Leo F. Gozalkowski, PLS
Stephen W. Yaussi, AIA
Edward G. Olley, Jr., AIA
William P. Plante, PLS
Patrick J. Scordo, PE
Thomas S.M. Compo, PE

Gregory F. Ashley, PLS

20 July 2010

Mr. Kurt Hauk, P.E.
City Engineer
Room 305
245 Washington St
Watertown, NY 13601

Re: Site Plan Submission
Purcell Construction Corp.
Ives Hill Retirement Community Phase III, Watertown, NY

File: 2010-077A

Dear Mr. Hauk:

On behalf of Purcell Construction Corp., we are submitting the following materials for Site Plan review at the August 3, 2010 City Planning Board meeting:

- 4 full size sets of Site and Architectural Plans for Departmental Review, including a wet stamped original (Cover, A101-A103, A201, A202, C001, C101, C102, and C501-C506);
- 12-11"x17" sets of Site Plans;
- 4 Signed and Sealed Engineering Reports;
- City of Watertown Site Plan Application, including Short EAF,and
- $50 Application Fee.

The project is located on three different tax parcel's; 14-49-101, 14-49-101.101, and 14-49-101.005 in the City of Watertown.

The proposed development consists of Phase III of the Ives Hill Retirement Community and includes a ±13,720 square foot (sf),18 unit enriched living facility, along with five multifamily buildings, each with (2) two bedroom apartments, upon which site plan approval is currently being sought. The remainder of Phase III includes an additional future 13,720 sf enriched living facility. Site plan approval is not sought for the additional enriched living facility at this time. The conceptual development of the future building is shown for informational purposes only. Phase IV will include additional multifamily housing.

A PDD amendment is needed to allow for the enriched living facility within the planned development district and the amendment will be submitted to the City of Watertown under separate cover. It is anticipated that the Planning Board will review the proposed PDD amendment at their 3 August 2010 meeting. It is understood that a two week public hearing is required for actions such as this.

The developer plans on beginning construction on the Phase III in the Fall of 2010.

If there are any questions or you require additional information, please feel free to contact our office.

Sincerely,
GYMO, Architecture, Engineering & Land Surveying, PC

Brian J. Drake, I.E.
Project Engineer

Attachments
pc: Pat Scordo, P.E. - GYMO, PC
Christina Schneider - Purcell Construction Corp.

X:\2010\2010-077A-IVES HILLS RETIREM\CORRESPONDENCE\ENGINEERING\CITY OF WATERTOWN\CITY_SITEPLAN_APP_SUBM_(7-20-10).DOC

220 Sterling Street
Watertown, New York 13601-3313
Tel (315) 788-3900 Fax (315) 788-0668
E-mail: gymopc@gymopc.com

PURCELL CONSTRUCTION CORPORATION
WATERTOWN, NEW YORK 13601

252522

DATE	INVOICE NO.	DESCRIPTION	INVOICE AMOUNT	RETAINAGE	NET
7-19-10		Sie Plan A The Lodge at Ives Hill	50.00	.00	50.00

CHECK DATE	7-19-10	CHECK NUMBER	252522	TOTALS	50.00	.00	50.00

PLEASE DETACH THIS PORTION AND RETAIN FOR YOUR RECORDS.

PURCELL CONSTRUCTION CORPORATION
General Contractors

566 Coffeen Street
Watertown, New York 13601

COMMUNITY BANK, N.A.
WATERTOWN, NEW YORK 13601

50-755
213

252522

'ay: ***Fifty dollars and no cents

DATE	CHECK NO.	AMOUNT
July 19, 2010	252522	$*********50.00

PAY TO THE ORDER OF

City of Watertown
Watertown Municipal Building
245 Washington Street
Watertown, NY 13601

⑈252522⑈ ⑆021307559⑆ 07 12 00571⑈

CITY OF WATERTOWN
SITE PLAN APPLICATION
AND
SHORT ENVIRONMENTAL
ASSESSMENT FORM, PART 1

** Provide responses for all sections. INCOMPLETE APPLICATIONS WILL NOT BE PROCESSED. Failure to submit required information by the submittal deadline will result in **not** making the agenda for the upcoming Planning Board meeting.

PROPERTY LOCATION

Proposed Project Name: Ives Hill Enriched Living Facility

Tax Parcel Number: 14-49-101 / 14-49-101.101 / 14-49-101.005

Property Address: Jewell Drive

Existing Zoning Classification: Planned Development District

OWNER OF PROPERTY

Name: Ives Hill Retirement Community

Address: 1200 Jewell Dr.

Watertown, NY 13601

Telephone Number: (315) 779-9590

Fax Number: (315) 782-5820 (Purcell)

APPLICANT

Name: Purcell Construction Corp.

