   0.725   0.734
            47          PC   0.743   0.751   0.758   0.766   0.772   0.779   0.785   0.790   0.796   0.801
            48          PC   0.806   0.811   0.816   0.821   0.825   0.829   0.834   0.838   0.842   0.845
            49          PC   0.849   0.853   0.857   0.860   0.864   0.867   0.870   0.874   0.877   0.880
            50          PC   0.886   0.889   0.892   0.895   0.898   0.900   0.903   0.906   0.908   0.910
            51          PC   0.911   0.913   0.915   0.917   0.919   0.920   0.922   0.924   0.925   0.927
            52          PC   0.929   0.930   0.932   0.933   0.935   0.936   0.938   0.939   0.941   0.942
```

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          53          PC   0.944   0.945   0.946   0.948   0.949   0.951   0.952   0.953   0.955   0.956
1                                                  HEC-1 INPUT                                                    PAGE  2

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          54          PC   0.957   0.958   0.960   0.961   0.962   0.963   0.965   0.966   0.967   0.968
          55          PC   0.969   0.971   0.972   0.973   0.974   0.975   0.976   0.977   0.978   0.979
          56          PC   0.981   0.982   0.983   0.984   0.985   0.986   0.987   0.988   0.989   0.990
          57          PC   0.991   0.992   0.993   0.994   0.995   0.996   0.997   0.998   0.999   1.000
          58          LS       1      91
          59          UD   0.145

          60          KK  BASIN1
          61          KM  OUTLET STRUCTURE DATA:
          62          KM  ******************************************************************
          63          KM  * BOTTOM OF BASIN = 381.0, TOP OF BASIN = 385.0                  *
          64          KM  * ORIFICE OPENING #1: SIZE = 2" DIA., ELEVATION = 381.0           *
          65          KM  * RECTANGULAR OPENING #2: SIZE = 12.3" x 12.3", ELEVATION = 382.2  *
          66          KM  * RECTANGULAR OPENING #3: SIZE = 12.3" x 12.3", ELEVATION = 382.2  *
          67          KM  * RECTANGULAR WEIR #3: LENGTH = 2' , ELEVATION = 382.6            *
          68          KM  * OVERFLOW WEIR LENGTH = 10' AT ELEVATION 383.75                  *
          69          KM  ******************************************************************
          70          KO               1                      21       1
          71          RS       1    ELEV     381
          72          SV       0  0.1159   0.273  0.4729  0.7199
          73          SE     381     382     383     384     385
          74          SQ       0    0.04    0.06    0.08    0.09    0.11    0.22    1.01    2.36    4.67
          75          SQ    7.61   11.65   14.65   17.69   23.44   31.84   41.92   53.37   66.02   79.75
          76          SE     381   381.2   381.4   381.6   381.8   382.1   382.3   382.5   382.7   382.9
          77          SE   383.1   383.3   383.5   383.7   383.9   384.2   384.4   384.6   384.8     385

          78          KK    PT.A
          79          KM  RUNOFF DEV-1 AT POINT OF INTEREST 'PT.A'
          80          RT                      0
          81          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21       DEV-1
                V
                V
    60      BASIN1
                V
                V
    78        PT.A

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                                  ****************************************
 *                                      *                                                  *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *   U.S. ARMY CORPS OF ENGINEERS       *
 *              MAY   1991              *                                                  *   HYDROLOGIC ENGINEERING CENTER      *
 *            VERSION 4.0.1U            *                                                  *          609 SECOND STREET           *
 *     Lahey F77L-EM/32 version 5.01    *                                                  *      DAVIS, CALIFORNIA 95616         *
 *       Dodson & Associates, Inc.      *                                                  *          (916) 551-1748              *
 *  RUN DATE  08/14/09  TIME  15:44:00  *                                                  *                                      *
 ****************************************                                                  ****************************************


                                HYDROLOGY FOR: HYENGA LAKE
                                               TOWN OF CLARKSTOWN, NY

                                ANALYSIS PREPARED BY: LEONARD JACKSON ASSOCIATES
                                                      LJA #09038 PREPARED BY: SK
                                                      DATE: 8/11/09
                                                      REVISED:
                              ***********************************************************************
                              ANALYSIS PARAMETERS:

                              EXISTING CONDITIONS RUN
                              STORM RECURRENCE INTERVALS = 1-, 2-, 5-, 10-, 25- & 100-YEAR
                              HYDROGRAPH METHOD:           SCS
                              RAINFALL DISTRIBUTION:       SCS TYPE III
                              ***********************************************************************


   19 IO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT           HYDROGRAPH TIME DATA
                         NMIN           6  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      2    0  ENDING DATE
                       NDTIME        0554  ENDING TIME
```

```
                ICENT          19  CENTURY MARK

            COMPUTATION INTERVAL    0.10 HOURS
                 TOTAL TIME BASE   29.90 HOURS

      ENGLISH UNITS
           DRAINAGE AREA         SQUARE MILES
           PRECIPITATION DEPTH   INCHES
           LENGTH, ELEVATION     FEET
           FLOW                  CUBIC FEET PER SECOND
           STORAGE VOLUME        ACRE-FEET
           SURFACE AREA          ACRES
           TEMPERATURE           DEGREES FAHRENHEIT

  JP          MULTI-PLAN OPTION
                NPLAN           1  NUMBER OF PLANS

  JR          MULTI-RATIO OPTION
                RATIOS OF PRECIPITATION
                 2.50      3.30      4.20      5.00      5.60      7.20


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
 21 KK    *     DEV-1  *
          *            *
          **************
                        *******************************************
                        * SUBAREA DEV-1
                        * DRAINAGE AREA = 4.64 ACRES = 0.0073 SQ.MI.
                        * TIME OF CONCENTRATION = 9.9 MIN.
                        * 0.16 HR x 0.6 (SCS LAG) = 0.099
                        * IMPERVIOUS AREA = 60.6%
                        * SCS CURVE NUMBER = 91
                        *******************************************

 30 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       0.100  TIME INTERVAL IN HOURS


 33 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN           6  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA        0.01  SUBBASIN AREA

                PRECIPITATION DATA

 32 PB                STORM        1.00  BASIN TOTAL PRECIPITATION

 34 PI            INCREMENTAL PRECIPITATION PATTERN
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.01      0.00      0.01      0.00      0.01      0.01      0.01      0.01      0.01
                    0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.03      0.05
                    0.08      0.08      0.05      0.03      0.02      0.01      0.01      0.01      0.01      0.01
                    0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.01      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

 58 LS          SCS LOSS RATE
                      STRTL        1.00  INITIAL ABSTRACTION
                     CRVNBR       91.00  CURVE NUMBER
                      RTIMP        0.00  PERCENT IMPERVIOUS AREA
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 59 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        0.14  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                     9 END-OF-PERIOD ORDINATES
                 9.       18.       12.        5.        2.        1.        0.        0.        0.

     TOTAL RAINFALL =    1.00, TOTAL LOSS =    1.00, TOTAL EXCESS =    0.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       0.      0.10                 0.          0.          0.          0.
                        (INCHES)   0.000       0.000       0.000       0.000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =    0.01 SQ MI

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 2.50

     TOTAL RAINFALL =    2.50, TOTAL LOSS =    1.60, TOTAL EXCESS =    0.90

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       3.     12.40                 1.          0.          0.          0.
                        (INCHES)   0.749       0.904       0.904       0.904
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =    0.01 SQ MI

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 3.30

     TOTAL RAINFALL =    3.30, TOTAL LOSS =    1.69, TOTAL EXCESS =    1.61

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       7.     12.30                 1.          0.          0.          0.
                        (INCHES)   1.376       1.608       1.608       1.608
                         (AC-FT)     1.          1.          1.          1.

                        CUMULATIVE AREA =    0.01 SQ MI

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 4.20

     TOTAL RAINFALL =    4.20, TOTAL LOSS =    1.76, TOTAL EXCESS =    2.44

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      11.     12.30                 2.          0.          0.          0.
                        (INCHES)   2.102       2.444       2.444       2.444
                         (AC-FT)     1.          1.          1.          1.

                        CUMULATIVE AREA =    0.01 SQ MI

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 5.00

     TOTAL RAINFALL =    5.00, TOTAL LOSS =    1.79, TOTAL EXCESS =    3.21

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      14.     12.30                 2.          1.          1.          1.
                        (INCHES)   2.746       3.207       3.207       3.207
                         (AC-FT)     1.          1.          1.          1.

                        CUMULATIVE AREA =    0.01 SQ MI
```

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     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 5.60

    TOTAL RAINFALL =    5.60, TOTAL LOSS =    1.81, TOTAL EXCESS =    3.79

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      16.     12.30                  3.          1.          1.          1.
                        (INCHES)    3.226       3.786       3.786       3.786
                         (AC-FT)      1.          1.          1.          1.

                        CUMULATIVE AREA =    0.01 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DEV-1
                          FOR PLAN 1, RATIO = 7.20

    TOTAL RAINFALL =    7.20, TOTAL LOSS =    1.85, TOTAL EXCESS =    5.35

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      22.     12.30                  4.          1.          1.          1.
                        (INCHES)    4.471       5.347       5.347       5.347
                         (AC-FT)      2.          2.          2.          2.

                        CUMULATIVE AREA =    0.01 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  60 KK     *    BASIN1  *
            *            *
            **************
                        OUTLET STRUCTURE DATA:
                        ******************************************************************
                        * BOTTOM OF BASIN = 381.0, TOP OF BASIN = 385.0                  *
                        * ORIFICE OPENING #1: SIZE = 2" DIA., ELEVATION = 381.0          *
                        * RECTANGULAR OPENING #2: SIZE = 12.3" x 12.3", ELEVATION = 382.2 *
                        * RECTANGULAR OPENING #3: SIZE = 12.3" x 12.3", ELEVATION = 382.2 *
                        * RECTANGULAR WEIR #3: LENGTH = 2' , ELEVATION = 382.6          *
                        * OVERFLOW WEIR LENGTH = 10' AT ELEVATION 383.75                *
                        ******************************************************************

  70 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       0.100  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

  71 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      381.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

  72 SV            STORAGE         0.0       0.1       0.3       0.5       0.7

  73 SE          ELEVATION      381.00    382.00    383.00    384.00    385.00

  74 SQ          DISCHARGE          0.        0.        0.        0.        0.        0.        0.        1.        2.        5.
                                     8.       12.       15.       18.       23.       32.       42.       53.       66.       80.

  76 SE          ELEVATION      381.00    381.20    381.40    381.60    381.80    382.10    382.30    382.50    382.70    382.90
                                383.10    383.30    383.50    383.70    383.90    384.20    384.40    384.60    384.80    385.00

                                                                  ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       0.00      0.02      0.05      0.07      0.09      0.12      0.13      0.16      0.19      0.23
           OUTFLOW       0.00      0.04      0.06      0.08      0.09      0.10      0.11      0.22      1.01      2.36
         ELEVATION     381.00    381.20    381.40    381.60    381.80    382.00    382.10    382.30    382.50    382.70

           STORAGE       0.26      0.27      0.29      0.33      0.37      0.41      0.45      0.47      0.52      0.57
           OUTFLOW       4.67      6.14      7.61     11.65     14.65     17.69     23.44     26.24     31.84     41.92
```

```
          ELEVATION     382.90    383.00    383.10    383.30    383.50    383.70    383.90    384.00    384.20    384.40

            STORAGE       0.62      0.67      0.72
            OUTFLOW      53.37     66.02     79.75
          ELEVATION     384.60    384.80    385.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       53. TO       80.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   BASIN1
                          FOR PLAN 1, RATIO = 2.50

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       0.     14.40                  0.          0.          0.          0.
                        (INCHES)    0.368       0.677       0.677       0.677
                         (AC-FT)       0.          0.          0.          0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     14.20                  0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    382.35     14.50               382.31      381.83      381.67      381.67

                       CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   BASIN1
                          FOR PLAN 1, RATIO = 3.30

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       2.     12.70                  1.          0.          0.          0.
                        (INCHES)    0.977       1.362       1.362       1.362
                         (AC-FT)       0.          1.          1.          1.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     12.70                  0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    382.71     12.70               382.42      381.91      381.73      381.73

                       CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   BASIN1
                          FOR PLAN 1, RATIO = 4.20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       7.     12.50                  1.          0.          0.          0.
                        (INCHES)    1.724       2.186       2.186       2.186
                         (AC-FT)       1.          1.          1.          1.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     12.50                  0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    383.07     12.50               382.50      381.96      381.77      381.77

                       CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   BASIN1
                          FOR PLAN 1, RATIO = 5.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
```

```
+   (CFS)        (HR)
                              (CFS)
+      11.      12.40                    2.          1.          0.          0.
                          (INCHES)     2.405       2.943       2.943       2.943
                           (AC-FT)        1.          1.          1.          1.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     12.40                      0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    383.27     12.40                  382.56      382.00      381.80      381.80

                          CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION   BASIN1
                            FOR PLAN 1, RATIO = 5.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                              (CFS)
+      13.      12.40                    2.          1.          1.          1.
                          (INCHES)     2.918       3.521       3.521       3.521
                           (AC-FT)        1.          1.          1.          1.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     12.40                      0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    383.41     12.40                  382.60      382.03      381.82      381.82

                          CUMULATIVE AREA =    0.01 SQ MI


      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION   BASIN1
                            FOR PLAN 1, RATIO = 7.20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                              (CFS)
+      19.      12.40                    3.          1.          1.          1.
                          (INCHES)     4.268       5.079       5.079       5.079
                           (AC-FT)        2.          2.          2.          2.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+  (AC-FT)      (HR)
        0.     12.40                      0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     29.90-HR
+   (FEET)      (HR)
    383.75     12.40                  382.71      382.11      381.89      381.89

                          CUMULATIVE AREA =    0.01 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  78 KK     *      PT.A  *
            *            *
            **************
                          RUNOFF DEV-1 AT POINT OF INTEREST 'PT.A'

               HYDROGRAPH ROUTING DATA

  80 RT          TATUM OR STRADDLE-STAGGER ROUTING
                      NSTPS            0   NUMBER OF TATUM STEPS
                      NSTDL            0   NUMBER OF ORDINATES TO BE AVERAGED
                      LAG              0   NUMBER OF INTERVALS TO LAG HYDROGRAPH
                                                                   ***

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     PT.A
```

```
                    FOR PLAN 1, RATIO = 2.50

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       0.     14.40                 0.          0.          0.           0.
                        (INCHES)   0.368       0.677       0.677        0.677
                         (AC-FT)     0.          0.          0.           0.

                        CUMULATIVE AREA =    0.01 SQ MI


      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 3.30

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       2.     12.70                 1.          0.          0.           0.
                        (INCHES)   0.977       1.362       1.362        1.362
                         (AC-FT)     0.          1.          1.           1.

                        CUMULATIVE AREA =    0.01 SQ MI


      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 4.20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+       7.     12.50                 1.          0.          0.           0.
                        (INCHES)   1.724       2.186       2.186        2.186
                         (AC-FT)     1.          1.          1.           1.

                        CUMULATIVE AREA =    0.01 SQ MI


      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 5.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      11.     12.40                 2.          1.          0.           0.
                        (INCHES)   2.405       2.943       2.943        2.943
                         (AC-FT)     1.          1.          1.           1.

                        CUMULATIVE AREA =    0.01 SQ MI


      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 5.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      13.     12.40                 2.          1.          1.           1.
                        (INCHES)   2.918       3.521       3.521        3.521
                         (AC-FT)     1.          1.          1.           1.

                        CUMULATIVE AREA =    0.01 SQ MI


      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     PT.A
                          FOR PLAN 1, RATIO = 7.20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+      19.     12.40                 3.          1.          1.           1.
                        (INCHES)   4.268       5.079       5.079        5.079
                         (AC-FT)     2.          2.          2.           2.

                        CUMULATIVE AREA =    0.01 SQ MI

1

          PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
```

FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
VOLUME IN ACRE-FEET, TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					2.50	3.30	4.20	5.00	5.60	7.20
HYDROGRAPH AT										
+	DEV-1	0.007	1	FLOW	3.24	6.87	10.76	13.95	16.24	22.11
				TIME	12.40	12.30	12.30	12.30	12.30	12.30
				VOLUME	0.35	0.63	0.95	1.25	1.47	2.08
ROUTED TO										
+	BASIN1	0.007	1	FLOW	0.41	2.44	7.15	11.02	13.33	19.20
				TIME	14.40	12.70	12.50	12.40	12.40	12.40
				VOLUME	0.26	0.53	0.85	1.15	1.37	1.98
			** PEAK STAGES IN FEET **							
			1	STAGE	382.35	382.71	383.07	383.27	383.41	383.75
				TIME	14.50	12.70	12.50	12.40	12.40	12.40
ROUTED TO										
+	PT.A	0.007	1	FLOW	0.41	2.44	7.15	11.02	13.33	19.20
				TIME	14.40	12.70	12.50	12.40	12.40	12.40
				VOLUME	0.26	0.53	0.85	1.15	1.37	1.98

*** NORMAL END OF HEC-1 ***

DEV-1

AREA: 4.64 AC
IMPERVIOUS AREA: 2.82 AC

PROPOSED 3 STORY SENIOR HOUSING
65 1 BEDROOM UNITS
2 BEDROOM SUPERINTENDANT UNIT
64,000 SQ. FT. FLOOR AREA

PROPOSED 3 STORY SENIOR HOUSING
40 1 BEDROOM UNITS
29,400 SQ. FT. FLOOR AREA

WATER QUALITY/
DETENTION BASIN #1

"PT.A"

DV-TC

VILLAGE OF SPRING VALLEY
TOWN OF CLARKSTOWN

NYACK TURNPIKE

ORANGE & ROCKLAND UTILITIES EASEMENT

ROCKLAND COUNTY DRAINAGE AGENCY
PASCACK BROOK
STREAM REHABILITATION
CONTRACT NO. 2

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

REV.	DESCRIPTION	DATE

EDWARD JACKSON, P.E.
N.Y.S. Lic. Nbr. 72167

LEONARD JACKSON ASSOCIATES
CONSULTING ENGINEERS
26 FIREMENS MEMORIAL DRIVE, POMONA, NEW YORK 10970
phone: (845) 354-4382 fax: (845) 354-4401

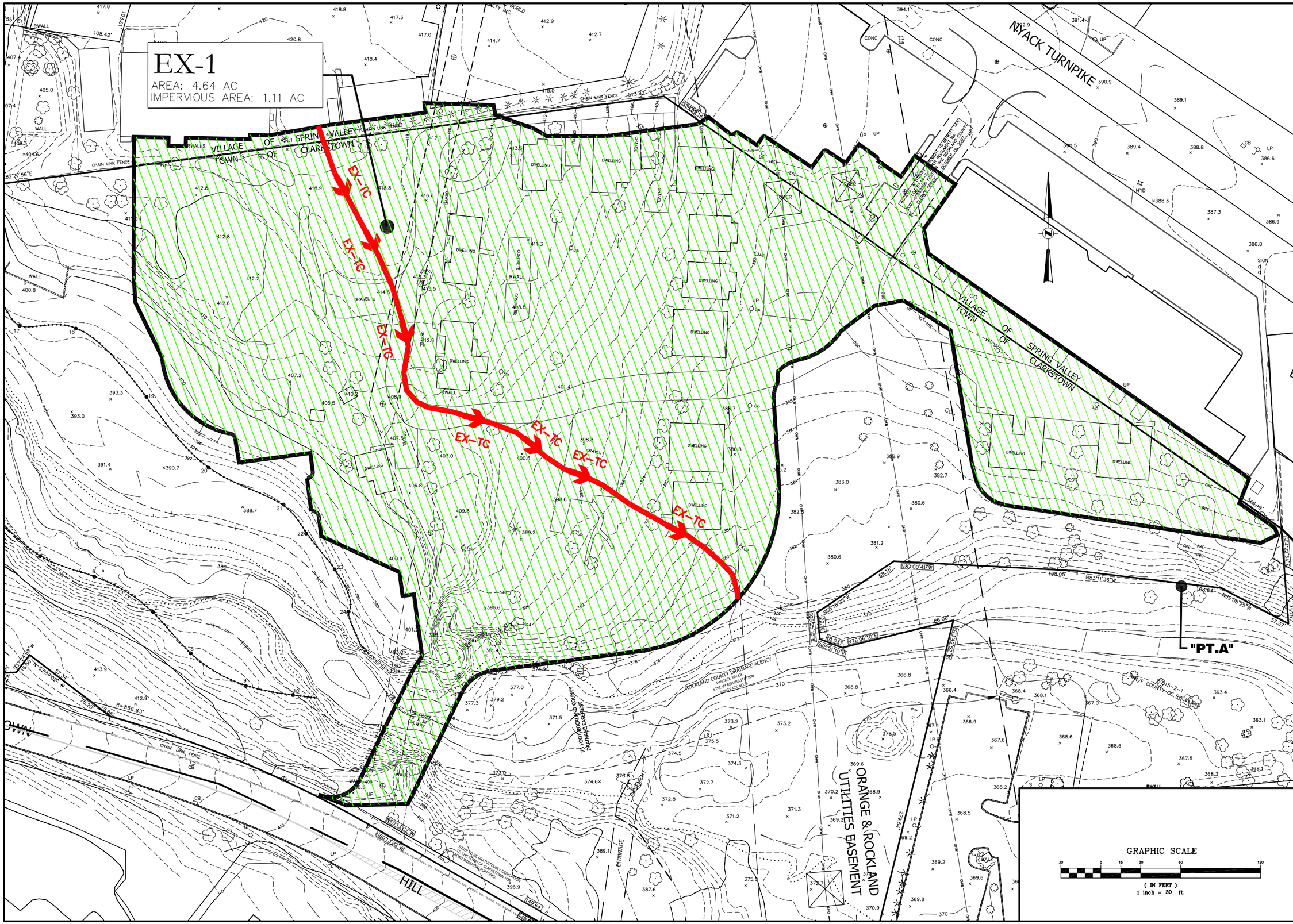
LJA

HYENGA LAKE
TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

DEVELOPED CONDITIONS DRAINAGE AREA MAP

Job number:	09038
Drawn by:	SK
Date:	7/30/09
Scale:	1" = 30'
Drawing Number:	D-2

P:\PROJECTS\09\09038\DWG\SHEETS\DRAINAGE\09038-DEV-DRN-AREA-MAP.dwg, DEV, 8/17/2009 9:38:46 AM, Adobe PDF.pc3, ARCH D, 1:1



REV.	DESCRIPTION	DATE

EDWARD JACKSON, P.E.
N.Y.S. LIC. No. 72167

LEONARD JACKSON ASSOCIATES
CONSULTING ENGINEERS
26 FIREMENS MEMORIAL DRIVE, POMONA, NEW YORK 10970
phone: (845) 354-4382 fax: (845) 354-4401

HYENGA LAKE
TOWN OF CLARKSTOWN
ROCKLAND COUNTY, NEW YORK

EXISTING CONDITIONS DRAINAGE AREA MAP

Job number: 09038
Drawn by: SK
Date: 7/30/09
Scale: 1" = 30'
Drawing Number: D-1

P:\PROJECTS\09\09038\DWGSHEETS\DRAINAGE\09038-EX-DRN-AREA-MAP.dwg, EX, 8/17/2009 9:41:05 AM, Adobe PDF.pc3, ARCH D, 1:1

Appendix E

SPECIAL USE PERMIT
PETITION

----------X

In the Matter of the Application of

HYENGA LAKE DEVELOPMENT LLC,

VERIFIED PETITION

For a Special Permit pursuant to § 290-17 (O) of the Zoning Ordinance of the Town of Clarkstown.

----------X

TO THE HONORABLE TOWN BOARD OF THE TOWN OF CLARKSTOWN:

The Petition of Hyenga Lake Development LLC, a limited liability company, having an office at 100 Snake Hill Road, West Nyack, New York, respectfully shows to the Honorable Board:

1. Your Petitioner is the owner of certain lands consisting of 12.4 acres, presently zoned MF-2, located in the Town of Clarkstown, County of Rockland and State of New York.

2. The Petitioner hereby seeks approval of a Special Permit to build non-profit or limited profit housing? for the elderly in accordance with the provisions of § 290-17 (O) of the Zoning Ordinance of the Town of Clarkstown.

3. Upon processing the matter the Petitioner will submit to the Board evidence indicating compliance with Paragraphs (1) through (11) of the aforesaid § 290-17 (O) either by documentary evidence in the form of a site plan and exhibits or by testimony at a hearing to be held therein.

4. Your Petitioner submits that it can comply with the special findings required under § 290-15 (B) (1) through (6) in that the property:

(1) Will be appropriately located in respect to transportation, water supply, waste disposal, fire and police protection and other public facilities;
(2) Not cause undue traffic congestion or create a traffic hazard;
(3) Not create, at a point of determination set forth in § 290-13 (f), (g) and (h) any more dangerous and objectionable elements referred to in § 290-13 (a) than is characteristic of the uses expressly permitted as a right in the same district;
(4) Not adversely affect the character of or property values in the area;
(5) Not otherwise impair the public health, safety, morals, convenience, comfort, prosperity and other aspects of the general welfare of the town; and
(6) Comply with all other regulations applicable to said use.

5. The property is located within 500 feet of a municipal boundary and New York State road and therefore § 239 (l), (m) and (n) of the General Municipal Law are applicable.

6. No previous Petition for the relief requested herein has been made.

WHEREFORE, your Petitioner respectfully requests the Honorable Town Board to refer this Petition to the Planning Board for advice and for compliance with the precepts of the State Environmental Quality Review Law.

Dated: New City, New York
June 9, 2009

HYENGA LAKE DEVELOPMENT LLC

By: Donald S. Tracy, Esq.
Attorney for Petitioner

VERIFICATION

STATE OF NEW YORK)
ss.:
COUNTY OF ROCKLAND)

HOWARD HELLMAN, being duly sworn, deposes and says:

I am the Managing Member of the Petitioner in the proceeding herein. I have read the annexed Petition, know the contents thereof and the same are true to my knowledge except those matters therein which are stated to be alleged on information and belief, and as to those matters, I believe them to be true.

HOWARD HELLMAN

Sworn to before me this
19 day of June, 2009.

DONALD S. TRACY
Notary Public, State of New York
No. 41-9368250
Qualified in Rockland County
Commission Expires December 31, 2010

SCHEDULE A

ALL that certain plot, piece or parcel of land, situate, lying and being in the Town of Clarkstown, County of Rockland and State of New York. Being more fully bounded and described as follows:

BEGINNING at a point westerly line of lands now or formerly of Joseph & Mary Ellen Seid (Tax Lot 57.15 2-2), said point being distant 286.74 feet as measured northerly along the westerly line of lands now or formerly of Joseph & Mary Ellen Seid (Tax Lot 57.15-2-2) on a course of N13-42-52E from a point on the northerly right-of-way of Pipetown Hill Road located at the southwest corner of lands now or formerly of Joseph & Mary Ellen Seid (Tax Lot 57.15-2-2); running thence thru lands now or formerly of De Staso Enterprises, Inc. (Tax Lot 57.14-3-2), the following fourteen (14) courses and distances:

1) S78-58-17W, a distance of 101.77 feet;
2) S71-45-04W, a distance of 127.65 feet;
3) On a curve to the right having a radius of 280.00 feet, an arc length of 329.98 feet;
4) N40-43-32W, distance of 4.02 feet;
5) On a curve to the left having a radius of 40.00 feet, an arc length of 25.55 feet;
6) N77-19-19W, a distance of 49.35 feet;
7) On a curve to the right having a radius of 210.00 feet, an arc length of 196.38 feet;
8) N23-44-26W, a distance of 13.13 feet;
9) On a curve to the left having a radius of 265.00 feet, an arc length of 120.31 feet;
10) N49-45-12W, a distance of 149.76 feet;
11) On a curve to the right having a radius of 160.00, an arc length of 189.23 feet;
12) N18-00-31E, a distance of 62.97 feet;
13) On a curve to the left having a radius of 115.00 feet, an arc length of 33.00 feet;
14) N1-34-04E, a distance of 23.31 feet; thence
15) N31-48-09E along the easterly line of lands now or formerly of Howard Jr. & Josiane Hoehmann (Tax Lot 57.14-3-1), a distance of 208.79 feet; thence
16) N80-20-38E along the southerly line of lands now or formerly of Sonny Properties, Inc. (Tax Lot 57.56-2-15), a distance of 12.02 feet; thence
17) S11-07-13W along the westerly line of lands now or formerly of Arthur & Kat Ohnikian (Tax Lot 57.56-2-14), distance of 114.45 feet; running thence thru lands now or formerly of De Staso Enterprises, Inc. (Tax Lot 57.14-3-2), the following fifteen (15) courses and distances:
18) On a curve to the left having a radius of 60.00 feet, an arc length of 54.28 feet;
19) S1-34-04W, a distance of 46.00 feet;
20) On a curve to the right having a radius of 190.00 feet, an arc length of 54.52 feet;
21) S18-00-31W, a distance of 62.97 feet;

SCHEDULE A
(CONTINUED)

22) On a curve to the left having a radius of 85.00 feet, an arc length of 100.53 feet;
23) S49-45-12E, a distance of 149.76 feet;
24) On a curve to the right having a radius of 340.00 feet, an arc length of 154.36 feet;
25) S23-44-26E, a distance of 13.13 feet;
26) On a curve to the left having a radius of 135.00 feet, an arc length of 126.25 feet;
27) S77-19-19E, a distance of 49.35 feet;
28) On a curve to the right having a radius of 115.00 feet, an arc length of 73.45 feet;
29) S40-43-32E, a distance of 4.02 feet;
30) On a curve to the left having a radius of 205.00 feet, an arc length of 241.59 feet;
31) N71-45-04E, a distance of 132.38 feet;
32) N78-58-17E, a distance of 47.07 feet; running thence along lands now or formerly of County of Rockland (Tax Lot 57.15-2-1), the following four (4) courses and distances:
33) S56-16-05W, a distance of 22.75 feet;
34) S5-25-15E, a distance of 20.16 feet;
35) S68-51-19E, a distance of 18.03 feet;
36) N76-06-10E, a distance of 86.06 feet; thence
37) S13-42-52W along the westerly line of lands now or formerly of Conklin Park, Inc. (Tax Lot 57.15-2-2), a distance of 45.00 feet to the point or place of BEGINNING.

617.20

Appendix C
State Environmental Quality Review
SHORT ENVIRONMENTAL ASSESSMENT FORM
For UNLISTED ACTIONS Only

PART I - PROJECT INFORMATION (To be completed by Applicant or Project Sponsor)

1. APPLICANT/SPONSOR
Hyenga Lake Development, LLC

2. PROJECT NAME
Hyenga Lake

3. PROJECT LOCATION:
Municipality Town of Clarkstown County Rockland

4. PRECISE LOCATION (Street address and road intersections, prominent landmarks, etc., or provide map)
The project site is approximately one-half mile north of Interchange 14 of the New York State Thruway. Site access is provided from NYS Route 59 and a second access is from Pipetown Hill Road. The northern property line of the project site is coterminous with Clarkstown's boundary with the Village of Spring Valley. See attached Map.

5. PROPOSED ACTION IS:
☑ New ☐ Expansion ☐ Modification/alteration

6. DESCRIBE PROJECT BRIEFLY:
The Project Sponsor proposes to remove all existing structures , install the required infrastructure, and develop 107 units of affordable Senior Citizen housing in two, three story buildings in response to a continued demand for affordable Senior Housing in the Town of Clarkstown and Rockland County. This action is consistent with the existing MF-2 zoning, under a Special Use Permit.

7. AMOUNT OF LAND AFFECTED:
Initially 12.4 acres Ultimately 12.4 acres

8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS?
☑ Yes ☐ No If No, describe briefly
Under a Special Use Permit

9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT?
☑ Residential ☐ Industrial ☐ Commercial ☐ Agriculture ☐ Park/Forest/Open Space ☐ Other
Describe:

10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL, STATE OR LOCAL)?
☑ Yes ☐ No If Yes, list agency(s) name and permit/approvals:
See Attached

11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL?
☐ Yes ☑ No If Yes, list agency(s) name and permit/approvals:

12. AS A RESULT OF PROPOSED ACTION WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION?
☐ Yes ☐ No

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE
Applicant/sponsor name: _____ Date: _____
Signature: _____

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment

Reset

PART II - IMPACT ASSESSMENT (To be completed by Lead Agency)

A. DOES ACTION EXCEED ANY TYPE I THRESHOLD IN 6 NYCRR, PART 617.4? If yes, coordinate the review process and use the FULL EAF.

☐ Yes ☑ No

B. WILL ACTION RECEIVE COORDINATED REVIEW AS PROVIDED FOR UNLISTED ACTIONS IN 6 NYCRR, PART 617.6? If No, a negative declaration may be superseded by another involved agency.

☑ Yes ☐ No

C. COULD ACTION RESULT IN **ANY** ADVERSE EFFECTS ASSOCIATED WITH THE FOLLOWING: (Answers may be handwritten, if legible)

C1. Existing air quality, surface or groundwater quality or quantity, noise levels, existing traffic pattern, solid waste production or disposal, potential for erosion, drainage or flooding problems? Explain briefly:

See attached narrative and refer to DEIS prepared for Hyenga Lake Dated June 4, 2007

C2. Aesthetic, agricultural, archaeological, historic, or other natural or cultural resources; or community or neighborhood character? Explain briefly:

C3. Vegetation or fauna, fish, shellfish or wildlife species, significant habitats, or threatened or endangered species? Explain briefly:

C4. A community's existing plans or goals as officially adopted, or a change in use or intensity of use of land or other natural resources? Explain briefly:

C5. Growth, subsequent development, or related activities likely to be induced by the proposed action? Explain briefly:

C6. Long term, short term, cumulative, or other effects not identified in C1-C5? Explain briefly:

C7. Other impacts (including changes in use of either quantity or type of energy)? Explain briefly:

D. WILL THE PROJECT HAVE AN IMPACT ON THE ENVIRONMENTAL CHARACTERISTICS THAT CAUSED THE ESTABLISHMENT OF A CRITICAL ENVIRONMENTAL AREA (CEA)?

☐ Yes ☑ No If Yes, explain briefly:

E. IS THERE, OR IS THERE LIKELY TO BE, CONTROVERSY RELATED TO POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS?

☐ Yes ☑ No If Yes, explain briefly:

PART III - DETERMINATION OF SIGNIFICANCE (To be completed by Agency)

INSTRUCTIONS: For each adverse effect identified above, determine whether it is substantial, large, important or otherwise significant. Each effect should be assessed in connection with its (a) setting (i.e. urban or rural); (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude. If necessary, add attachments or reference supporting materials. Ensure that explanations contain sufficient detail to show that all relevant adverse impacts have been identified and adequately addressed. If question D of Part II was checked yes, the determination of significance must evaluate the potential impact of the proposed action on the environmental characteristics of the CEA.

☐ Check this box if you have identified one or more potentially large or significant adverse impacts which **MAY** occur. Then proceed directly to the FULL EAF and/or prepare a positive declaration.

☐ Check this box if you have determined, based on the information and analysis above and any supporting documentation, that the proposed action **WILL NOT** result in any significant adverse environmental impacts **AND** provide, on attachments as necessary, the reasons supporting this determination.

Town of Clarkstown Town Board	
Name of Lead Agency	Date
Alex Gromack	Supervisor
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (If different from responsible officer)

Reset

Appendix F

MARKET DEMAND ANALYSIS

Market Demand Analysis

Hyenga Lake

Senior Apartments

Town of Clarkstown, New York
Rockland County, New York

February 2009

Prepared for:

Ms. Geri Levy
Rockland Housing Action Coalition, Inc.
95 New Clarkstown Road
Nanuet, NY 10954

\

Prepared by:

Richard J. Lampert
Real Estate Market Research and Consulting
2 Sutton Place
Pleasantville, New York, 10570
(914) 747-3412

Richard J. Lampert

Market Research, Real Estate Appraisal & Real Estate Investment Analysis

February 2, 2009

Ms. Geri Levy
Rockland Housing Action Coalition, Inc.
95 New Clarkstown Road
Nanuet, NY 10954

Re: Clarkstown Senior Housing:

Dear Ms. Levy,

In accordance with your requirements, I have completed a market study of the above referenced subject. The subject property is located just outside in the unincorporated Hamlet of Nanuet, in the Town of Clarkstown, in Rockland County, New York. Clarkstown is the most densely populated of the five towns in Rockland, as well as being the commercial hub of the County.

The proposed development consists of single three-story building that will be serviced by elevators. The housing complex will contain 65 units, which are all one-bedroom units. The project (100%) is directed at seniors with maximum income of 60% of AMI, of which 69% of the units are directed at 55% AMI or less.