Address: 566 Coffeen Street

Watertown, NY 13601

Telephone Number: (315) 782-1050

Fax Number: (315) 782-5820

Email Address: Tina@Purcellconstruction.com

ENGINEER/ARCHITECT/SURVEYOR

Name: Patrick J. Scordo, P.E. - GYMO P.C.

Address: 220 Sterling Street, Watertown, NY 13601

Watertown, NY 13601

Telephone Number: (315) 788-3900

Fax Number: (315) 788-0668

Email Address: pat@gymopc.com

PROJECT DESCRIPTION

Describe project and proposed use briefly:

Construction of 13,720 square feet Enriched Living Facility with parking, water, sanitary sewer, private drive, and required appurtenances. Construction of (2) Type A, 2980 SF Duplex buildings with two-bedroom units and (3) Type B, 3370 SF Duplex buildings with two-bedroom units. Total of 10 two-bedroom units with required water, sanitary sewer, storm sewer, private drive, and required appurtenances.

Is proposed Action:

☑ New ☐ Expansion ☐ Modification/Alteration

Amount of Land Affected:

Initially: ± 5.5 Acres Ultimately: ± 5.5 Acres

Will proposed action comply with existing zoning or other existing land use restrictions?

☐ Yes ☑ No If no, describe briefly

PDD Zoning Amendment Required

What is present land use in vicinity of project?

☑ Residential ☐ Industrial ☐ Commercial ☐ Agriculture

☐ Park/Forest/Open Space ☐ Other

Describe: Planned Development - Multi Family Apartments and Retirement Community.

Does project 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) and permit/approval(s)

NYS DOH - water and NYS DEC - sewer

Does any aspect of the project have a currently valid permit or approval?

☐ Yes ☑ No If yes, list agency(s) and permit/approval(s)

As a result of proposed project, will existing permit/approval require modification?

☐ Yes ☑ No

Construction of 13,720 square feet Enriched Living Facility with parking, water, sanitary

Proposed number of housing units (if applicable): 18 one-bed and 10 two-bed

Proposed building area: 1st Floor (ELF)13,720 Sq. Ft.

1st Floor (MF)16,070 Sq. Ft.

3rd Floor _____ Sq. Ft.

Total 29,790 Sq. Ft.

Area of building to be used for the boiler room, heat facilities, utility facilities and storage: 691 Sq. Ft.

Number of parking spaces proposed: 13 spaces - ELF; Private Drives - MF

Construction Schedule: Fall 2010

Hours of Operation: Employees on staff 7 am to 1 am at Enriched Living Facility

Volume of traffic to be generated: 122 trip ends ADT

REQUIRED DRAWINGS:

** The following drawings with the listed information **ARE REQUIRED, NOT OPTIONAL**. If the required information is not included and/or addressed, the Site Plan Application will **not** be processed.

☑ **BOUNDARY & TOPOGRAPHIC SURVEY**
(Depict existing features as of the date of the Site Plan Application. This Survey and Map must be performed and created by a Professional Land Surveyor licensed and currently registered to practice in the State of New York. This Survey and Map must be stamped and signed with an original seal and signature on at least one copy, the rest may be copies thereof.

- ☑ All elevations are National Geodetic Vertical Datum of 1929 (NGVD29).
- ☑ 1' contours are shown & labeled with appropriate spot elevations.
- ☑ All existing features on and within 50 feet of the subject property are shown and labeled.
- ☑ All existing utilities on and within 50 feet of the subject property are shown and labeled.
- ☑ All existing easements and/or right-of-ways are shown and labeled.
- ☑ Existing property lines (bearings & distances), margins, acreage, zoning, existing land use, reputed owner, adjacent reputed owners & tax parcel numbers are shown and labeled.
- ☑ The north arrow & graphic scale are shown.

☐ **DEMOLITION PLAN** (If Applicable)

- ☐ All existing features on and within 50 feet of the subject property are shown and labeled.
- ☐ All items to be removed are labeled in darker text.

☑ **SITE PLAN**

- ☑ All proposed above ground features are depicted and clearly labeled.
- ☑ All proposed features are clearly labeled "proposed".
- ☑ All proposed easements & right-of-ways are shown and labeled.
- ☑ Land use, zoning, & tax parcel number are shown.

☑ The Plan is adequately dimensioned including radii.

☑ The line work & text for all proposed features is shown darker than existing features.

☑ All vehicular & pedestrian traffic circulation is shown including a delivery or refuse vehicle entering and exiting the property.

☑ Proposed parking & loading spaces including ADA accessible spaces are shown and labeled.