The county has market rate senior apartments. There are two major developments in the county with one-bedroom rents at $1,250+ month

The market area contains the sections of the Town of Clarkstown and part of the Town on Ramapo with population of 135,910 in over 40,000 households. The area has large senior population that is projected to increase significantly.

We believe that this proposal is financially feasible, based on market data. The vast majority of external demand will be relationship based, that is seniors following their adult children, friends or relatives that are living in the area.

Attached is my market study and some supporting documentation for your review.

Thank you for the opportunity to work on this assignment.

Attached is my market study and some supporting documentation for your review.

Thank you for the opportunity to work on this assignment.

Yours Truly,

Richard J. Lampert

Richard J. Lampert

2 Sutton Place Pleasantville, NY 10570 (914) 747-3412
Other Field Offices: Saratoga, NY & Waterbury, CT

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Executive Summary

Property Name:	**Hyenga Lake Senior Housing**
Location:	Town of Clarkstown, Rockland County, New York
Address	*Pipetown Road, Nanuet, New York 10954*
Client:	Rockland Housing Action Coalition, Inc.
Type of Report	*Full Complete – Market Study*
Date of Report	February 2009
Area Summary	Moderate to low income – suburban
Census Tract	113.01
Area	12 +/- Acres
Type of Housing	Senior Affordable Housing – Age Restrictions: 55 years
Type of Construction	Three-story wood garden apartment with surface parking Community areas, washer and dryer area and related uses
Number of Units	65

Unit Analysis

Type	Studio	One	Two	Three	Four
Units	n/a	65	n/a	n/a	n/a
Square Feet	n/a	688	n/a	n/a	n/a
Bathroom	n/a	1.0	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a

Rent Structure	30% to 60% AMI
Tenant Expenses	Electric and Gas
Landlord Expenses	Water, sewer, trash and other
Year Built	2009/2010
Elevator	None
Sprinklers	Yes
Parking	Surface - # spaces
Property Analysis:	The immediate area of Pipertown Road is mixture of multi-family housing and townhouses. The area is considered an affordable section of the town and close to shopping, transportation

Executive Summary

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Area Analysis

The subject property is located just outside in the unincorporated Hamlet of Nanuet, in the Town of Clarkstown, in Rockland County, New York. Clarkstown is the most densely populated of the five towns in Rockland, as well as being the commercial hub of the County.

Apt Market Factors

Vacancy %	2%	Occupancy %	98%

Apt Market Type

Urban

New Construction	yes

Apartment Overview

This is older area of the county and has over 5,000 units of apartments. Some new market rate apartment construction. The vast majority of new development was townhouses.

The county has market rate senior apartments. There are two major developments in the county – see page 33

Rental Analysis

Unit Type	Market Rate	FMR *(HUD)*	Subject If Market	Subject Affordable
Studio	n/a	$1,095	n/a	n/a
One-Bedroom	$850 to $1,800	$1,185	$1,100	$420 to $900
Two-bedroom	n/a	$1,318	n/a	n/a
Three-Bedroom	n/a	$1,621	n/a	n/a
Four - Bedroom	n/a	$1,823	n/a	n/a

Competitive Properties

There are over 400 tax credit senior units in the County of Rockland. Only Airmont Gardens has a minor vacancy issue (NYS-HFA) rental structure with significant 60% AMI units. The over all occupancy is 99%. Airmont is not in our primary market area.

Other Factors:

There could be a significant demand **(15% to 25%)** from outside the primary market area. The majority of outside demand is relationship related – children, friends or relatives in the area. **<u>However, I did not include this in our analysis.</u>**

Market Area

The market area contains the sections of the Town of Clarkstown and part of the Town on Ramapo with population of 135,910 in over 40,000 households. The area has large senior population that is projected to increase significantly.

Capture Rate Percentage (%)

Unit Type	Less than or Equal 30% AMI	Between 30% and 50% AMI	51% to 60% AMI	Greater Than 60%
Studio	n/a	n/a	n/a	n/a
One-Bedroom	n/a	n/a	n/a	n/a
Two-bedroom	n/a	n/a	n/a	n/a
Three-Bedroom	n/a	n/a	n/a	n/a
Four - Bedroom	n/a	n/a	n/a	n/a

Modified/Weight Capture Rate 13.9%
See page 45

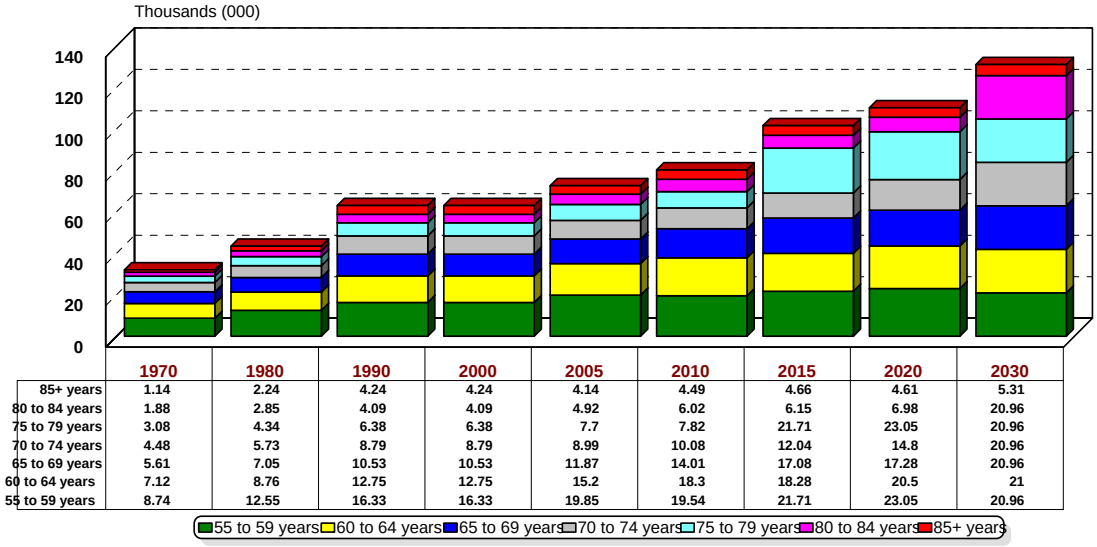
Executive Summary

Senior Market Analysis

Approximately 50%+ of all housing within the county was developed between 1960 and 1980 and this has direct impact upon demographic trends within the county. As result, Rockland County continues to increase based on the all-available population projection models. While the surrounding Counties of Bergen and Westchester reflect a slight downward trend in senior population after 1995, Rockland County continues to generate increased demand for senior housing and services passed year 2030.

Rockland, New York

Senior Population Trends 1970 to 2030



	1970	1980	1990	2000	2005	2010	2015	2020	2030
85+ years	1.14	2.24	4.24	4.24	4.14	4.49	4.66	4.61	5.31
80 to 84 years	1.88	2.85	4.09	4.09	4.92	6.02	6.15	6.98	20.96
75 to 79 years	3.08	4.34	6.38	6.38	7.7	7.82	21.71	23.05	20.96
70 to 74 years	4.48	5.73	8.79	8.79	8.99	10.08	12.04	14.8	20.96
65 to 69 years	5.61	7.05	10.53	10.53	11.87	14.01	17.08	17.28	20.96
60 to 64 years	7.12	8.76	12.75	12.75	15.2	18.3	18.28	20.5	21
55 to 59 years	8.74	12.55	16.33	16.33	19.85	19.54	21.71	23.05	20.96

Source: Woods& Poole Economics 2005

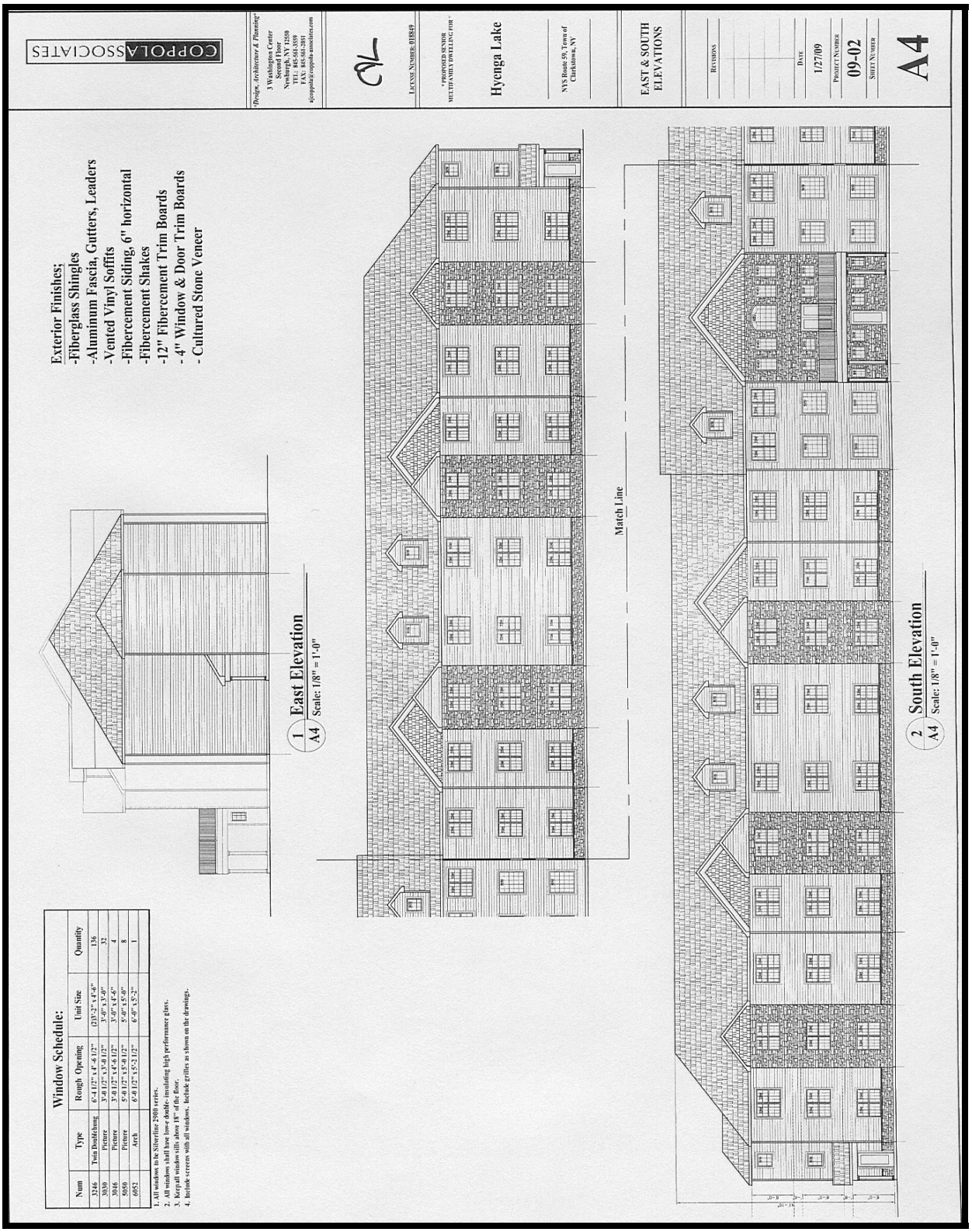
As population grows old, the mobility issues associated with a senior population dramatically increase. Mobility issues increase by over 50+% after 75 years of age. This eventually will force many senior homeowners to seek affordable senior housing. In addition, household income **significantly decreases after age 75** and is another driving force for senior housing demand.

Senior renters tend to move into senior rental housing 10 to 15 years earlier than senior home owners, which is what the market is currently experiencing. Our senior renter population is significantly less than our senior home owner population. **As a result, a large demand segment for senior households 75+ years or more, after 2015, will be generated by low–income senior homeowners – 3,000+ units**.

It is estimated that the county has three to five year period before there is significant increase demand trend for senior housing within the county. At this time, the majority of available resources *(capital, land and political support*) will be required by the senior community and only limited resources, if any, will be available for affordable family housing. It is also important to note that the majority of senior units built before 2005 were directed at young senior households at the 60% AMI income level.

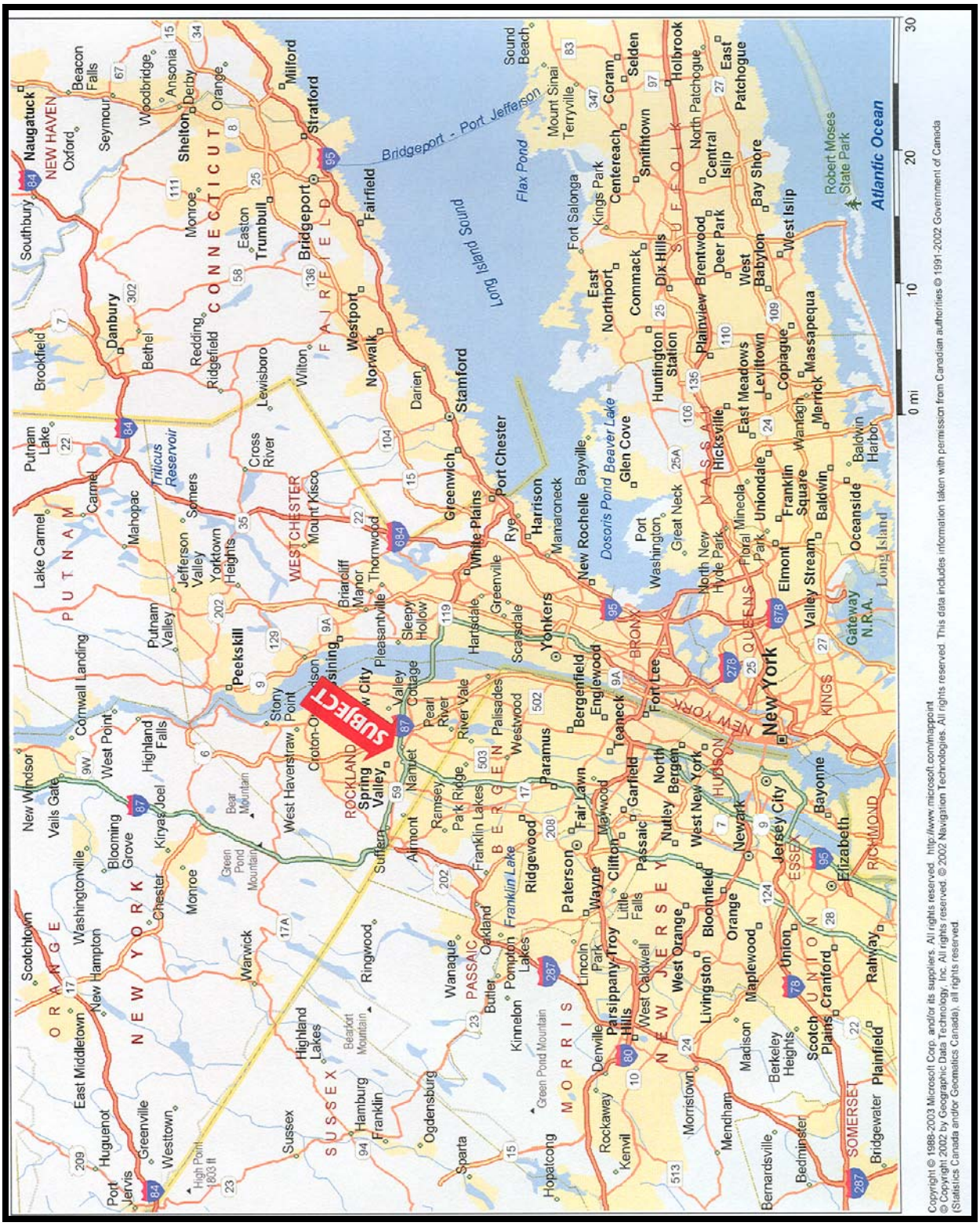
Executive Summary

Proposed Improvements - Conceptual View



Executive Summary

Regional Location Map



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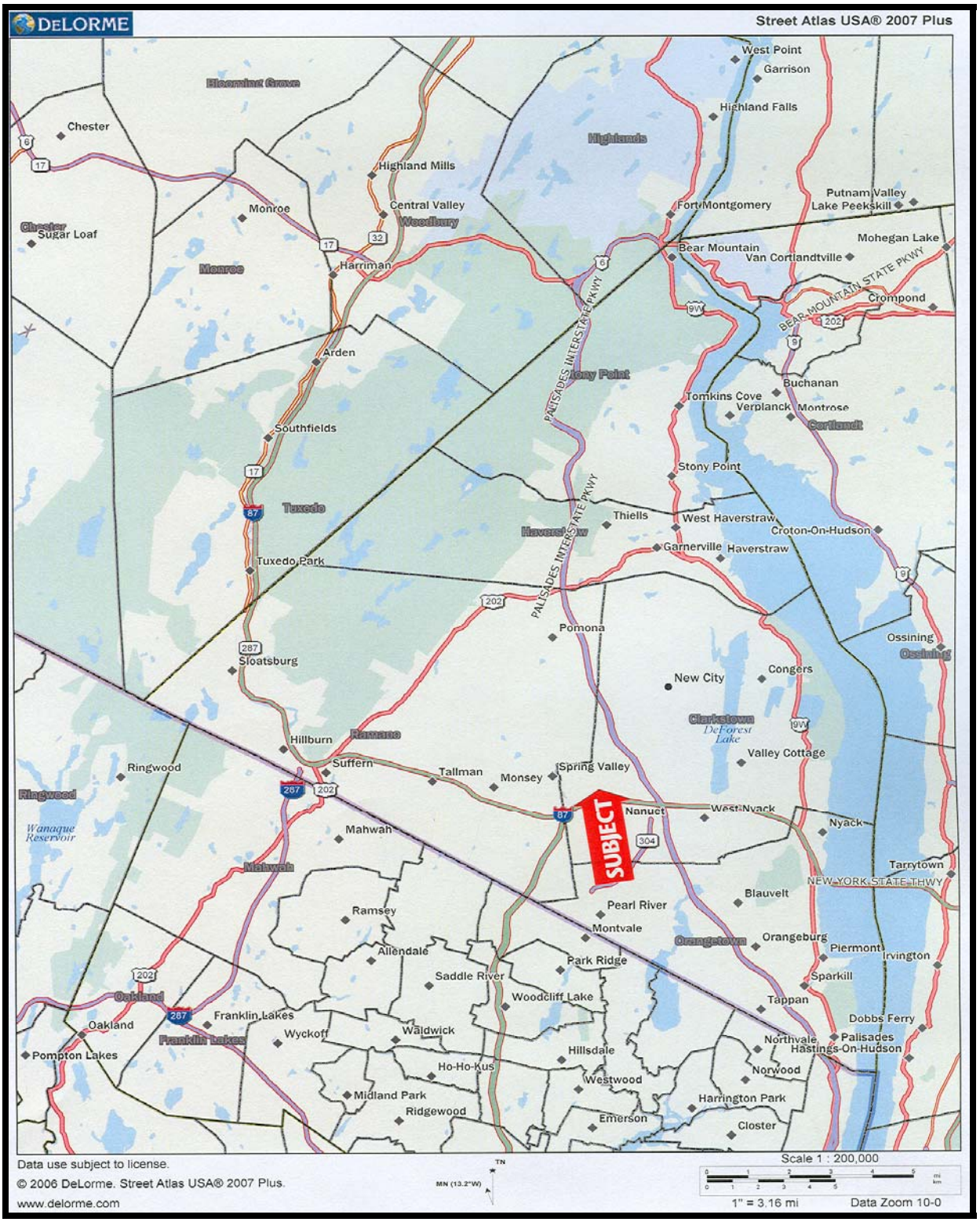
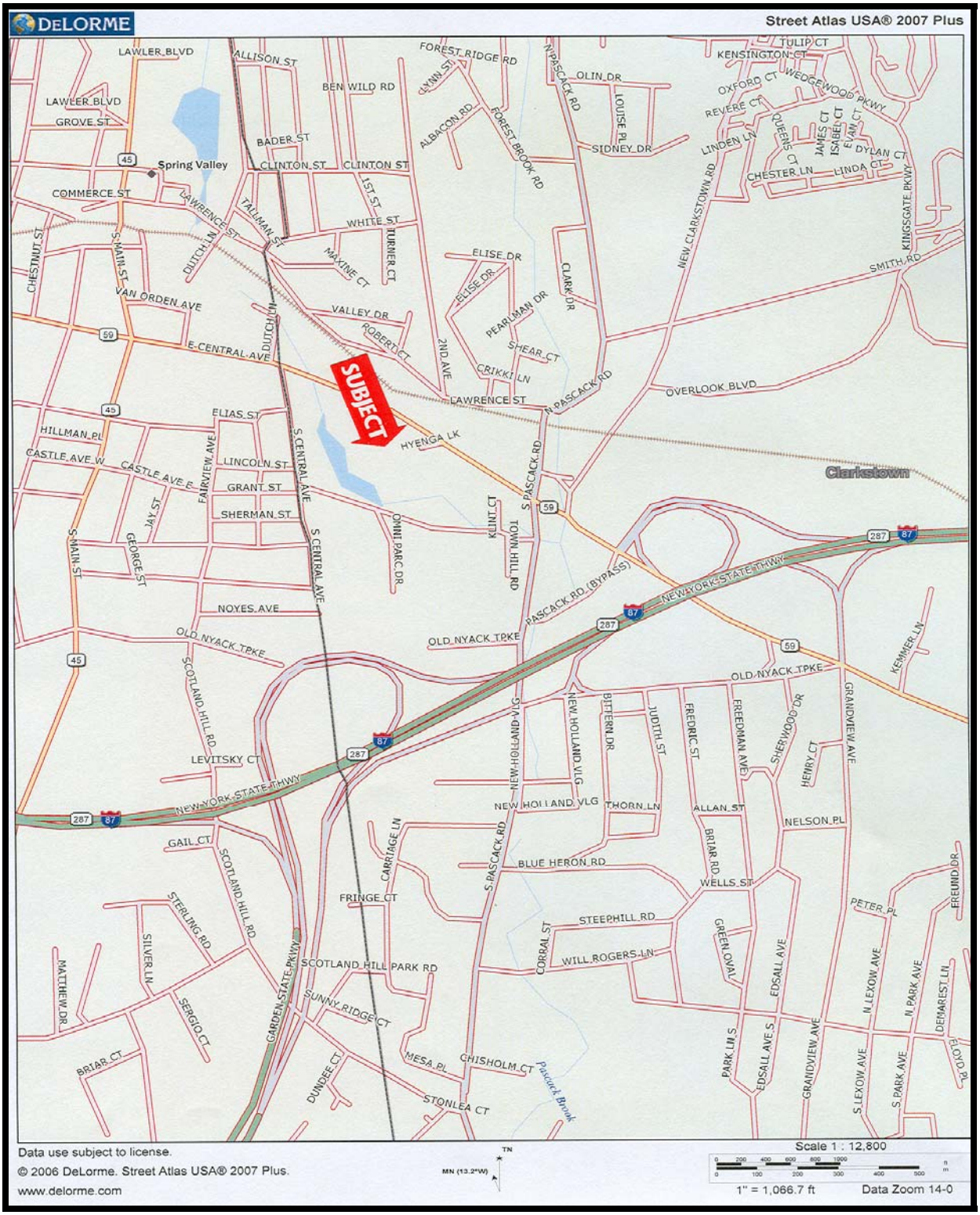
Executive Summary

General Location Map



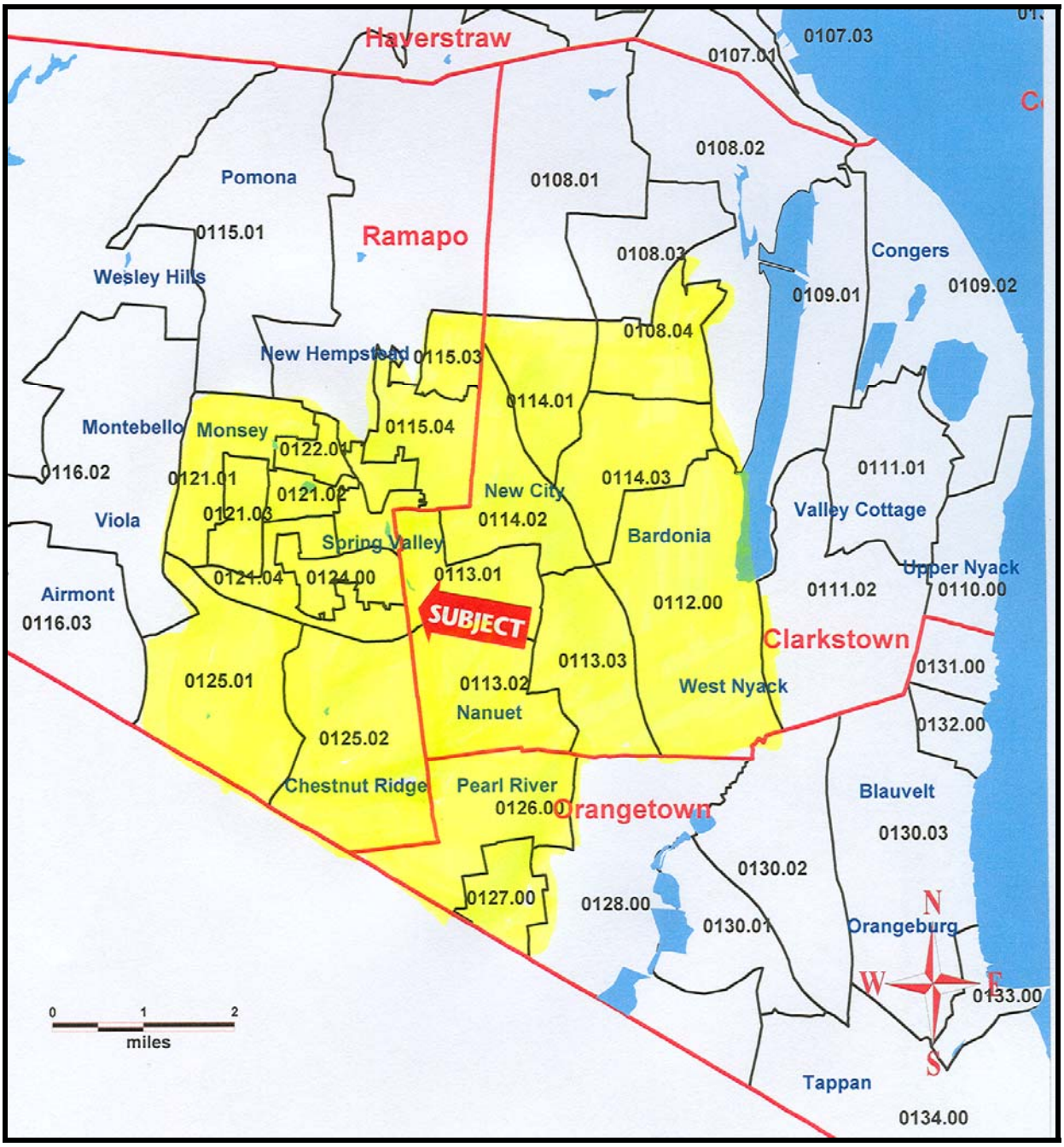
Executive Summary

Site Location Map



Executive Summary

Market Area Map



The market area contains the sections of the Town of Clarkstown and part of the Town on Ramapo with population of 135,910 in over 40,000 households. The area has large senior population that is projected to increase significantly.

Market Report and Analysis

Rockland County Overview

Rockland County, New York is at the north end of the New York-New Jersey metropolitan area. It is the smallest county in New York State. Rockland County is roughly triangular in shape, bounded on the east by the Hudson River, on the southwest by the State of New Jersey and northwest by Orange County, New York.

Approximately 20% of the county is contiguous undeveloped State parklands along the northwest boundary with Orange County. Rockland includes a number of densely populated older villages, but the bulk of the county's population lives in sprawling suburban developments, most of which have been built up since the end of World War II. The New York MSA encompasses an eight county area. Rockland County has a very high percentage of educated residents in comparison to the surrounding region. Approximately 84% are high school graduates and 40% have college degrees. 72% of all residents are homeowners and 68% of all housing is single family units.

To a large extent, Rockland County's employment growth is directly related to the New York PMSA and the continued migration of corporations from New York City to the county.

Rockland County is most closely identified with its villages and unincorporated hamlets from a marketing and economic viewpoint. The average prices in housing have been increasing significant in the southern section of the county prior to 2008.

Town	Square Miles	Unincorporated Hamlets	Villages - Corporate
Clarkstown	38.5	Bardonia, Central Nyack, Congers, Nanuet, New City, Valley Cottage, and West Nyack	Upper Nyack, Nyack, and Spring Valley (part)
Haverstraw	22.4	Garnerville, Mt. Ivy and Thiels	West Haverstraw, Haverstraw, and Pomona
Orangetown	24.2	Blauvelt, Orangeburg, Palisades, Pearl River, Sparkill, and Tappan	Nyack, South Nyack, Grand View, and Piermont
Stoney Point	27.8	Garssy Point, Stony Point, and Tomkins Cove	No incorporated Villages
Ramapo	61.2	Hillcrest, Monsey, Viola and Tallman	Spring Valley, Suffern, Sloatsburg, Hillburn, New Square, Pomona, New Hempstead, Wesley Hills, Chestnut Ridge, Montebello, Kaser, and Airmont
Total			

Nanuet is the commercial hub of the county containing as it does have a myriad of shopping centers, and the county's only two regional shopping malls. The appreciation of real estate in Rockland County has been significant and has resulted in crisis for affordable housing programs. Approximately 50%+ of all housing within the county was developed between 1960 and 1980 and this has direct impact upon demographic trends within the county, especially for senior housing demand.

The long-term population growth is limited in the county. Rockland County has largest household size in the State of New York. The County is projected to be one of the high income areas of the State of New York.

Market Report and Analysis

Years	1980	1990	2000	2005	2010	2015	2020
Total Population	259.60	265.98	287.52	294.16	296.49	296.77	296.86
% Change Prior Period	12.24%	2.46%	8.10%	2.31%	0.79%	0.09%	0.03%
Total net Population Change	28,300	6,380	21,540	6,640	2,330	280	90

Years	1980	1990	2000	2005	2010	2015	2020
Total Households	78.01	85.18	93.08	95.55	96.83	97.69	98.67
% Change Prior Period	28.54%	9.19%	9.27%	2.65%	1.34%	0.89%	1.00%
Total Net Households	17,320	7,170	7,900	2,470	1,280	860	980

Years	1980	1990	2000	2005	2010	2015	2020
Households Size	3.33	3.12	3.09	3.08	3.06	3.04	3.01
% Change Prior Period	-12.60%	-6.31%	-0.96%	-0.19%	-0.68%	-0.82%	-0.82%

Years - 1987 dollars	1980	1990	2000	2005	2010	2015	2020
Income per Household	$81,871	$101,488	$119,198	$130,972	$146,277	$165,454	$179,770
% Change Prior Period	16.94%	23.96%	17.45%	9.88%	11.69%	13.11%	8.65%

Source: NPA October 2008

The over all unemployment rate for New York State in December 2008 was 6.8%, which was increase from December 2007's rate of 4.7%. The unemployment rate for Rockland County as of December 2008 was 5.5%, which was increase from December 2008's rate of 3.8%. This is a 16 year high for the county. Projections indicate an increase to over 8% in 2009/2010.

Unemployment Trends - Rockland County, New York

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann Avg
2008	4.3%	4.5%	4.5%	3.9%	4.7%	4.9%	5.1%	5.2%	5.3%	4.9%	5.1%	5.5%	
2007	4.3%	3.9%	3.6%	3.4%	3.6%	3.8%	4.2%	3.9%	4.1%	3.7%	3.6%	3.8%	3.8%
2006	4.1%	4.2%	3.9%	3.9%	3.7%	3.8%	4.2%	3.8%	3.7%	3.3%	3.5%	3.2%	3.8%
2005	4.4%	4.4%	4.1%	3.7%	3.8%	4.0%	4.2%	3.9%	4.0%	3.8%	4.0%	3.7%	4.0%
2004	4.9%	4.8%	5.1%	4.4%	4.4%	4.7%	4.5%	4.4%	4.3%	4.0%	4.0%	3.8%	4.4%
2003	4.7%	4.6%	4.4%	4.3%	4.4%	5.3%	5.2%	5.1%	4.8%	4.3%	4.9%	4.5%	4.7%
2002	4.9%	4.8%	4.6%	4.3%	4.3%	4.4%	4.6%	4.3%	4.2%	4.0%	4.2%	4.1%	4.4%
2001	3.4%	3.3%	3.2%	3.1%	3.1%	3.4%	3.6%	3.8%	3.8%	3.8%	4.0%	4.1%	3.6%
2000	3.7%	3.7%	3.4%	3.0%	3.2%	3.3%	3.5%	3.4%	3.4%	3.0%	3.0%	2.8%	3.3%
1999	3.4%	3.5%	3.2%	3.2%	3.3%	3.8%	4.1%	3.8%	3.7%	3.3%	3.1%	2.7%	3.4%
1998	3.7%	3.7%	3.5%	3.2%	3.3%	3.6%	3.6%	3.7%	3.7%	3.2%	3.0%	2.7%	3.4%
1997	4.3%	4.2%	3.9%	3.6%	4.0%	4.3%	4.7%	4.4%	4.4%	4.0%	3.5%	3.2%	4.0%
1996	4.9%	4.6%	4.4%	4.3%	4.5%	4.5%	4.9%	4.4%	4.2%	3.9%	3.8%	3.7%	4.3%
1995	4.9%	4.8%	4.7%	4.9%	4.8%	5.1%	5.6%	5.5%	5.3%	4.7%	4.3%	4.1%	4.9%
1994	6.0%	6.0%	5.6%	5.2%	5.0%	5.5%	5.7%	5.7%	5.4%	4.9%	4.6%	4.2%	5.3%
1993	6.4%	6.2%	5.8%	5.6%	6.3%	6.7%	6.8%	6.7%	6.5%	6.1%	5.6%	5.3%	6.2%
1992	6.7%	6.9%	6.2%	6.0%	6.4%	7.0%	7.1%	6.8%	6.8%	6.2%	5.9%	5.6%	6.5%
1991	5.0%	5.3%	5.3%	5.2%	6.0%	5.9%	6.5%	6.2%	6.3%	5.7%	5.8%	5.7%	5.7%
1990	3.1%	3.3%	2.9%	2.9%	3.0%	3.2%	3.5%	3.5%	3.7%	3.6%	3.3%	3.5%	3.3%

Source: New York State Department of Labor

Market Report and Analysis

The following are median single family prices from NYS – Office of Real Property Management:

Median	2001	2002	2003	2004	2005	2006	2007
Sales	2,566	2,635	2,961	3,019	2,656	2,150	1,963
Price	$295,000	$343,000	$384,000	$435,000	$485,000	$495,000	$490,000
Change in five years		**%Pct**	**Price$**		**%Pct**	**Sales**	
	Prices	27.60%	$106,000	**Sales**	-33.70%	(998)	

Sales prices have decreased from 5% to over 20% throughout the county with greatest decreases in older urban areas and western sections of the county. During the next two years, the over all housing prices are projected to decrease by additional 7% to 15%.

New York – White Plains- Wayne NY-NJ Metropolitan Division Wages and Annual Survey – Selected Employment

Classification	Employment	Median Hourly	Mean Hourly	Mean Annual
Computer Programmers	23,600	$35.01	36.67	$76,270
Elementary School Teachers	53,910	-	-	$76,970
Secondary School Teachers	38,250	-	-	$81,560
Health care Support	195,440	$11.60	$12.39	$25,780
Home Health Aides	95,560	$9.59	$9.68	$20,140
Registered Nurses	96,720	$34.75	$35.98	$74,830
Protective Service	180,030	$18.27	20.20	$42,010
Retail Sales Person	150,490	$9.70	$12.06	$25,090
Cashiers	101,720	$7.99	$9.23	$19,200
Waiters and Waitresses	69,030	$10.67	$12.22	$25,420
Office /administrative Support	1,001,560	$16.02	$17.14	$35,640
Carpenters	25,410	$25.05	$26.22	$54,540
Electricians	22,710	$30.00	$32.12	$66,800
Automotive Technicians	14,740	$16.62	$18.42	$38,310
Production Occupations	180,360	$12.68	$14.92	$31,030
Transportation	272,620	$14.17	$16.84	$35,040

Source: BLS.gov February 2008

▪

Market Report and Analysis

Small firms dominate Rockland County employment market with firms of less then 20 employees comprise 91% of the employment base in the county, of which 67% have less than 5 employees. Over the last 40 years, there have been six recessions in the United States and New York State. Recessions in New York State have tended to be significantly longer than their national counterparts. The projection data was obtained from National Planning Association and was updated in October 2008. The loss of employment is projected to continue into 2009 for the county.

Summary of Employment Trends 1970 to 2015

Rockland	**1980**	**1990**	**2000**	**2005**	**2008**	**2010**	**2015**
Total Employment	103.11	125.71	137.11	144.46	150.82	151.88	156.75
Manufacturing	16.37	15.11	11.85	11.50	11.69	11.55	11.09
Non - Manufacturing	86.74	110.60	125.26	132.96	139.13	140.33	145.66
Mining & Other	1.01	1.12	1.13	0.59	0.57	0.54	0.54
Construction	3.67	5.74	6.49	7.13	7.91	7.16	7.14
TCPU (1)	4.07	5.91	7.35	8.15	7.81	7.90	8.12
Wholesale Trade	4.90	7.07	6.52	5.90	6.11	6.34	6.91
Retail trade	17.31	18.13	21.38	16.71	16.59	16.85	17.58
FIRE (2)	7.21	10.89	11.90	11.97	13.65	13.77	14.09
Services	27.24	39.68	49.67	61.68	64.39	65.70	69.09
Government	21.34	22.07	20.27	20.81	22.11	21.99	22.19
%Chg - Total Employment	n/a	21.92%	9.07%	5.36%	4.40%	0.70%	3.21%
%Chg - Manufacturing	n/a	-7.70%	-21.58%	-2.95%	1.65%	-1.20%	-3.98%
%Chg - Non- Manufacturing	n/a	27.51%	13.25%	6.15%	4.64%	0.86%	3.80%
%Chg - Retail Trade	n/a	4.74%	17.93%	-21.84%	-0.72%	1.57%	4.33%
%Chg - FIRE	n/a	51.04%	9.27%	0.59%	14.04%	0.88%	2.32%