☑ Refuse Enclosure Area (Dumpster), if applicable, is shown. Section 161-19.1 of the Zoning Ordinance states, "No refuse vehicle or refuse container shall be parked or placed within 15 feet of a party line without the written consent of the adjoining owner, if the owner occupies any part of the adjoining property".

☑ The north arrow & graphic scale are shown.

☑ **GRADING PLAN**

☑ All proposed below ground features including elevations & inverts are shown and labeled.

☑ All proposed above ground features are shown and labeled.

☑ The line work & text for all proposed features is shown darker than existing features.

☑ All proposed easements & right-of-ways are shown and labeled.

☑ 1' existing contours are shown dashed & labeled with appropriate spot elevations.

☑ 1' proposed contours are shown & labeled with appropriate spot elevations.

☑ All elevations are National Geodetic Vertical Datum of 1929 (NGVD29).

☑ Sediment & Erosion control are shown & labeled on the grading plan unless separate drawings have been provided as part of a Stormwater Pollution Prevention Plan (SWPPP).

☑ **UTILITY PLAN**

☑ All proposed above & below ground features are shown and labeled.

☑ All existing above & below ground utilities including sanitary, storm water, water, electric, gas, telephone, cable, fiber optic, etc. are shown and labeled.

☑ All proposed easements & right-of-ways are shown and labeled.

☑ The Plan is adequately dimensioned including radii.

☑ The line work & text for all proposed features is shown darker than existing features.

☑ The following note has been added to the drawings stating, "All water main and service work must be coordinated with the City of Watertown Water Department. The Water Department requirements supercede all other plans and specifications provided."

☑ **LANDSCAPING PLAN**

☑ All proposed above ground features are shown and labeled.

☑ All proposed trees, shrubs, and other plantings are shown and labeled.

☑ All proposed landscaping & text are shown darker than existing features.

☑ All proposed landscaping is clearly depicted, labeled and keyed to a plant schedule that includes the scientific name, common name, size, quantity, etc.

☐ For additional landscaping requirements where nonresidential districts and land uses abut land in any residential district, please refer to Section 310-59, Landscaping of the City's Zoning Ordinance.

☑ **Site Plan complies with and meets acceptable guidelines set forth in Appendix A - Landscaping and Buffer Zone Guidelines (August 7, 2007).**

☑ **PHOTOMETRIC PLAN** (If Applicable)

☑ All proposed above ground features are shown.

☑ Photometric spot elevations or labeled photometric contours of the property are clearly depicted. Light spillage across all property lines shall not exceed 0.5 foot-candles.

☑ **CONSTRUCTION DETAILS & NOTES**

☑ All details and notes necessary to adequately complete the project including, but not limited to, landscaping, curbing, catch basins, manholes, water line, pavement, sidewalks, trench, lighting, trash enclosure, etc. are provided.

☑ Maintenance & protection and traffic plans & notes for all required work within City streets including driveways, water laterals, sanitary laterals, storm connections, etc. are provided.

☑ The following note must be added to the drawings stating:
"All work to be performed within the City of Watertown margin will require sign-off from a Professional Engineer, licensed and currently registered to practice in the State of New York, that the work was built according to the approved site plan and applicable City of Watertown standards. Compaction testing will be required for all work to be performed within the City of Watertown margin and must be submitted to the City of Watertown Codes Department."

☑ **PRELIMINARY ARCHITECTUAL PLANS** (If Applicable)

☑ Floor plan drawings, including finished floor elevations, for all buildings to be constructed are provided.

☑ Exterior elevations including exterior materials and colors for all buildings to be constructed are provided.

☑ Roof outline depicting shape, slope and direction is provided.

☑ **ENGINEERING REPORT**

** **The engineering report at a minimum includes the following:**

☑ Project location

☑ Project description

☑ Existing & proposed sanitary sewer flows & summary

☑ Water flows & pressure

☑ Storm Water Pre & Post Construction calculations & summary

☑ Traffic impacts

☑ Lighting summary

☑ Landscaping summary

☑ **GENERAL INFORMATION**

☑ ALL ITEMS ARE STAMPED & SIGNED WITH AN ORIGINAL SIGNATURE BY A PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR SURVEYOR LICENSED AND CURRENTLY REGISTERED TO PRACTICE IN THE STATE OF NEW YORK.

☑ If required, a copy of the Stormwater Pollution Prevention Plan (SWPPP) submitted to the NYSDEC will also be sent to the City of Watertown Engineering Department.

☑ If required, a copy of all submittals sent to the New York State Department of Environmental Conservation (NYSDEC) for the sanitary sewer extension permit will also be sent to the City of Watertown Engineering Department

☑ If required, a copy of all submittals sent to the New York State Department of Health (NYSDOH) will also be sent to the City of Watertown Engineering Department.