%Chg - Services	n/a	45.67%	25.18%	24.18%	4.39%	2.03%	5.16%
%Chg - Government	n/a	3.42%	-8.16%	2.66%	6.25%	-0.54%	0.91%
Net Job Growth	**1980**	**1990**	**2000**	**2005**	**2008**	**2010**	**2015**
Total Net Jobs Created	n/a	22,600	11,400	7,350	6,360	1,060	4,870
Manufacturing	n/a	(1,260)	(3,260)	(350)	190	(140)	(460)
Mining & Other	n/a	110	10	(540)	(20)	(30)	0
Construction	n/a	2,070	750	640	780	(750)	(20)
TCPU (1)	n/a	1,840	1,440	800	(340)	90	220
Wholesale Trade	n/a	2,170	(550)	(620)	210	230	570
Retail trade	n/a	820	3,250	(4,670)	(120)	260	730
FIRE	n/a	3,680	1,010	70	1,680	120	320
Services	n/a	12,440	9,990	12,010	2,710	1,310	3,390
Government	n/a	730	(1,800)	540	1,300	(120)	200
Total - non farm	**n/a**	**22,600**	**10,840**	**7,880**	**6,390**	**970**	**4,950**

Source: National Planning Association (NPA) - October 2008

(1) Transportation, Communications and Public Utilities (2) Finance, Insurance and Real Estate

Market Report and Analysis

Census 2000 Housing Analysis	Rockland County	Pct % Total
Single detached	58,406	61%
Single Attached	6,949	7%
2 to 4 units	12,446	13%
5 to 19 units	9,284	10%
20 units or more	6,674	7%
Mobile Home or Trailer	1,198	1%
Boat,RV,van, etc	16	0%
Total	**94,973**	100%
Value - Average Home	$271,679	
Value - Median Home	$242,500	

Median HH Income 2000 Census Data	Rockland County	Pct % Median
Median HH Income	$69,253	
Under 25 Years	$25,216	36%
25 to 34 years	$61,984	90%
35 to 44 years	$78,091	113%
45 to 54 years	$91,306	132%
55 to 64 years	$85,828	124%
65 to 74 years	$53,937	78%
75+ years	$26,255	38%
%Pct of Persons Below Poverty Level	9.5%	

Population 2000 Census	Rockland County	Pct % Total
Under 5 years	21,751	8%
5 to 9 years	23,339	8%
10 to 14 years	22,730	8%
15 to 19 years	19,436	7%
20 to 24 years	15,485	5%
25 to 34 years	34,879	12%
35 to 44 years	46,016	16%
45 to 54 years	40,914	14%
55 to 59 years	16,374	6%
60 to 64 years	12,277	4%
65 to 74 years	19,531	7%
75 to 84 years	10,118	4%
85 years	3,903	1%
Total	286,753	100%
Median Age - years		
Average Age - years	36.1	
Dominant Age Group	35 to 44 yrs	

Employment by Sector 2000 Census	Rockland County	Pct % Total
Agriculture and Related	206	0%
Mining	100	0%
Construction	7,045	5%
Manufacturing	12,273	9%
Wholesale Trade	5,107	4%
Retail Trade	13,721	10%
Trans & warehousing	4,371	3%
Utilities	1,427	1%
Information	5,982	4%
F.I.R.E.	11,049	8%
Professional & Related	14,128	10%
Education Service	17,596	13%
Health Care & Social Asst	21,396	16%
Art, Enter, & Recreation	2,437	2%
Accomm & Food Service	5,659	4%
Other Services	6,253	5%
Public Administration	6,512	5%
Total	135,262	100%

Households By Age Census 2000	Rockland County	Pct % Total
Under 25 Years	1,888	2%
25 to 34 years	12,724	14%
35 to 44 years	22,056	24%
45 to 54 years	21,421	23%
55 to 64 years	15,658	17%
65 to 74 years	11,130	12%
75+ years	7,867	8%
Total Households	92,744	

Households by Income Census 2000	Rockland County	Pct % Total
Less than $20,000	11,873	13%
$20,000 to $34,999	10,335	11%
$35,000 to $49,999	10,899	12%
$50,000 to $74,999	17,225	19%
$75,000 to $99,999	13,868	15%
$100,000 to $149,999	17,313	19%
$150,000 or more	11,231	12%
Total Households	92,744	

Education Analysis	Rockland County	Pct % Total
No HS Diploma	27,016	15%
High School Diploma	41,428	23%
Some College	32,908	18%
College	82,660	45%
Total	184,012	100%

Housing Units	Rockland County	Pct % Total
Vacant	2,298	**2%**
Occupied	92,675	**98%**
Owner	66,461	70%
Renter	26,214	28%
Total	94,973	**100%**

Neighborhood and Market Area

Market Report and Analysis

Town of Clarkstown and Market Area

The subject property is located just outside in the unincorporated Hamlet of Nanuet, in the Town of Clarkstown, in Rockland County, New York. Clarkstown is the most densely populated of the five towns in Rockland, as well as being the commercial hub of the County.

Population Trends	**Rockland County**	**Town of Clarkstown**	**Market Area**	**C.T. 113.01**
1980 - Population	258,254	77,008	113,821	2,787
1990 - Population	265,474	79,346	118,794	4,765
2000 - Population	286,753	82,082	131,759	5,351
2007 - Population	295,062	82,608	135,910	5,522
2012 - Population	300,138	82,874	142,174	5,627
2017 - Population	307,489	83,291		5,780
Chg % - 1990 to 2000	**8.02%**	**3.45%**	**10.91%**	**12.30%**
Chg % - 2000 to 2007	**2.90%**	**0.64%**	**3.15%**	**3.20%**
Chg % - 2007 to 2017	**4.21%**	**0.83%**	**-100.00%**	**4.67%**

Households Trends	Rockland County	Town of Clarkstown	Market Area	C.T. 113.01
1980 - Households	77,892	22,723	34,209	3,787
1990 - Households	84,875	25,316	36,808	4,675
2000 - Households	92,675	27,697	40,322	5,351
2007 - Households	93,003	27,292	40,458	5,522
2012 - Households	93,311	27,067	40,593	5,627
2017 - Households	93,578	26,696	40,704	5,780
Chg % - 1990 to 2000	**9.19%**	**9.41%**	**9.55%**	**14.46%**
Chg % - 2000 to 2007	**0.35%**	**-1.46%**	**0.34%**	**3.20%**
Chg % - 2007 to 2017	**0.62%**	**-2.18%**	**0.61%**	**4.67%**

Nanuet is the commercial hub of the Town and the county containing as it does a myriad of shopping centers, and the county's only two regional shopping malls. In recent years, new stores along Route 59 have enhanced the commercial importance of Nanuet, including the new Spring Valley Marketplace located on the western edge, but have not been very successful.

Near the Nanuet Mall is an apartment complex (Normandy Village) and the Nanuet Railroad Station, but this mixture of uses does not constitute a true urban type center because the overall character of Nanuet is still heavily influenced by automobile access.

The largest concentration of multi-family housing is located in northwestern Nanuet and southwestern New City. There is over a total of 2,500 condominium and apartment units.

Market Report and Analysis

Population Market Area	Year 2000	Year 2007	Year 2012	Chg 2000 to 6	Chg 2007 to 11
Under 5 years	11,390	11,664	11,959	274	295
5 to 9 years	11,498	10,870	10,997	-628	127
10 to 14 years	11,223	10,828	10,513	-395	-315
15 to 19 years	9,875	10,885	10,680	1,010	-205
20 to 24 years	7,758	9,481	10,677	1,723	1,196
25 to 29 years	7,581	8,048	9,111	467	1,063
30 to 34 years	8,705	7,035	7,224	-1,670	189
35 to 39 years	9,841	7,539	6,596	-2,302	-943
40 to 44 years	9,392	8,746	7,127	-646	-1,619
45 to 49 years	8,855	9,564	8,752	709	-812
50 to 54 years	8,689	8,788	9,059	99	271
55 to 59 years	7,089	8,475	8,632	1,386	157
60 to 64 years	5,489	7,223	7,847	1,734	624
65 to 69 years	4,595	5,447	6,815	852	1,368
70 to 74 years	3,882	4,221	4,794	339	573
75 to 79 years	2,814	3,368	3,733	554	365
80 to 84 years	1,568	2,084	2,108	516	24
85 years	1,515	1,644	1,850	129	206
Total	131,759	135,910	138,474	4,151	2,564
Under 55 years	104,807	103,448	102,695	-1,359	-753
55 to 64 years	12,578	15,698	16,479	3,120	781
65 to 74 years	8,477	9,668	11,609	1,191	1,941
75 to 84 years	4,382	5,452	5,841	1,070	389
85 years +	1,515	1,644	1,850	129	206

Households by Age of Household	Census Year 2000	Projected Year 2007	Projected Year 2012	Change 2007 to 2012	Change 2000 to 2012
15 to 24 years	1,239	1,417	1,509	**92**	**270**
25 to 34 years	5,782	5,143	5,498	**355**	**(284)**
35 to 44 years	9,201	7,460	5,156	**(2,304)**	**(4,045)**
45 to 54 years	9,213	9,243	8,805	**(438)**	**(408)**
55 to 64 years	6,890	8,255	8,509	**254**	**1,619**
65 to 74 years	4,799	5,239	6,187	**948**	**1,388**
75 to 84 years	2,531	3,011	3,172	**161**	**641**
85+ years	667	690	757	**67**	**90**
All Ages	40,322	40,458	39,593	**(865)**	**(729)**

Market Report and Analysis

Households by Age of Household	Census Year 2000	Projected Year 2007	Projected Year 2012	Change 2007 to 2012	Change 2000 to 2012
15 to 24 years	229	249	259	**10**	**30**
25 to 34 years	3,232	2,782	2,935	**153**	**(297)**
35 to 44 years	6,481	5,184	4,252	**(932)**	**(2,229)**
45 to 54 years	7,084	6,969	6,598	**(371)**	**(486)**
55 to 64 years	5,223	6,156	6,307	**151**	**1,084**
65 to 74 years	3,397	3,638	4,287	**649**	**890**
75 to 84 years	1,619	1,877	1,953	**76**	**334**
85+ years	432	437	476	**39**	**44**
All Ages	27,697	27,292	27,067	**(225)**	**(630)**

Household Income by Age - Year 2007	Rockland County	Town of Clarkstown	Market Area	Town % County	Mkt Area % County
15 to 24 years	$29,818	$49,766	$24,262	167%	81%
25 to 34 years	$69,303	$95,246	$60,665	137%	88%
35 to 44 years	$87,863	$103,577	$80,462	118%	92%
45 to 54 years	$103,583	$115,204	$93,833	111%	91%
55 to 59 years	$95,904	$112,555	$93,408	117%	97%
60 to 64 years	$91,805	$109,411	$91,516	119%	100%
65 to 69 years	$66,400	$71,465	$66,250	108%	100%
70 to 74 years	$57,867	$65,333	$57,247	113%	99%
75 to 79 years	$37,050	$41,385	$37,073	112%	100%
80 to 84 years	$31,688	$36,520	$34,000	115%	107%
85+ years	$26,630	$32,946	$29,151	124%	109%
All Ages	$79,108	$96,413	$73,726	122%	93%

Rockland County Household (HH) Income	HH Income 2000	HH Income 2007	HH Income 2012	% Chg 2007	% Chg 2012
Median HH Income	$69,014	$83,598	$87,778	21.13%	5.00%
Average HH Income	$85,241	$99,056	$104,009	16.21%	5.00%
Per capita Income	$27,549	$32,328	$33,944	17.35%	5.00%

Town of Clarktown Household (HH) Income	HH Income 2000	HH Income 2007	HH Income 2012	% Chg 2007	% Chg 2012
Median HH Income	$83,141	$101,345	$106,412	21.90%	5.00%
Average HH Income	$100,407	$111,533	$117,110	11.08%	5.00%
Per capita Income	$33,880	$38,289	$40,203	13.01%	5.00%

Market Report and Analysis

Market Area Household (HH) Income	HH Income 2000	HH Income 2007	HH Income 2012	% Chg 2007	% Chg 2012
Median HH Income	$65,644	$78,401	$82,321	19.43%	5.00%
Average HH Income	$79,328	$89,361	$93,829	12.65%	5.00%
Per capita Income	$24,277	$27,697	$29,082	14.09%	5.00%

CT 113.01 Household (HH) Income	HH Income 2000	HH Income 2007	HH Income 2012	% Chg 2007	% Chg 2012
Median HH Income	$57,656	$68,056	$71,459	18.04%	5.00%
Average HH Income	$69,198	$70,571	$74,100	1.98%	5.00%
Per capita Income	$21,971	$24,457	$25,680	11.31%	5.00%

Household Income Estimated 2007	Rockland County	Town of Clarkstown	Market Area	*% Pct* *County*	*% Pct* *City*	*% Pct* *Area*
Less then $5,000	3,353	453	1,889	***3.61%***	***1.66%***	***4.66%***
$ 5,000 to $9,999	1,563	201	763	***1.68%***	***0.74%***	***1.88%***
$ 10,000 to $14,999	2,489	380	1,124	***2.68%***	***1.39%***	***2.77%***
$ 15,000 to $19,999	2,760	598	1,244	***2.97%***	***2.19%***	***3.07%***
$ 20,000 to $24,999	2,758	592	1,394	***2.97%***	***2.17%***	***3.44%***
$ 25,000 to $29,999	2,926	652	1,446	***3.15%***	***2.39%***	***3.57%***
$ 30,000 to $34,999	2,724	632	1,251	***2.93%***	***2.32%***	***3.08%***
$ 35,000 to $39,999	2,687	618	1,196	***2.89%***	***2.26%***	***2.95%***
$ 40,000 to $44,999	3,049	742	1,340	***3.28%***	***2.72%***	***3.30%***
$ 45,000 to $49,999	2,894	696	1,263	***3.11%***	***2.55%***	***3.11%***
$ 50,000 to $54,999	3,301	722	1,527	***3.55%***	***2.65%***	***3.76%***
$ 55,000 to $59,999	3,044	735	1,387	***3.27%***	***2.69%***	***3.42%***
$ 60,000 to $64,999	2,591	714	1,167	***2.79%***	***2.62%***	***2.88%***
$ 65,000 to $69,999	3,018	900	1,320	***3.25%***	***3.30%***	***3.25%***
$ 70,000 to $74,999	2,828	853	1,231	***3.04%***	***3.13%***	***3.04%***
$ 75,000 to $79,999	2,642	787	1,157	***2.84%***	***2.88%***	***2.85%***
$ 80,000 to $84,999	2,605	816	1,116	***2.80%***	***2.99%***	***2.75%***
$ 85,000 to $89,999	2,537	829	1,070	***2.73%***	***3.04%***	***2.64%***
$ 90,000 to $94,999	2,192	698	921	***2.36%***	***2.56%***	***2.27%***
$ 95,000 to $99,999	2,685	837	1,135	***2.89%***	***3.07%***	***2.80%***
$100,000 to $124,999	10,770	3,551	4,497	***11.58%***	***13.01%***	***11.09%***
$125,000 to $149,999	8,407	2,864	3,496	***9.04%***	***10.49%***	***8.62%***
$150,000 to $199,999	9,157	3,697	4,096	***9.85%***	***13.55%***	***10.10%***
$200,000 to $249,999	3,448	1,471	1,415	***3.71%***	***5.39%***	***3.49%***
$250,000 to $499,999	4,059	1,651	1,425	***4.36%***	***6.05%***	***3.51%***
$500,000 or more	2,516	603	688	***2.71%***	***2.21%***	***1.70%***
Total HH - Year 2007	93,003	27,292	40,558	***100.00%***	***100.00%***	***100.00%***
Income Cohort Analysis						
Less Than $35,000	18,573	3,508	9,111	***19.97%***	***12.85%***	***22.46%***
$35,000 to $49,999	8,630	2,056	3,799	***9.28%***	***7.53%***	***9.37%***
$50,000 to $74,999	14,782	3,924	6,632	***15.89%***	***14.38%***	***16.35%***
$75,000 to $99,999	12,661	3,967	5,399	***13.61%***	***14.54%***	***13.31%***
$100,000 to $149,000	19,177	6,415	7,993	***20.62%***	***23.51%***	***19.71%***
$150,000 or Greater	19,180	7,422	7,624	***20.62%***	***27.19%***	***18.80%***

Market Report and Analysis

2007 Estimated Owner Occupied Housing	Rockland County	Town of Clarkstown	Market Area	*% Pct County*	*% Pct Clarkstown*	*% Pct Area*
Less than $20,000	134	1	27	***0.20%***	***0.00%***	***0.12%***
$20,000 to $39,999	278	27	96	***0.41%***	***0.12%***	***0.42%***
$40,000 to $59,999	391	90	198	***0.57%***	***0.39%***	***0.87%***
$60,000 to $79,999	439	26	161	***0.64%***	***0.11%***	***0.71%***
$80,000 to $99,999	245	37	95	***0.36%***	***0.16%***	***0.42%***
$100,000 to $149,999	878	118	216	***1.29%***	***0.51%***	***0.95%***
$150,000 to $199,999	1,772	481	546	***2.59%***	***2.08%***	***2.41%***
$200,000 to $299,999	6,959	1,818	2,204	***10.19%***	***7.86%***	***9.74%***
$300,000 to $399,999	13,017	3,659	4,220	***19.06%***	***15.81%***	***18.64%***
$400,000 to $499,999	15,557	5,874	5,825	***22.78%***	***25.39%***	***25.73%***
$500,000 to $749,999	19,773	7,735	7,109	***28.95%***	***33.43%***	***31.41%***
$750,000 to $999,999	6,385	2,490	1,667	***9.35%***	***10.76%***	***7.36%***
$1,000,000 or more	2,468	783	271	***3.61%***	***3.38%***	***1.20%***
Total - 2007	68,296	23,139	22,635	***100.00%***	***100.00%***	***100.00%***
Median Value -2007	**$464,505**	**$490,441**	**$461,021**			
Median Value -2000	**$238,056**	**$252,576**	**$235,960**			
$ Amount - Change	**$226,449**	**$237,865**	**$225,061**			
%Percentage Change	**95.12%**	**94.18%**	**95.38%**			

Housing Analysis Estimated 2007	Rockland County	Town of Clarkstown	Market Area	County Pct - %	Town Pct - %	Market Pct - %
Single Attached	7,260	2,589	2,649	**7.45%**	**9.02%**	**7.61%**
Single detached	59,805	20,391	20,163	**61.40%**	**71.02%**	**57.93%**
2 units	5,870	988	2,103	**6.03%**	**3.44%**	**6.04%**
3 to 19 units	16,626	3,893	6,661	**17.07%**	**13.56%**	**19.14%**
20 - 49 units or more	2,375	258	1,046	**2.44%**	**0.90%**	**3.01%**
50 units or more	4,189	400	1,980	**4.30%**	**1.39%**	**5.69%**
Mobile Home or Trailer	1,260	185	194	**1.29%**	**0.64%**	**0.56%**
Boat,RV,van, etc	15	7	8	**0.02%**	**0.02%**	**0.02%**
Total	**97,400**	**28,711**	**34,804**			

Market Report and Analysis

Employment: Over 50% of the town's residents commuted to work within Rockland County based on a 1990 census study. The remaining commuters went to work sites in New York City, White Plains, and northern New Jersey. Labor force is predominantly office type *(managerial, professional, and technical)* with remainder in factory or service type categories. The largest industrial sector for employment is in service trades (business, professional categories), followed by wholesale/retail trades, and manufacturing. Local employment is focused on commercial shopping centers with the two shopping Malls employing over 2,000 persons and other shop employing additional workers.

Medical Services: The area has three major hospitals and one is located in the immediate area of the subject. In addition, the immediate area has numerous medical and doctors offices. The Ramapo Valley Ambulance Corps services the area.

1. Good Samaritan Hospital, Route 59, Suffern
2. Helen Hayes Hospital, Route 9W, West Haverstraw
3. Nyack Hospital, 160 North Midland Ave, Nyack

Education: Rockland County has a very high percentage of educated residents in comparison to the surrounding region. Approximately 84% are high school graduates and 40% have college degrees. Clarkstown residents had a greater level of educational attainment than that for Rockland County as a whole, reflected especially in the percent of residents with a college or post college degree. Within the Town, Upper Nyack, Bardonia, and New City had the highest levels of educational achievement. The Town of Clarkstown has three school districts. The subject is located in the East Ramapo Central School District.

The area has five colleges and one is located in the immediate area of the subject. In addition, there is three-extension campus of major universities in the area and an observatory.

1. Rockland Community College,145 College Road, Suffern,
2. SUNY – Empire State College, North Broadway, Nyack
3. St Thomas Aquinas College, Route 304, Sparkill
4. Nyack College, South Boulevard, Nyack
5. Dominican College, 470 Western Highway, Orangeburg

Fire and Safety Services: Fire and Emergency for the town is supplied via the town fire department. The Town has its own police department. In addition, the State Police or the Sheriffs Office also handles police matters within the town.

Religious Facilities: The area has numerous religious facilities, including temples, churches, and religious schools. The area support and large and growing Jewish Orthodox community of over 10,000 people.

Major Roads: Several of the arteries passing through the Nanuet community carry large volumes of traffic. Route 59, the major east-west roadway, carried as many as 34,554 vehicles on a typical day in 1988. Middletown Road, an important northsouth artery, carried as many as 18,578 vehicles in the same period. Other important roads were Route 59A (10,836) and Church Street (7,867). Nearby are important regional highways such as the Palisades Interstate Parkway, New York State Thruway, and Garden State Parkway.

Market Report and Analysis

Shopping : The area has two major shopping malls to the east in Nanuet near the Interstate highway. They are the Nanuet Mall (675,000 sq. ft.) and the Palisades Mall (3,000,000 sq. ft.). There are three chain drug stores within a five minute drive of the site.

Other : The area is serviced by The Rockland County Transit System. In addition, *T.R.I.P.S. INC.,* a special bus service for the handicapped and senior citizens provides service to the property. Bus Service is as follows:

1. Leisure Line has direct bus service to Wall Street from Rockland County that takes 1 ½ hrs. Leisure Line also operates a local bus service to the Palisades Mall and park and ride lots in the area.

2. Shortline bus service to New York City is available from Suffern to the Port Authority. The Red and Tan Bus line provides service from Spring Valley to the Port Authority. TOR operates local bus service along routes 59, 91, 93 and 94 in Rockland County.

3. Train Service Train service to New York City is provided by NJ Transit on the Main Line with stations at Spring Valley, Nanuet, Suffern and Pearl River. Passengers must change at Hoboken and take the path train into NYC.

Market Report and Analysis

Census 2000 Housing Analysis	Town of Clarkstown	Pct % Total
Single detached	20,150	71%
Single Attached	2,454	9%
2 to 4 units	2,390	8%
5 to 19 units	2,397	8%
20 units or more	648	2%
Mobile Home or Trailer	173	1%
Boat,RV,van, etc	8	0%
Total	**28,220**	100%
Value - Average Home	$284,030	
Value - Median Home	n/a	

Median HH Income 2000 Census Data	Town of Clarkstown	Pct % Median
Median HH Income	$83,120	
Under 25 Years	$47,368	57%
25 to 34 years	$79,121	95%
35 to 44 years	$89,643	108%
45 to 54 years	$98,604	119%
55 to 64 years	$98,090	118%
65 to 74 years	$56,379	68%
75+ years	$29,491	35%
%Pct of Persons Below Poverty Level	3.8%	

Population 2000 Census	Town of Clarkstown	Pct % Total
Under 5 years	5,238	6%
5 to 9 years	5,896	7%
10 to 14 years	5,801	7%
15 to 19 years	4,954	6%
20 to 24 years	3,722	5%
25 to 34 years	9,763	12%
35 to 44 years	13,795	17%
45 to 54 years	13,521	16%
55 to 59 years	5,502	7%
60 to 64 years	3,870	5%
65 to 74 years	6,211	8%
75 to 84 years	2,690	3%
85 years	1,119	1%
Total	82,082	100%
Median Age - years	39.1	
Average Age - years	38.1	
Dominant Age Group	35 to 44 yrs	

Employment by Sector 2000 Census	Town of Clarkstown	Pct % Total
Agriculture and Related	64	0%
Mining	42	0%
Construction	2,143	5%
Manufacturing	3,502	8%
Wholesale Trade	1,579	4%
Retail Trade	3,827	9%
Trans & warehousing	1,220	3%
Utilities	446	1%
Information	2,028	5%
F.I.R.E.	3,998	10%
Professional & Related	3,390	8%
Education Service	6,198	15%
Health Care & Social Asst	6,893	17%
Art, Enter, & Recreation	890	2%
Accomm & Food Service	1,461	4%
Other Services	1,761	4%
Public Administration	1,866	5%
Total	41,308	100%

Households By Age Census 2000	Town of Clarkstown	Pct % Total
Under 25 Years	176	1%
25 to 34 years	3,204	12%
35 to 44 years	6,597	24%
45 to 54 years	7,123	26%
55 to 64 years	5,041	18%
65 to 74 years	3,560	13%
75+ years	1,985	7%
Total Households	27,686	

Households by Income Census 2000	Town of Clarkstown	Pct % Total
Less than $20,000	2,067	7%
$20,000 to $34,999	2,388	9%
$35,000 to $49,999	2,587	9%
$50,000 to $74,999	5,320	19%
$75,000 to $99,999	4,560	16%
$100,000 to $149,999	6,426	23%
$150,000 or more	4,338	16%
Total Households	27,686	

Education Analysis	Town of Clarkstown	Pct % Total
No HS Diploma	5,650	10%
High School Diploma	11,389	20%
Some College	9,799	17%
College	29,733	53%
Total	56,571	100%

Housing Units	Town of Clarkstown	Pct % Total
Vacant	523	**2%**
Occupied	27,697	**98%**
Owner	22,716	80%
Renter	4,981	18%
Total	28,220	**100%**

Market Report and Analysis

Affordability Chart Paying 30% to 34.9% to Gross Rent	Rockland County 2000	Town of Clarkstown 2000	Percentage of County 2000	Percentage of Town 2000	Percentage Town/County 2000
Age 15 to 24 years	91	**25**	5%	5%	**27.47%**
Age 25 to 34 years	387	**105**	19%	23%	**27.13%**
Age 35 to 44 years	545	**95**	27%	21%	**17.43%**
Age 45 to 54 years	262	**82**	13%	18%	**31.30%**
Age 55 to 64 years	251	**49**	13%	11%	**19.52%**
Age 65 to 74 years	181	**35**	9%	8%	**19.34%**
Age 75+ years	280	**66**	14%	14%	**23.57%**
Total	1,997	**457**			**22.88%**
Paying More than 35% to Gross Rent	**Rockland County 2000**	**Town of Clarkstown 2000**	**Percentage of County 2000**	**Percentage of Town 2000**	**Percentage Town/County 2000**
Age 15 to 24 years	894	**35**	10%	2%	**3.91%**
Age 25 to 34 years	2,036	**259**	22%	17%	**12.72%**
Age 35 to 44 years	1,964	**305**	21%	20%	**15.53%**
Age 45 to 54 years	1,368	**327**	15%	21%	**23.90%**
Age 55 to 64 years	864	**173**	9%	11%	**20.02%**
Age 65 to 74 years	758	**137**	8%	9%	**18.07%**
Age 75+ years	1,358	**293**	15%	19%	**21.58%**
Total	9,242	**1,529**			**16.54%**
Paying 30% or more to Gross Rent	**Rockland County 2000**	**Town of Clarkstown 2000**	**Percentage of County 2000**	**Percentage of Town 2000**	**Percentage Town/County 2000**
Age 15 to 24 years	985	**60**	9%	3%	**6.09%**
Age 25 to 34 years	2,423	**364**	22%	18%	**15.02%**
Age 35 to 44 years	2,509	**400**	22%	20%	**15.94%**
Age 45 to 54 years	1,630	**409**	15%	21%	**25.09%**
Age 55 to 64 years	1,115	**222**	10%	11%	**19.91%**
Age 65 to 74 years	939	**172**	8%	9%	**18.32%**
Age 75+ years	1,638	**359**	15%	18%	**21.92%**
Total	11,239	**1,986**	100%	100%	**17.67%**
Total Renters Gross Rent as A Pct% of Household Income	**Rockland County 2000**	**Town of Clarkstown 2000**	**Percentage of County 2000**	**Percentage of Town 2000**	**Percentage Town/County 2000**
Less than 10%	1,198	**241**	5%	5%	**20.12%**
10% to 14.9%	2,426	**448**	9%	9%	**18.47%**
15% to 19.9%	3,467	**692**	13%	14%	**19.96%**
20% to 24.9%	3,274	**714**	12%	14%	**21.81%**
25% to 29.9%	2,744	**523**	10%	10%	**19.06%**
30% to 34.9%	1,997	**457**	8%	9%	**22.88%**
35% to 39.9%	1,437	**185**	5%	4%	**12.87%**
40% to 49.9%	2,007	**375**	8%	8%	**18.68%**
50.0% or more	5,788	**969**	22%	19%	**16.74%**
Not Computed	1,856	**377**	7%	8%	**20.31%**
Total Renters	26,194	**4,981**			

Market Report and Analysis

Rockland County Apartment Market

There is a critical need for both market and affordable apartments units to service the region. Long-term construction trends indicate a continued development of higher price housing for the region. There is total of about 25,000 multi-family units in Rockland County of which over 50% are condominiums or cooperatives. During the 1980's and into the early 1990's, most of the quality apartments were converted to condominiums or cooperatives and as a result the supply is very limited. The market demand for apartments is very strong as the result of a very limited supply of reasonable quality apartments. Occupancy rates for the area are over 98%. *Vacancy for two bedroom units is less then 2.00% and vacancy rates for three and four bedroom apartments are* ***less then 0.50%***

The Town of Ramapo has the most apartments units of any of the five towns, amounting to over 2,000 units. The Rockland/Westchester County rental market (non-subsidized) is generally a three-tier market structure. The lower tier consists of a large base of older garden apartments and a few recently constructed apartment buildings, the second tier consists of the newly completed garden apartment complexes, and upper tier consists of three proposed projects, the market rate development in Montebello and two projects in New Rochelle. An additional proposed apartment development in White Plains may also increase the inventory in this market. The Spring Valley and Haverstraw have generally the lowest rents in the market. The areas in Nanuet, Nyack, and Mahwah have the highest rental rates. The only area with apartments building deterioration was in the Spring Valley area. To a large extent, the majorities of the garden complexes are well maintained and have been improved over the years.

The rental market is generally a two tier market structure. The lower tier consists of large older (20+ years) garden complexes .The higher tier consists of the more recent constructed apartments and condominiums. There are no truly high-rise luxury units being development in Rockland County at this time. For the lowest tier: one bedroom rents range from a low of $650 to a high of $1,100 per month plus utilities. Two bedroom rents range from a low of $800 to a high of $1,700 plus utilities. Three bedroom rents range from a low of $1,100 to a high of $1,600+ plus electric.

For the second tier: one bedroom rents range from a low of $1050 to a high of $1,600 per month plus utilities. Two bedroom rents range from a low of $1,300 to a high of $2,200 plus utilities. Three-bedroom rent range could range from a low of $2,300 to a high of $4,800 plus utilities. The upper tier: one bedroom rents (proposed) range from a low of $1,200 to a high of $2,000 per month plus utilities. Two bedroom rents range from a low of $1,600 to a high of $2,500+ plus utilities. Three bedroom rents range from a low of $2,200 to a high of $5,000 plus utilities.

From a design standpoint, the majority of all apartment buildings in the area are two to three story garden walk-ups with a standard small bathroom. The apartments built in the late 1970's have 1.5 bathroom in a few selected two-bedroom units. Less than 5.0% of the units have potential to be updated for handicapped access. The three-bedroom apartment market is very limited. The true luxury segment of the housing market does not exist in Rockland County at this time. Over all, the Rockland County Apartment market is old and dated with regard to vast majority of inventory Given the over all market conditions, rates per square foot do not reflect market standards on older (pre-1990) developments. To a large extent, the demand for two-bedroom and three-bedroom apartment is the highest. The majority of new in-fill apartment developments have been two-bedroom units.

Market Report and Analysis

Comparable Apartments Market

Location	Name	Year Built	Units	One-Bedroom Rents	Two-Bedroom Rents
Pomona	Crystal Hill Ridge	2000	166	$1,400+ **$1,695**	$2,180 to $2,230 **$1,810 - $2,097**
Nyack	Warren Hills Apts	1960	190	$1,135	$1,390
Nyack	Northgate Gardens	1960	64	$1,200	$1,350 to $1,400
Nyack	Nyack Garden Apts	1960	72	$1,100+	$1,400+
Nanuet	Avalon Gardens	1997	504	$1,600+ **$1,400+**	$1,860 to $2,227 1,800+
Nanuet	Jeanne Marie	1969	166	$1,095 **$1,180**	$1,410 **$1,490**
Nanuet	Normandy Village -1	1972	251	$845 to $875 **$1,145**	**$1,390**
Nanuet	Normandy Village –2	2000	126	$1,400 **$1,500 to $1,600**	$1,800 **$1,925**
Spring Valley	Victoria Gardens	1978	328	$845 to $875 **$975**	$1,095 to $1,200 **$1,320**
Spring Valley	Blue Hill Apartments	1971	287	$995 to $1,150 **$1,185to $1,200**	$1,475 to $1,600 **$1,550+**
Spring Valley	Linda Court	1985	239	$870 to $920 **$900**	$995 to $1,065 **$1,200**
Spring Valley	Royal Garden Apartments	1960	71	$790 to $850 **$850 to $950**	$950 to $1,100 **$1,100**
Montebello	Montebello Commons Market Seniors	2000	177	n/a	$1,425 **$1,440 to $1,465**
New City	Academy Hill	2002	26	**$950**	**$1,250**
Nanuet	Green Briar	n/a	60	**$1,395**	**$1,495**
Valley Cottage	Burgundy Apartments	1966	96	$1,145	$1,350
Pearl River	Mayfair	1960	64	**$1,150**	**$1,350**
Pomona	Palisades Garden	n/a	340	$1,125	$1,425
			3,227		

Red indicates an updated survey as of January 2009

Market Report and Analysis

Analysis of Comparable Apartments

The following is analysis of 15 apartment buildings in the general area. The original survey was completed prior to May 2000 and updated in 2004 and 2005. I have recently completed a minor updated of selected properties. Since 1997, we had completed over five surveys of the apartment market.

Jeanne Marie Garden Apartments is located in Nanuet, was built in 1969 and contains 166 units, ¾ of them are 1 BR units. The tenants pay their own electric. Heat, water, cooking gas and hot water is included in the rent. There are limited amenities, such as a children's play area. There are laundry facilities in basement of each building. They presently have a 1-bedroom apartment available at this time.

One parking space is included in the rent. Each additional parking space is $40 per month. The buildings are standard two-story brick garden style building development around three courtyards. The following is the rents per unit. Actual unit measurements were not available

Unit Type	Square Feet	Rent	Price Per Sq. Ft.	Bathrooms
1BR	800 +/-	$1,180	$1.26	1.0
2BR	925 -950	$1,490	$1.31	1.5

Avalon Gardens was built in 1997 and contains 504 apartment units. The units are well designed with good layouts. The units have wall-to-wall carpeting, fully equipped kitchens with Whirlpool appliances, gas heating, central air conditioning, and washers and dryers. Carports are $50 per month and garages are from $90 per month.

A 1 bedroom, 1 bath rents for $1,400, a 2 bedroom, 1 bath rents for $1,800 and a 3 bedroom, 2 bath rents for $2,200 per month. Utilities are not included in the rent. The stoves are gas and the heat is forced air. There are a few apartments available at the present time. These units include a garage and storage area.

Tenants pay for all utilities, except for water and trash removal. There is an annual recreation fee and charges for pets. The development has a pool and clubhouse.

Mayfair Apartments is a 2 -story garden style complex with 1 and 2 bedroom units. The one-bedroom unit rents for $1,150 per month and the two- bedroom unit rents for $1,350 per month. Heat and hot water and cooking gas are included in the rent. They do not accept Section 8 tenants. There is a no dog pet policy. Laundry facilities are located on premises. Amenities include a weight training room and playground. They presently have a 1- bedroom and a 2-bedroom unit vacant. They do not keep a formal waiting list. There is sufficient on site parking.

Green Briar Apartments is a 2- story garden style complex with 60 1 and 2 bedroom apartments. The apartments have a washer/dryer hook-up. The 1-bedroom unit rents for $1,390 per month and the 2-bedroom unit rents for $1,425 per month. Tenants pay all of their own utilities. Cats are allowed but no dogs and do not require an additional pet fee. The project presently has 3 1-bedroom apartments available. There is no formal waiting list. There is sufficient on site parking.

Market Report and Analysis

Crystal Hill Club is a private gated house community with 312 townhouse style apartments and regular rental apartments. The project is located at 1 Crystal Hill Drive in Pomona, New York The townhouse style apartments are 1 and 2 bedroom units that rent for $1,855-$2,500 per month. The standard apartment rentals range in price from $1,665 for a 2 bedroom, 2-bath to $1,694 for a 1 bedroom, 2- bath unit with a den. Utilities are not included in the rent. The utilities are gas heat, hot water and cooking gas. They also have 144 townhouse units for sale. They presently have 11 vacant units and anticipate an additional 6 apartments becoming available in the near future. Amenities include a clubhouse complete with a fitness center and tennis courts. They have a lenient pet policy; 2 pets but cannot weigh more than 60 pounds combined.

Palisades Garden is located on Fields Mt. Ivy Road in Pomona, New York. This is a 2 story garden style apartment complex with 340 units located in 40 buildings, The 1 bedroom unit rents for $1,150 per month and the 2 bedroom unit rents for $ 1,425 per month. Gas heat, hot water and cooking gas are included in the rent. The tenants pay their own electric utility charges. There is a no pet policy here. Families occupy most of the units but there are a few seniors residing here. They always have some vacancies.

Normandy Village (older phase) is located in Nanuet, New York and contains 251 apartments. It was built in 1972. The 1 bedroom, 1 bath unit rents for $1,145 per month and a 2 bedroom, 1 bath for $1,390 per month. There are no vacancies at the time. The utilities are all electric and not included in the rent. The 2 bedroom apartments rarely become available.

Normandy Village 2 is located in Nanuet, New York and contains 125 apartments. It was built from 1997 to 2000. A 1 bedroom, 1 bath unit rents for $1,500-$1,600 per month and a 2-bedroom 21/2 bath rents for $1,925. per month. There are currently a few 1 and 2 bedroom apartments available. All units have their own washer dryers. The manager does not keep a waiting list.

Victoria Gardens Apartments is located on Route 306 in Monsey and contains 328 units situated in 12 buildings. This is a two-story garden style complex. There are one, two, two bedroom duplexes and some three-bedroom units. The landlord supplies heat and hot water. The tenant is responsible for standard tenant electric. Amenities included are balconies, dishwashers, and air-conditioners. There is only surface parking available.

There are some 1-bedroom units available at this time. There is a substantial waiting list of 45 applicants for the 2 bedroom units and a 3-year waiting list for the 3 bedroom units. Management is only accepting applications for the 1-bedroom apartments. A 1 bedroom rents for $975 per month and a 2 bedroom for $1,320 per month. The 3-bedroom apartment rents for $1,475 per month.

Academy Hill Apartments is a 2 story garden style complex with 26 1 and 2 bedroom units spread out in 3 buildings. The project was built only 3 year ago in 2002. The 1- bedroom unit rents for $950 per month and the 2-bedroom unit for $1,250 per month. Only hot water is included in the rent. Tenants pay their own utilities. Each unit has it's own separate entrance. Tenants also have storage areas. Laundry facilities are located on premises. There is a no dog pet policy but cats are allowed and do not require a pet fee. They have a few vacant apartments. There is no formal waiting list.

Market Report and Analysis

Upper: Royal Gardens Apartments – Spring Valley
Lower: Northgate Garden Apartments

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Market Report and Analysis

Upper: Bradford Mews Apartments
Lower: Warren Hills Apartments

Market Report and Analysis

Palisades Garden is located on Fields Mt. Ivy Road in Pomona, New York. This is a 2 story garden style apartment complex with 340 units located in 40 buildings, The 1 bedroom unit rents for $1,150 per month and the 2 bedroom unit rents for $ 1,425 per month. Gas heat, hot water and cooking gas are included in the rent. The tenants pay their own electric utility charges. There is a no pet policy here. Families occupy most of the units but there are a few seniors residing here. They always have some vacancies.

Mountainside Apartments is a 225-unit project located on Forrest Drive in Garnerville, New York. They presently have a few 1-bedroom vacancies but are beginning to fill them up. There is no formal waiting list. The 1 bedroom unit rents for $1,150 per month and the 2-bedroom unit for $ 1,450 per month. Heat, hot water and cooking gas are included in the rent. Tenants pay their own electric utility charges. Management requires a 1-½ month security deposit as well as a $25 non-refundable credit check fee. Laundry facilities are located on premises. Pets are not allowed. They do not have any amenities.

Blueberry Hill Apartments is located off Route 306 in Monsey, New York and contains 328 units. This is a two-story garden style complex. There are one, two and three bedroom units. The landlord supplies heat and hot water. The tenant is responsible for standard tenant electric. Amenities include a basketball court, pool, tennis courts, balconies and air-conditioner. Each of the 13 buildings has their own laundry facility. There are a few vacant units. There hasn't been a vacant 3 BR unit on the market for a very long time. There is a short waiting list. There is only surface parking available.

There are some smaller bedroom units available. Revise rent schedule as follows: 1BR $1,185-$1,200,2 BR $1,550 and 3BR and 3 BR duplex $1,850-$1,900 per month.

Royal Garden Apartments are a part of a group of nine apartment buildings located in Spring Valley, New York and was built in 1960 to 1975. The buildings are all two-story garden apartments. The older units have deferred maintenance issues.

The reported rent for one-bedroom is $850-$950 and for two-bedroom the rents are in excess of $1,100 per month plus standard electric. There is substantial waiting list.

Gas heat, hot water and cooking gas are included in the rent. They only have a few 1-bedroom units available at this time. The size of the units varies in many of the buildings. There are no on site amenities. There is a laundry facility in each building and some of the newer units have dishwashers**.**

Unit Type	Square Feet	Rent	Price Per Sq. Ft.	Bathrooms
One – Bedroom	800	$850 to $950	$0.99	1.0
Two- Bedroom	900	$1,100+	$1.06	1.0
Three Bedroom	1,000	$1,200+	$1.10	1.5

Market Report and Analysis

Market Rents Conclusion

The property is located in the Town of Clarkstown. The following is the proposed rental structure:

Analysis of One-Bedroom Rents

One Bedroom Units	Rockland County - older	New Construction	Subject Rent	Existing Senior Tax credit (1)
Monthly Rents	$850 to $1,600+	$1,050 to $1,800+	***$420 to $900***	***$1,088***
Square Feet	500 to 850+	675 to 1,100+	***688***	
Tenant Paid Utilities	Varies	All Utilities	***Gas & Electric***	***Assumes all utilities in rent***
Options	Dishwasher	Dishwasher Garages Site Amenities	***1.0 bathroom***	***Mostly 60% AMI***

Market Report and Analysis

Senior Tax Credit Developments:

The following are six senior tax credit projects in our market area. Only Airmont Gardens has a minor vacancy issue (NYS-HFA) rental structure with significant 60% AMI units. There are over 400 tax credit senior units in the County of Rockland. The over all occupancy is 99%,

Airmont Gardens 845 368-4422

Airmont Gardens is a 3 story brick and vinyl structure located at 60 N. Debaun Avenue in Airmont. The project was financed under the Tax Credit Program and has a total of 4 buildings with 140 units broken down into 126 1 Bedroom, 1 bath and 14 2 Bedroom, 1 bath apartments. There is ample on site parking. Each of the 4 buildings has laundry facilities. There is also a recreation center located in building A that is accessible from all of the other buildings. Tenants must be 55 years or older to be eligible for an apartment. Rents are based on minimum and maximum income levels set by HUD. The one- bedroom apartment rents for $856-$1,038 and the two-bedroom 1 bath apartment rents for $1,025-$1,243 per month. Gas heat and hot water are included in the rent. The tenants pay their own electric utility charges. This includes the electric stove. The utility charges average $36-$50 per month. The units have fully equipped kitchens, handicap accessible, emergency call system, a resident clubroom for entertainment, on site recreation program, scheduled social activities, card room, billiard room and library. There is a 3-6 month waiting list for the 2-bedroom units, but no waiting list for the 1-bedroom units. They have a 1-bedroom unit available. The property is far west of the subject and is not considered in our market area

Sycamore Crest 845 352-1911

Sycamore Crest is located at 15 Summit Avenue in Spring Valley. It is a 55+ years or older senior citizen project built under the Tax Credit Program. The white brick building has 5 stories and 96 1 and 2 bedroom units in 3 wings. A 1 bedroom, 1-bath unit rents for $1,038 per month and the 2-bedroom 1 bath unit rents for $1,243 per month. Heat and hot water is included in the rent. The tenant pays his or her own electric utility charges. The project is 100% occupied and there is a 1 year waiting list for the units. Eligibility is based on tenant income with a minimum and maximum income set by HUD. One pet per unit is allowed. Dogs cannot weigh more than 25 lbs.

Haverstraw Place on 9w (845) 947-3113 or (845) 947-5444

Haverstraw Place was completed in December 2001 under the Tax Credit Program. The project is located at 140 Route 9W in the Town of Haverstraw. Residents must be 55 + years or older. There are a total of 89 units, 87 one-bedrooms and 2 studios'. The 1BR, 1-bath unit rents for $832 per month and a studio unit rents for $494 per month. Only hot water is included in the rent. Tenants pay their own electric utilities, phone and cable. The minimum income limits set by HUD is $13,338 and the maximum income limit is $40,620. There is a 12-24 month waiting list. Occupancy is 100%. The project has a senior center, meeting room, laundry facility, dishwasher in the apartments and 2 A/C sleeves are provided but only 1 A/C unit (the tenant must supply the other unit). This is not in our primary market area

Market Report and Analysis

YOUNGBLOOD (845) 352-3819

Youngblood Senior Affordable Housing is located in Spring Valley, New York. The project was funded through the low income Tax Credit Program to help finance affordable housing for seniors. Youngblood has 261-bedroom units for seniors 55+ situated in a 3-story building. The units rent for $785 per month and includes utilities. The project is at 100% occupancy and the waiting list is several years long. Residents must meet a minimum and maximum income requirement set by HUD. The developer is proposing to build another senior housing project also on Main Street in Spring Valley with 26 1-bedroom units for seniors 55+ under the Tax Credit

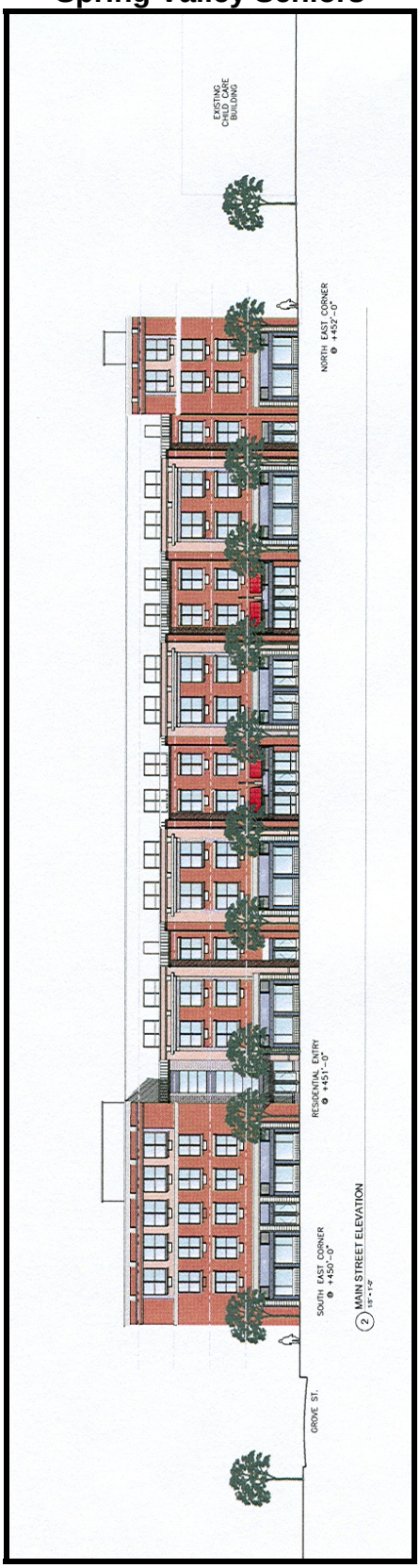
Spring Valley Seniors – June 2009

The improvement consists of the redevelopment of three blocks into 53 senior apartments, and 11,000 square feet of ground floor retail. The property will be completed in June 2009. There is a planned 50+ unit family development across the street that is being built under NYS-HFA program.

The property has 41 one-bedroom units at 50%-AMI $760, 7 one-bedrooms at 30% $267, and four two-bedroom units at rents from $ 295 to $795

Walnut Hill Apartments is a 55+ residential project that was renovated and restructured under the tax credit program. The property was prior to renovation an old NYS-UDC 236 Senior housing development. There are 180 1-bedroom units spread out in 8 2-story buildings. The rent is $829 per month and this includes baseboard heat and hot water. The tenant is responsible for electric utility charges including an electric stove. Utility rates are cheaper as the tenant pays at a commercial rate. The waiting list is 1-6 months. Pets are allowed but must weigh less than 20 pounds and require a $300 security deposit. Amenities include a laundry room, community room, and library and fitness center. This is not in our primary market area

Spring Valley Seniors



Market Report and Analysis

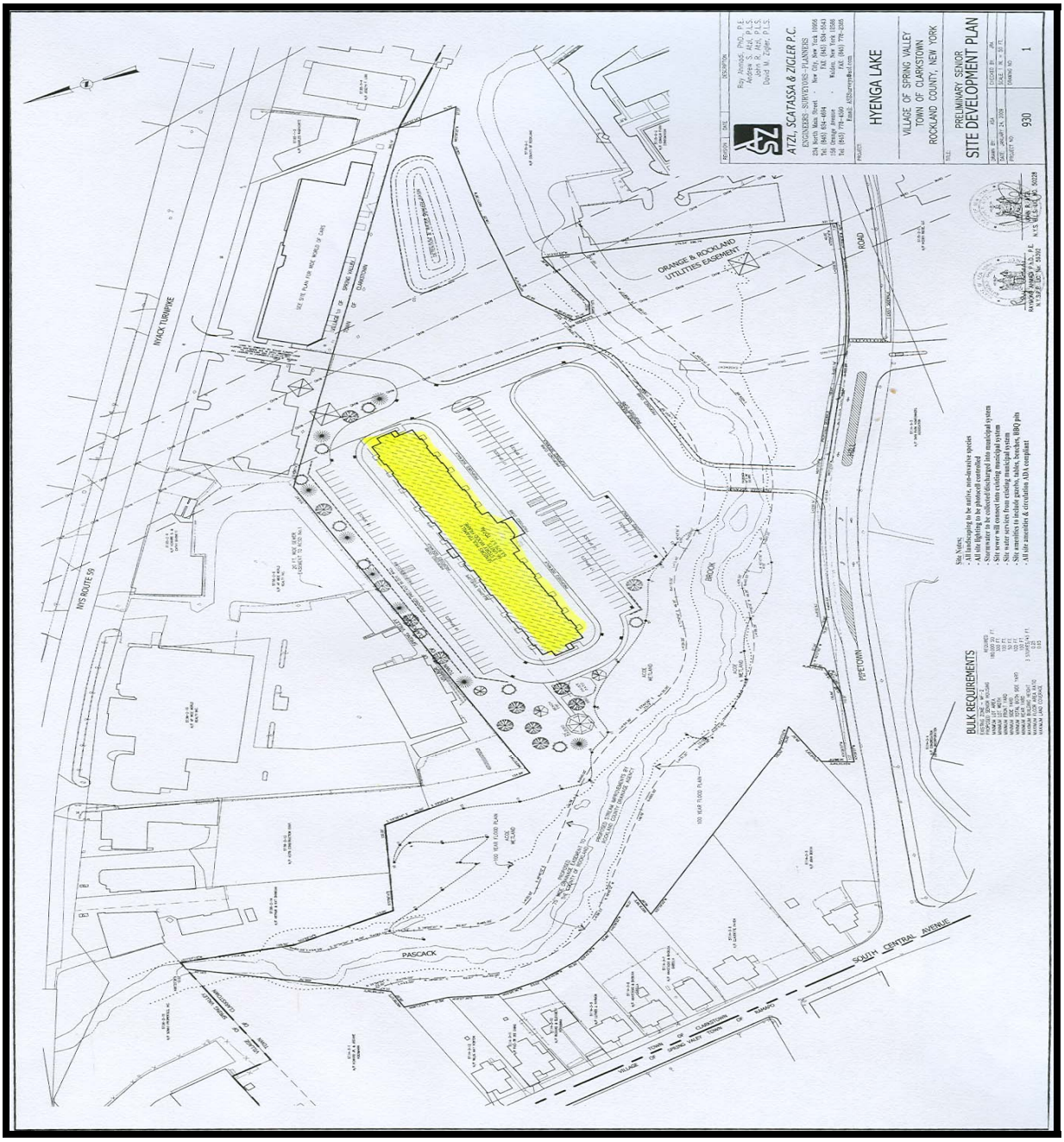
Upper: **Montibello Commons – Senior Apartment Units**
Lower: **Liberty Ridge Apartments Seniors – 100% market rate seniors (Stony Point)**

Market Report and Analysis

Property and Site Analysis

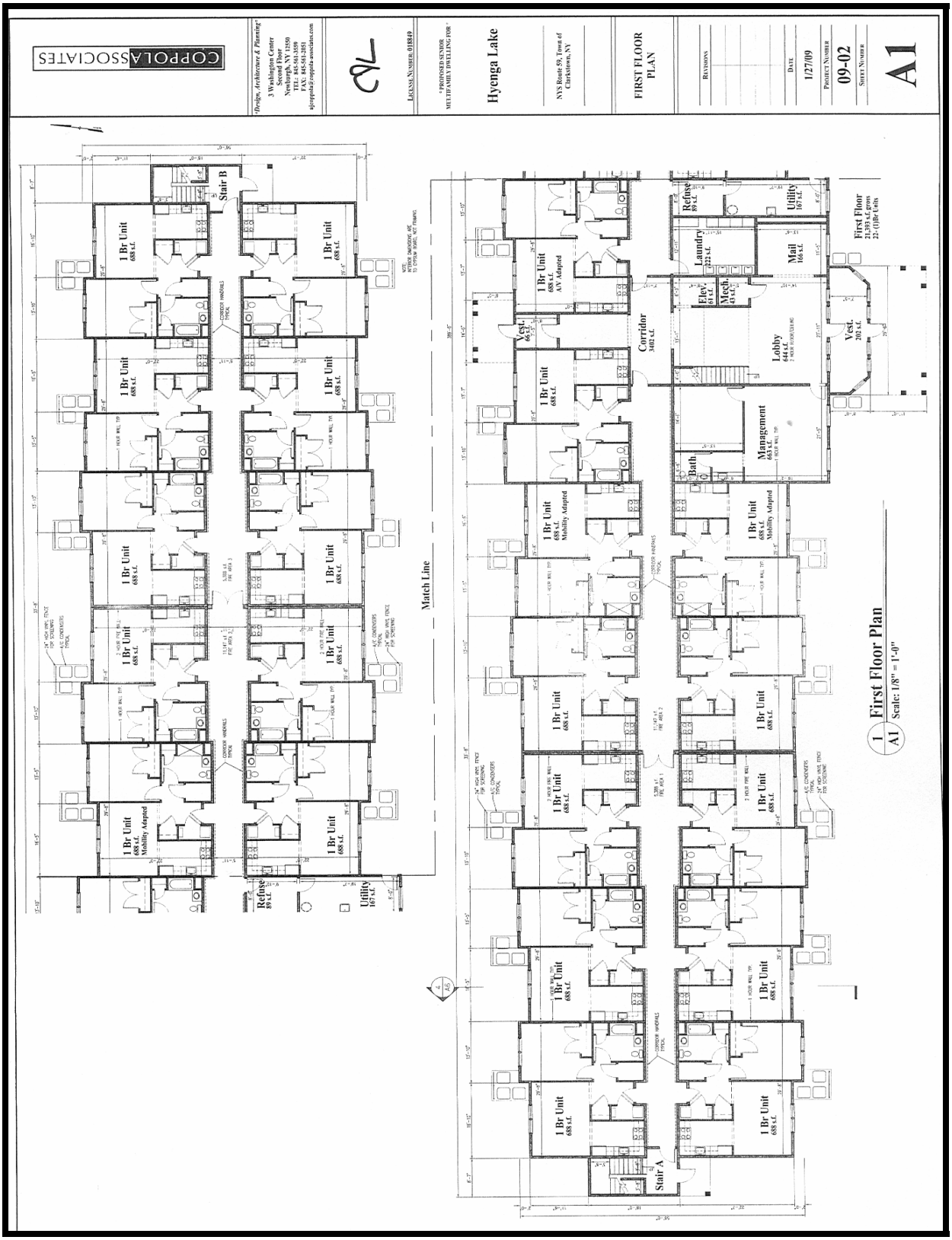
The subject property is located just outside in the unincorporated Hamlet of Nanuet, in the Town of Clarkstown, in Rockland County, New York. Clarkstown is the most densely populated of the five towns in Rockland, as well as being the commercial hub of the County.

The immediate area of Pipetown Road is mixture of multi-family housing and townhouses. The area is considered an affordable section of the town and close to shopping, transportation



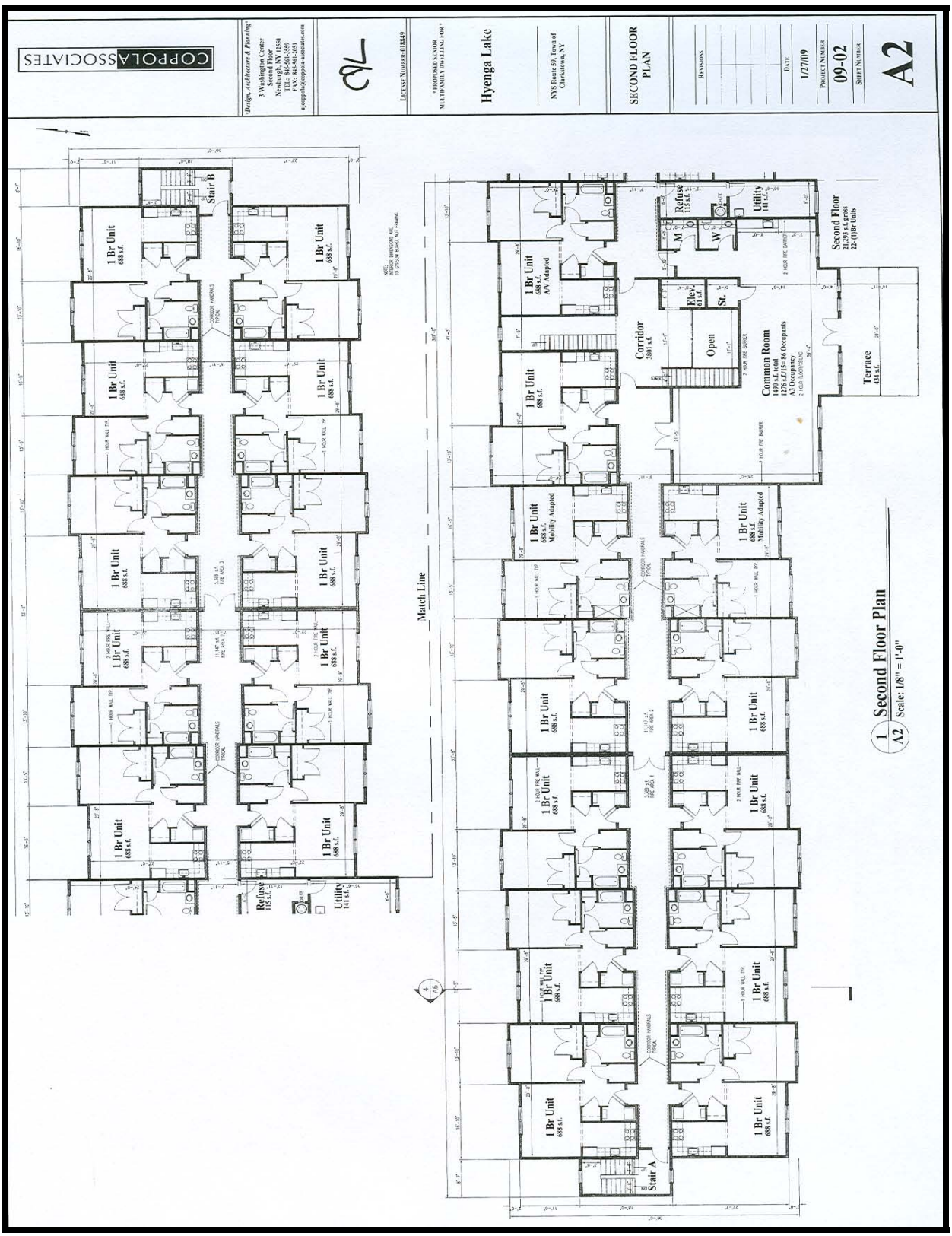
Market Report and Analysis

Floor Plan



Market Report and Analysis

Floor Plan



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Market Report and Analysis

Tax Credit Analysis Rents:

The LIHTC is a dollar-for-dollar reduction in federal tax liability available to investors in exchange for equity participation in the construction, acquisition, and/or rehabilitation of low-income rental housing. Based on its population, each state has a limited amount of credit available for allocation to investors. Credits are taken over a 10-year period. Although credits for individuals may be limited by passive loss restrictions, corporate investors generally can use them without limitation.

While credits are paid over a ten-year period, they are amortized over a five-year period. The concept of this program is to offset the development costs and expenses of new construction and renovations and limit the Federal government exposure for operating subsides.

Once the property is built, it should be able to operate on its own cash flow, subject to HUD and NYS-DHCR and/or NYS-HFA requirements.

To qualify for the LIHC, a residential rental project must meet the following requirements:

One: Units must be available to the general public.

Two: 20%/40% Requirements.

- At least 20 percent of the units must be occupied by tenants whose incomes do not exceed 50 percent of the area's median gross income (adjusted for family size)

- Or at least tenants whose incomes do not exceed 60 percent of the area's median gross income (adjusted for family size) must occupy 40 percent of the units.

Three: Gross rent charged to tenants of qualified low-income unit can not exceed 30 percent of the area's median gross income, adjusted for family size. **Gross rent includes base rent plus utility allowances**

Four: The property must be held in compliance with all requirements for at least 15 years. However, some states have extended this holding period to 30 years. This project has a 30 year holding period for New York State and a 15 year holding period for Federal Government purposes.

In addition the federal government program provides an incentive (30% bonus) for housing built in economically distress or difficult to developed areas. . **The property is located in a bonus area. Rockland County is designated as difficult development Area (DDA).**

The state, county, and city have sources of additional funding. But they come with regulations and requirements that have to be reviewed. The projected in being funded under the New York State Tax Credit Program that allows household income from 60% to 90% AMI.

These rent estimates are based on following calculations using the 2008 household income by HUD.

Market Report and Analysis

Maximum Rent Allowable – Tax Credit Program

		Type of Apt Unit	Rent Factor (%)	Unadjusted Monthly Rent	Adjusted Monthly Rent	Utility Allowance	Net Rent
Annual Median Income	$96,700						
Income Factor	**60.00%**	studio	70.00%				
Adjusted AMI	$58,020	One Bedroom	75.00%	$1,451	$1,088	$120	$968
Rent Factor	30.00%	Two Bedroom	90.00%				
Annual Unadjusted Rent	$17,406	Three Bedroom	104.00%				
Monthly Unadjusted Rent	**$1,451**	Four Bedroom	116.00%				

Number of Persons	Rent Factor (%)	Adjusted AMI	Max Income
One Person	70.00%	**$58,020**	$40,620
Two Persons	80.00%	**$58,020**	$46,440
Three Persons	90.00%	**$58,020**	$52,200

		Type of Apt Unit	Rent Factor (%)	Unadjusted Monthly Rent	Adjusted Monthly Rent	Utility Allowance	Net Rent
Annual Median Income	$96,700						
Income Factor	**50.00%**	studio	70.00%				
Adjusted AMI	$48,350	One Bedroom	75.00%	$1,209	$907	$120	$787
Rent Factor	30.00%	Two Bedroom	90.00%				
Annual Unadjusted Rent	$14,505	Three Bedroom	104.00%				
Monthly Unadjusted Rent	$1,209	Four Bedroom	116.00%				

Number of Persons	Rent Factor (%)	Adjusted AMI	Income
One Person	70.00%	**$48,350**	$33,850
Two Persons	80.00%	**$48,350**	$38,700
Three Persons	90.00%	**$48,350**	$43,500

		Type of Apt Unit	Rent Factor (%)	Unadjusted Monthly Rent	Adjusted Monthly Rent	Utility Allowance	Net Rent
Annual Median Income	$96,700						
Income Factor	**30.00%**	studio	70.00%				
Adjusted AMI	$29,010	One Bedroom	75.00%	$725	$544	$120	$424
Rent Factor	30.00%	Two Bedroom	90.00%				
Annual Unadjusted Rent	$8,703	Three Bedroom	104.00%				
Monthly Unadjusted Rent	$725	Four Bedroom	116.00%				

Number of Persons	Rent Factor (%)	Adjusted AMI	Max Income
One Person	70.00%	**$29,010**	$20,300
Two Persons	80.00%	**$29,010**	$23,200
Three Persons	90.00%	**$29,010**	$26,100

		Type of Apt Unit	Rent Factor (%)	Unadjusted Monthly Rent	Adjusted Monthly Rent	Utility Allowance	Net Rent
Annual Median Income	$96,700						
Income Factor	**80.00%**	studio	70.00%				
Adjusted AMI	$77,360	One Bedroom	75.00%	$1,934	$1,451	$120	$1,331
Rent Factor	30.00%	Two Bedroom	90.00%				
Annual Unadjusted Rent	$23,208	Three Bedroom	104.00%				
Monthly Unadjusted Rent	$1,934	Four Bedroom	116.00%				

Number of Persons	Rent Factor (%)	Adjusted AMI	Max Income
One Person	70.00%	**$77,360**	$43,050
Two Persons	80.00%	**$77,360**	$49,200
Three Persons	90.00%	**$77,360**	$55,350

NYS-DHCR 2008

Market Report and Analysis

Other Factors to Consider

The definition of a senior varies from Federal, State, and local standards. Government age standards are generally directed at ages 55, 60, 62, and 65 years old, based on our research.

The Fair Housing Act *(FHact*) was amended in 1988 and addresses the definition of senior households. A brief analysis is as follows

- HUD has determined that the dwelling is specifically designed for and occupied by elderly persons under a Federal, State or local government program or
- It is occupied solely by persons who are 62 or older or
- It houses at least one person who is 55 or older in at least 80% of the occupied units, and adheres to a policy that demonstrates intent to house persons who are 55 years or older.

Therefore, housing that meets the legal definition of senior housing or housing for older persons described above, can legally exclude families with children. HUD's 202 Program and Rural Development 515 Program are directed at populations of ages 62 or older. The various state senior housing programs are directed at ages from 55 to 65 years of age.

Market Standards: The definition of seniors by market parameters and other economic, physical, and social standards are as follows:

"Young-seniors" households are headed by persons 60 to 74 years. This group is generally characterized as homeowners, healthy, financially stable and couples (majority are married).

"Old-seniors" households are headed by persons aged 75 to 84 years old. This group can be characterized as a transition group with increase frailty, increased widowhood, less financially secure and exploring potential for alternative housing with options with services. This is beginning of needs base demand.

"Oldest-seniors" households are headed by persons 85+ years old. This group is generally characterized as female, frail, widowed, financially less secure and living alone. This segment has a significant increase in needs base housing and services.

The majority of most senior independent housing development prior to 2000 was directed towards young seniors and to a lesser extent to the old senior segment. The project is directed towards old and oldest seniors, but will accept young seniors.

The State, County, and Towns have sources of additional funding. But they come with regulations and requirements that have to be reviewed. The Federal Investment Tax program provides housing up to the 60% AMI household standard. However, both the HUD 202 and Rural 515 program have maximum household income at 50% AMI income standard. The New York State Housing program provides additional affordable housing for AMI households from 60% to 90% of the AMI for senior households

Market Report and Analysis

Rental Absorption Requirements

The rent structure for the proposed development is $420 to $900 for one-bedroom. The tenant is responsible only for tenant electric and heat, which is $120 per month for a one-bedroom unit.

This rent structure assumes that water, trash, and common area utilities is supplied by the landlord in the rent. The total rental is $591,000

Estimated Average Rents – Year 2008

Type of Unit	Number of Units	Tenant Rent -net	Utility Estimate	Total Rent	Total Annual Rent
One-bedroom - 30%	5	$420	$120.00	$540.00	$6,480.00
One-bedroom - 40%	5	$575	$120.00	$695.00	$8,340.00
One-bedroom - 50%	15	$685	$120.00	$805.00	$9,660.00
One-bedroom - 60%	20	$800	$120.00	$920.00	$11,040.00
One-bedroom - 60%	20	$900	$120.00	$1,020.00	$12,240.00
Total	65				

Projected household incomes range from a low of $14,000 to a high of $40,000, based on the cost of occupancy for renters. We believe that tenants (family-households) will pay between 30% to 35% of their income for rent and utilities. Generally for market rates units, we assume from 20% to 30% of household income. We believe that tenants will pay between 30% to 40% of their income for rent and utilities in Poughkeepsie, given market conditions in the area. However, generally in this market, it is assumed up to 45% of senior household Income is allowable for the initial lease-up of senior units.

Annual Household Income Requirements

Type of Unit	Total Rent	HH Income 30.00%	HH Income 35.00%	HH Income 40.00%	HH Income 45.00%	HH Income 48.00%
One-bedroom - 30%	$6,480	$21,600	$18,514	$16,200	$14,400	$13,500
One-bedroom - 40%	$8,340	$27,800	$23,829	$20,850	$18,533	$17,375
One-bedroom - 50%	$9,660	$32,200	$27,600	$24,150	$21,467	$20,125
One-bedroom - 60%	$11,040	$36,800	$31,543	$27,600	$24,533	$23,000
One-bedroom - 60%	$12,240	$40,800	$34,971	$30,600	$27,200	$25,500

Projected Absorption Demand per NYS – DHCR Standards 2008

The income limits were obtained from New York State Division of Housing and Community Renewal *(NYS-DHCR)* Unified Funding Reference materials for 2008. The maximum allowable income is based on 3.0 person household for a two-bedroom apartment, 4.5 person for three-bedroom, and 1.5 persons for a one-bedroom apartment.

Market Report and Analysis

Based on our absorption model parameters, 7 of the units would be directed at households earning from $15,000 to $20,000, 23 units earning from $20,000 to $30,000, 25 units between $30,000 to $40,000, and 10 units are directed at households earning from $40,000 to $43,000.

Projected Absorption Demand

Type of Unit	Units	Max Income	Minimum Income	Income 15K to 20K	Income 20K to 30K	Income 30K to 40K	Income 40K to 43K
One-bedroom - 30%	5	$21,500	$14,400	5	0	0	0
One-bedroom - 40%	5	$29,100	$18,533	2	3	0	0
One-bedroom - 50%	15	$36,275	$21,467	0	15	0	0
One-bedroom - 60%	20	$43,530	$24,533	0	5	10	5
One-bedroom - 60%	20	$43,530	$27,200	0	0	15	5
Total	65			7	23	25	10

Fair Market Rent Calculation Analysis:

The one bedroom rents ranges from $420 to $900 plus standard tenant utilities of $120 per month. The average one bedroom rent is $758 plus $120 for tenant utilities. This equals a gross rent of $878 per month. **This is 26% less then the Fair Market Rent *(FMV)* for 2008.**

Rockland County	Calendar Year	Studio 0 - Bed	One Bedroom	Two Bedroom	Three Bedroom	Four Bedroom
	2001	$750	$836	$949	$1,187	$1,330
	2002	$785	$874	$993	$1,242	$1,391
	2003	$815	$907	$1,031	$1,289	$1,445
Fair	2004	$848	$944	$1,073	$1,342	$1,504
Market	2005	$846	$915	$1,018	$1,252	$1,288
Rent	2006	$893	$966	$1,075	$1,322	$1,360
	2007	$988	$1,069	$1,189	$1,462	$1,645
	2008	$1,095	$1,185	$1,318	$1,621	$1,823
	2009					

Market Report and Analysis

Market Area

As the development of affordable housing has increased, there is increase awareness of the critical importance of a defining trade area *(market area).* The market area definition has a direct impact on the capture rate potential of a development. The capture rate is simple analytical method to better understand the financial and to a limited extent social feasibility of new senior housing development in a given community. The market area can be defined as a geographic area from which is obtained a major portion of the continued renter demand necessary for the continued leasing of a rental community. Within a community market area, the strongest influences will be exerted closest to the site, with the influence diminishing gradually as the distance increases

In defining the market area for an affordable housing project, several factors must be considered including service area, access to the site, availability of services and limiting constraints. Generally, a tight service area of 10 miles or less is an acceptable standard provided that adequate services are available and location constraints of the proposed site are minimal.

The market area contains the sections of the Town of Clarkstown and part of the Town on Ramapo with population of 135,910 in over 40,000 households. The area has large senior population that is projected to increase significantly.

Market *(Trade)* areas are typically divided into categories or zones of influence that can be classified as primary, secondary and tertiary (or fringe) trade areas. **The majority of the demand for this development will be from local market area.**

There are two other less traditional views of market areas for senior citizen developments. *They are the Dynamic View and Drive-time analysis.*

1. **Dynamic View of Markets and Rents:** A more dynamic approach to market captures rates and a rental rate analyzes the market demand from a pure supply versus demand issues. The basic difference between the more tradition and dynamic approaches is the definition of market area. The traditional model relies on a predetermined area that can be constrained by drive times and physical barriers. The dynamic approach that is constrained by only market conditions. To certain extent, the Dynamic View does have an impact upon the proposal because of its location and supply and demand issues to the Orange, Rockland, and Westchester Counties and New York City.

2. **Drive Time Analysis**: The use of drive time demand analysis is generally limited to service or retail type developments. However, if the proposal is part of a medical center or has other unique demand factors a drive-time analysis may be effective method of analysis. For this development proposal, we believe that the analysis would have only limited value.

For this report analysis, we have only developed the traditional market area demand analysis.

Market Report and Analysis

Market Demand - Senior

Traditionally, tertiary generated market demand is very minimal for most affordable senior developments. This a small senior development with the majority of demand from the general market area

The main senior renting demand for the proposed project will come from the following sources:

1. Existing pent-up demand – ***Very High Demand for Affordable housing –town and County***
2. Immigration of seniors into the area – **Moderate *Demand***
3. Increasing population in the immediate area – **Very High Demand**
4. **Limited new supply of senior housing**

The four major demand factors for this project will generate a continued demand for the project.

Market Demand - Family

Traditionally, tertiary generated market demand is very minimal for most affordable senior developments. This a small senior development with the majority of demand from the general market area

The main senior renting demand for the proposed project will come from the following sources:

1. Existing pent-up demand – ***Very High Demand for Affordable housing –town and County***
2. Immigration of non- seniors into the area – **High *Demand***
3. Increasing population in the immediate area – **Very High Demand**

The three major demand factors for this project will generate a continued demand for the project's workforce units.

Market Report and Analysis

Estimated Capture Rates

The capture rate is simple analytical method to better understand the financial and to a limited extent social feasibility of new senior housing development in a given community. The **Capture Rate** is defined in the *Dictionary of Real Estate Appraisal – Second Edition published by the American Institute of Real Estate Appraisers* (Page 44) as follows:

> "The estimated percentage of the total potential market for a type of property, e.g., office space, retail sales, single-family homes, that is currently absorbed by existing facilities or is forecast to be absorbed by proposed facilities."

Gross capture rates (primary market) of less than 3.00% are considered very favorable for a project. To a large extent, the important of gross capture rate analysis is limited, if the market population is constrained by income limitations or restrictions.

Capture rates for defined sub-market areas of less than 10% are considered favorable and rates less then 5.0% are considered very favorable. This capture rate analysis assumes that the tenants will pay from 30% to 40% of their income for total rent. Total rent includes tenant contract rent plus estimated tenant utilities. Other factor such as age, family household size, and supply of unit types will have impact on the capture rate. For the initial lease-up of senior developments in this region, we have assumed up to 45% as the cost of occupancy.

Analysis of Trends and Capture Rates:

Based on previous research, we believe that a minimum of 10+% of the demand for this property will originate outside its traditional market area. Generally, senior developments located in the commuter corridors of New York City and Westchester County have significant demand from tertiary market area. *This is result of two factors:*

1. *The general lack of supply of affordable senior housing in the immediate New York City and Westchester Markets*

2. *The significant immigration of seniors following their adult children into Rockland County.*

The age cohort will be from 55 to 85 years old. For household greater then 85 years old, we assume that they will go to a more service orientated senior affordable apartments.

There could be a significant demand **(15% to 25%)** from outside the primary market area. The majority of outside demand is relationship related – children, friends or relatives in the area. **<u>However, I did not include this in our analysis</u>**

Capture rates should increase with age because age has directed impact on dependence. We believe that free and clear capture rates would range from 3% to 5% for ages 55 to 64 years, 5% to 10% for years 65 to 74 years and over 20% for years 75+ years. There is a significant correlation between advancing age and renter status. This reflects the association between increasing frailty and willingness to relocate to a supportive housing environment.

Market Report and Analysis

Among the State's young elderly households (60-74), 37% are renters; this then increases to 48% among households aged 75 to 84 and to 55% among those aged 85+. In addition to these events, many senior female households become financially challenged to maintain their lifestyle and require more affordable housing choices.

As aging continues, their life in further impacted by increasing frailty and the need to adapt to a more senior oriented housing community increases. Generally, most affordable senior developments have a tenant based of at least 65% consisting of single female households.

HISTA Ribbon Demographics has supplied a database that has age. Income and tenure status separated. This reduces assumption errors and provides a more effective database.

The apartment units are separated by type of unit (example: one, two and three-bedroom units) and unit demand is separated by an income band analysis.

With regard to potential absorption of the units, we have assumed the following parameter or guideline.

1. Developments with all one bedroom units only – Included all one and two person households in selected income bands.

2. Developments with one and two bedroom units only – Included all one and 50% of two person households in selected income bands for one-bedroom demand. For two-bedroom demand include all three person households and 50% of two person households in selected income bands for two-bedroom demand. Since there are not one-bedroom units, the calculation should include 100% of all two person households and 50% of all three bedroom households.

3. For three bedroom units include four person and five person households and 50% of three person households in selected income bands for three-bedroom demand .

Since the proposed develop is a small project of 24 units, of which four are two bedrooms, we have assumed all senior households with less than four (4) persons in our rental demand analysis.

The Demand Model

The demand model is based on the following analysis:

1. The development of qualified senior rentals households

2. The development of qualified senior owner households – 10%

3. Analysis of Senior Tax Credits units in market area - comparable

4. Analysis of 515 and 202 units in area - comparable

5. Deducting potential inventory from potential demand to find adjusted potential demand

6. Dividing the proposed units by the adjusted potential demand to calculate the capture rate

Market Report and Analysis

Renter Households – Hyenga Lake Seniors						
Aged 18-54 Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	Total
$0-10,000	157	176	183	192	332	**1,040**
$10,000-20,000	172	175	167	134	253	**901**
$20,000-30,000	266	175	116	104	299	**960**
$30,000-40,000	299	161	169	163	210	**1,002**
$40,000-50,000	240	108	177	97	277	**899**
$50,000-60,000	232	207	78	132	255	**904**
$60,000+	545	853	560	633	621	**3,212**
Total	**1,911**	**1,855**	**1,450**	**1,455**	**2,247**	**8,918**

Renter Households						
Aged 55-61 Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	Total
$0-10,000	46	20	21	7	3	**97**
$10,000-20,000	36	38	3	9	13	**99**
$20,000-30,000	28	38	12	6	12	**96**
$30,000-40,000	36	41	4	2	32	**115**
$40,000-50,000	41	12	12	7	5	**77**
$50,000-60,000	46	26	66	8	15	**161**
$60,000+	62	139	93	62	58	**414**
Total	**295**	**314**	**211**	**101**	**138**	**1,059**

Renter Households						
Aged 62+ Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	Total
$0-10,000	416	30	6	1	3	**456**
$10,000-20,000	326	119	8	1	10	**464**
$20,000-30,000	315	82	25	0	11	**433**
$30,000-40,000	178	71	43	17	10	**319**
$40,000-50,000	33	69	8	32	14	**156**
$50,000-60,000	15	73	13	1	12	**114**
$60,000+	10	107	116	56	29	**318**
Total	**1,293**	**551**	**219**	**108**	**89**	**2,260**

Source: Hista Data 2008

Market Report and Analysis

Owner Households – Hyenga Lake Seniors						
Aged 18-54 Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	**Total**
$0-10,000	39	38	14	17	51	**159**
$10,000-20,000	33	8	10	9	56	**116**
$20,000-30,000	49	56	29	36	110	**280**
$30,000-40,000	128	54	46	81	117	**426**
$40,000-50,000	145	107	98	107	106	**563**
$50,000-60,000	95	117	156	170	139	**677**
$60,000+	570	2,086	2,211	2,931	2,828	**10,626**
Total	**1,059**	**2,466**	**2,564**	**3,351**	**3,407**	**12,847**

Owner Households						
Aged 55-61 Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	**Total**
$0-10,000	12	8	28	0	8	**56**
$10,000-20,000	70	16	4	3	5	**98**
$20,000-30,000	34	56	3	23	9	**125**
$30,000-40,000	81	67	34	29	7	**218**
$40,000-50,000	77	156	36	9	8	**286**
$50,000-60,000	81	81	53	9	49	**273**
$60,000+	346	1,640	1,090	532	475	**4,083**
Total	**701**	**2,024**	**1,248**	**605**	**561**	**5,139**

Owner Households						
Aged 62+ Years						
Current Year Estimates - 2008						
	1-Person Household	2-Person Household	3-Person Household	4-Person Household	5+-Person Household	**Total**
$0-10,000	188	39	2	0	0	**229**
$10,000-20,000	416	143	20	14	0	**593**
$20,000-30,000	419	349	9	0	22	**799**
$30,000-40,000	190	368	39	27	0	**624**
$40,000-50,000	214	359	91	8	13	**685**
$50,000-60,000	199	378	53	15	9	**654**
$60,000+	468	2,378	938	379	335	**4,498**
Total	**2,094**	**4,014**	**1,152**	**443**	**379**	**8,082**

Source: Hista Data 2008

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Market Report and Analysis

Property Name: Hyenga Lake Seniors

Development Type	Senior	Senior	Senior	Senior	Senior
Unit Type	*One-bedroom*	*One-bedroom*	*One-bedroom*	*One-bedroom*	*One-bedroom*
Number of Apartments	20	20	15	5	5
AMI – Pct%	60%	55%	50%	40%	30%
Income Band ($)	**$27,000 to $43,000**	**$24,000 to $43,530**	**$21,000 to $36,000**	**$18,000 to $29,000**	**$14,000 to $22,000**
Number HH – Renters (55 -62 yrs)	143	158	105	78	74
Number HH – Renters (62+ yrs)	646	646	260	397	445
Number HH – owners **(10%)**	62	62	80	80	59
Total HH	851	866	445	555	578
Existing Inventory					
Tax Credits – 60-% Units	280	280	0	0	0
Tax Credits – 50-% Units	0	0	75	0	0
Tax Credits – 40-% Units	0	0	0	0	0
Tax Credits – 30-% Units	0	0	0	25	25
Section Eight Units – 50%	0	0	0	0	0
Section 202 – 50% (seniors)	0	0	60	60	60
Rural – 515	0	0	0	0	0
Section 236	0	0	117	117	117
Public Housing	0	0	0	0	0
Other – Spring Valley ***	0	0	75	75	75
Total Units:	280	280	327	277	277
Potential Demand - HH	571	586	118	278	301
Effective Capture Formula	20+ 20/586	20+20/586	15/118	5/278	5/301
Capture Rate (%)	**6.8%**	**6.8%**	**12.7%**	**1.8%**	**1.7%**
Notes (#) or Comments	Majority of tax credits is 60% NYS - HFA		*** public housing Senior with family	*** public housing Senior with family	*** public housing Senior with family

Market Report and Analysis

Modified Capture Rate
NYS - DHCR 2/3/2009

Unit Type	Number of Units	Capture Rate	Pct Factor	Modified Rate
One-bedroom - 60%	20	6.8%	30.8%	2.1%
One-bedroom - 55%	20	6.8%	30.8%	2.1%
One-bedroom - 50%	15	12.7%	23.1%	2.9%
One-bedroom - 40%	5	1.8%	7.7%	0.1%
One-bedroom - 30%	5	1.7%	7.7%	0.1%
Total Units	65	**Total Modified Rate**		7.4%

Occupancy Rate for Comparable Units

The estimate occupancy rate for comparable tax credit units is 99+%. This is stated also on page 31 of this report. There are over 400 tax credit senior units in the County of Rockland. Only Airmont Gardens has a minor vacancy issue (NYS-HFA) rental structure with significant 60% AMI units. The over all occupancy is 99%,

Market Conclusion:

We believe that this proposal is financially feasible, based on market data. The development of the proposed 65-unit project will have no adverse impact upon the competition within or near its market area.

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Report Certification

I (Richard J. Lampert) certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analysis, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and my personal, unbiased professional analysis, opinions, and conclusions.
- I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.
- My compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event resulting from the analysis, opinions, or conclusions in, or the use, of this report.
- My analysis, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
- No one provided significant professional assistance to the person(s) signing this report. The researchers (walkers) only did follow-up analysis and had no impact upon the report's conclusions.
- I hereby acknowledge that I have the appropriate education and experience to complete the assignment in a competent manner.
- This reported is dated as of February 6, 2009 and reflects the conditions at this date.

♦ ***This report conforms to the standards cited in the NYS DHCR Capital Program Manual – Section 506***

I certify that, to the best of my knowledge and belief, the reported analysis, opinions and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and the Standards of Professional Practice of the Appraisal Institute.

Richard J. Lampert

Richard J. Lampert **Dated: February 6, 2009**

General State Certified General Real Estate Appraiser # 6405

Assignment Goal and Scope

Assignment Goals

Richard J. Lampert was contracted by Wilder Property Companies, Inc. to provide information and data for the company's management and funding requirements. The objective of this study is to provide a market analysis and the goals are as follows:

- Analyze the regional (MSA) and the county for housing, economic and demographic trends.
- Provide a demographic profile of the primary and secondary market profiles using computer data models based on census tract data for the period of 1990 to 2017.
- Determine current demand for affordable housing and projected future demand.

Assignment Scope

The following is the method of research and work that was undertaken to complete this assignment

- Obtain and analyze economic and population trends by census tract projection data from both public and private sources.
- Inspected and analyze competing apartment complexes in the area by a drive time analysis and available public records.
- Obtain specialized population reports to analyze prior and future trends.
- Provide a research report for the developer and NYS-DHCR use of this assignment.

Research Sources

The following sources were used in completing the demographic analysis for this assignment:

Market Statistics	*Claritias Demographics*
Census 2000 SF3	*AGS Demographics*
NPA Data Services	*Ulster County - Planning Department*
Market Statistics	*Woods and Pool Research*

Field Inspection of Comparable Properties

Over 10 rental projects *(apartments and condominiums)* in the general area were reviewed in the market. Some projects did not return our telephone calls. However, all sites were inspected and we attempted to find additional data from discussions with residents and/or a review of town records.

Professional Qualifications of Researchers

Richard J. Lampert

Summary of Professional Experience:

Actively engaged in real estate consulting, market analysis, investment research and appraisal since 1975. Market research assignments on senior citizens and multi-family projects in New York, Connecticut, New Jersey, Rhode Island and North Carolina.

Editor and Publisher of *The Waterbury Industrial and Office Report, The Greater Glens Falls & Saratoga Real Estate Report, Southeastern Connecticut Real Estate Report, and The Greater Danbury Office and Industrial Report.*

Extensive appraisal and consulting experience appraising all types of real property including office buildings, shopping centers, apartment buildings, and vacant land.

Richard J. Lampert - Real Estate Consultant and Appraiser, Pleasantville, NY

Cushman & Wakefield - Tri-State Financial Services Group, New York, NY

VMS Realty Partners, Vice President - Acquisitions & Technical Services, New York, NY

Landauer Associates, Assistant Vice President - Appraisal, New York, NY

Forest City Enterprises, Senior Analyst - Land Division, Cleveland, Ohio

NYS Urban Development Corporation, Real Estate Analyst, New York, NY

Education

Long Island University, Master of Science, *Taxation & Finance* - 1975
Saint Vincent College, Bachelor of Science, *Accounting* - 1973

Professional Affiliations

Appraisal Institute, State Accredited Affiliate and Candidate
National Association of Realtors - Real Estate Appraisal Section
New York - State Certified General Real Estate Appraiser NYS#: 46000006405
State of Connecticut - Certified General Real Estate Appraiser Conn # 0000354

Selected Clients

Clients include major commercial bank, local savings banks, Industrial corporations, law firms, accounting firms, developers, and real estate consulting firms.

Professional Qualifications of Researchers

Selected Multi-family Assignments

Property	Location	Assignment
Riverview Apts – Proposed	Peekskill, New York	Research Report
Stony Hill Crescent – Proposed	Danbury, Connecticut	Research Report
Second Ave Apts - Proposed	New York, New York	Research Report
Tarryrand Apartments	Tarrytown, New York	Research Report
Woodlands Apts – Proposed	Saratoga Springs, New York	Appraisal Report
Terrance Pines	Ballston Spa, New York	Appraisal Report
Brookline Apartments	Ballston Spa, New York	Appraisal Report
Evergreen Hills Apartments	Macedon, New York	Appraisal Report
Heritage Apartments	Glens Falls, New York	Appraisal Report
Madison Apartments	Sacketts Harbor, New York	Appraisal Report
Willard Street Apartments	Hartford, Connecticut	Research Report
Hartford Tower Apartments	Hartford, Connecticut	Appraisal Report
The Meadows Apartments	Queensbury, New York	Research Report
River Street	Napanoch, New York	Appraisal Report
120 Cannon Street	Poughkeepsie, New York	Appraisal Report
La Triumphe Apartments	Groton, Connecticut	Appraisal Report
Mentebello Commons – Proposed	Montebello, New York	Research Report
Loosestrife Apartments	Montgomery, New York	Appraisal Report
Kensington Village	Hyde Park, New York	Appraisal Report
Silver Maples Acres	Harriman, New York	Appraisal Report
Brookside Acres	Washingtonville, New York	Appraisal Report
Cascade Acres	Lake Placid, New York	Appraisal Report
Amsterdam Senior Study	Amsterdam, New York	Research Report

Professional Qualifications of Researchers

Partial List of Clients

Appraisal and Financial Services	Multi-Family – Appraisal and Market Research
Citizens Bank – Mass, Ct, RI, and NH	New York State Housing Finance Agency – NYS – HFA
Key Bank	ROUSE – Not for profit Housing
Chase Bank	Hudson Valley Housing Development Fund
First Federal Bank	
The Sakura Bank Limited	The Rural Preservation Company of Dutchess County, Inc.
Tarrytowns Bank - FSB	
New Haven Saving Bank	Taconic Capital – Duncan Bannet
Union Savings Bank	Omni Development – Albany, NY
Citibank	L. A. Swyer Co., Inc.
Cornerstone Asset Management	Goldstein Interests – Rockland Cty
	Elm Ridge Management
NAMIC	Talleyrand Associates LLC
Barenholtz & Farrell	Wilder Balter Partners
The Howard Carr Companies	Cappelli Enterprises
Delmhorst & Sheehan	
Real Estate Counselors International	**Market Research**
Weiner, Mantell & Fornes, P.C.	Lehman Brothers
Arthur Anderson	Drubner Industrial
Doggett's Parking	Ryer Associates
VMS Realty Partners	Gallagher & Company
Krauser, Welsh, & Cirz	J.W. O'Connor
Amsterdam Memorial Hospital	Gerner Kronick + Valcarcel, Architects, PC

Addenda and Supporting Documents - Listing

The following documents are included in the addenda.

Document	Description
Assignment Letter	Assignment authorization and related
Additional Data	Additional data and materials are maintained in the subject's and regional files in my office

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Supporting and Required Documents

Assignment Letter

Richard J. Lampert
Real Estate Consulting and Market Research

December 24, 2008 - revised

Ms. Geri Levy
Rockland Housing Action Coalition, Inc.
95 New Clarkstown Road
Nanuet, NY 10954

Re: Clarkstown Senior Housing: Via Fax (845) 352-2126

Dear Ms. Levy,

My firm is interested in providing research and consulting services for the above referenced apartment project. The property is located in the Town of Clarkstown, Rockland County, New York, near Route 59. The proposed development is 80+/- units senior development directed at 30%, 50% and 60% AMI. Our initial review indicates that your proposal has positive factors and could be competitive, but it is generally considered at this time to be a very large project.

NYS-DHCR and Rural Development requires additional research with regard to all existing, under-construction and proposed housing within the project's greater market region. In addition, my firm has up-graded our databases and graphics to address the latest DHCR market demand. We also include Flood Plain Maps and zoning data as requested by tax credit underwriters.

$6,500.00

We can make adjustments and changes after the delivery date. **The total cost of the report will be $6,850. We require $3,850 up front payment with balance due at delivery.** This proposal expires on December 30, 2008. The deadline for submissions is February 11, 2008.

I am requesting the following data: Site Plan (8 ½ x11), Unit layouts with square feet, floor layouts, and building rendering.

My compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client. My compensation is not contingent upon an amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event resulting from the analysis, opinions, or conclusions in, or the use, of this report. The reported analysis, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and my personal, unbiased professional analysis, opinions, and conclusions. I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.

There will be additional charges for offsite meetings and work beyond the scope of the assignment. The report will be directed for use by the developer and other related parties.

Please call me if you have any questions

Yours Truly

Richard J. Lampert

Richard J. Lampert

2 Sutton Place Pleasantville, NY 10570 **(914) 747-3412**
Other Field Offices: Saratoga, NY & Waterbury, CT