☑ Signage will not be approved as part of this submission. It requires a sign permit from the Codes Department. See Section 310-52.2 of the Zoning Ordinance.

☑ Plans have been collated and properly folded.

☑ Explanation for any item not checked in the Site Plan Checklist.

Sediment and Erosion control will be included in SWPPP when submitted.

Stormwater calculations summary will be included in SWPPP, NYSDOH,

and NYSDEC submittals will be forwarded when submitted.

☑ Completed SEQR – Short Environmental Assessment Form – Part I.
*A copy of the SEQR Form can be obtained from the City of Watertown website.

SIGNATURE

I certify that the information provided above is true to the best of my knowledge.

Applicant (please print) PATRICK J. SCORDO - ESMO, PC

Applicant Signature Patrick J. Scordo Date: 7-19-10

PROJECT I.D. Number

Appendix C

State Environmental Quality Review

SEQR

SHORT ENVIRONMENTAL ASSESSMENT FORM

For UNLISTED ACTIONS Only

PART 1 – PROJECT INFORMATION (To be completed by Applicant or Project Sponsor)

1. APPLICANT/SPONSOR
Purcell Construction Corp.

2. PROJECT NAME
Ives Hill Phase III

3. PROJECT LOCATION:
Municipality City of Watertown County Jefferson

4. PRECISE LOCATION (Street address and road intersections, prominent landmarks, etc., or provide map)
East side of Jewell Drive across from congregate living building, Ives Hill Phase III of Planned Development District

5. IS PROPOSED ACTION:
☑ New ☐ Expansion ☐ Modification/alteration

6. DESCRIBE PROJECT BRIEFLY:
Site Plan approval for a ± 13,720 square foot enriched living building, 18 units, parking, private driveway, water, sanitary sewer, storm sewer, and required appurtenances. Site Plan approval for 2 Type A Duplexes & 3 Type B Duplexes with required water/sanitary sewer/storm sewer/private driveway/ other appurtenances.

7. AMOUNT OF LAND AFFECTED:
Initially ± 5.5 acres Ultimately ± 5.5 acres

8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS?
☐ Yes ☑ No If no, describe briefly PDD site plan change. Need to amend PDD to allow for Enriched Living Facility.

9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT?
☑ Residential ☐ Industrial ☐ Commercial ☐ Agriculture ☐ Park/Forest/Open Space ☑ Other
Describe: Planned development - Multi Family Apartments and Retirement Community.

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) and permit/approvals NYS DOH - water
NYS DEC - sewer

11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL?
☐ Yes ☑ No If yes, list agency(s) 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: Purcell Construction Corp. Date: 7·20·10

Signature: Patrick J. Sipolo (GMU, PC - ENGINEER) FOR

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment

OVER

A. DOES ACTION EXCEED ANY TYPE I THRESHOLD IN 6 NYCRR, PART 617.12? 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 patterns, solid waste production or disposal, potential for erosion, drainage or flooding problems? Explain briefly:

C2. Aesthetic agricultural, archaelogical, 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 CEA?
☐ Yes ☐ No

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.

☐ 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:

Name of Lead Agency

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)

Date

2010-077E

ENGINEERING REPORT

IVES HILL – PHASE III
PURCELL CONSTRUCTION CORP.

CITY OF WATERTOWN
JEFFERSON COUNTY, NEW YORK

GYMO PC
ARCHITECTURE, ENGINEERING & LAND SURVEYING
220 Sterling Street, Watertown, New York 13601
tel.315.788.3900 fax.315.788.0668 e-mail. gymopc@gymopc.com

ENGINEERING REPORT

IVES HILL PHASE III

JEWELL DRIVE
CITY OF WATERTOWN
JEFFERSON COUNTY
STATE OF NEW YORK

PURCELL CONSTRUCTION CORP.

566 COFFEEN STREET
WATERTOWN, NY 13601
CONTACT PERSON:
MS. CHRISTINA SCHNEIDER
CHIEF FINANCIAL OFFICER (315) 782-1050

PROJECT # 2010-077E
20 JULY 2010

PATRICK J. SCORDO, P.E.
DIRECTOR OF ENGINEERING

The above Engineer states that to the best of his knowledge, information and belief, the plans and specifications are in accordance with the applicable requirements of New York State. It is a violation of New York State Law for any person, unless acting under the direction of a licensed professional engineer to alter this document in any way. If altered, such licensee shall affix his or her seal and the notation "altered by" followed by his or her signature, date, and a specific description of alteration.

GYMO ARCHITECTURE, ENGINEERING & LAND SURVEYING, P.C.
220 STERLING STREET-WATERTOWN, NY-TELE: (315)788-3900 FAX: (315)788-0668

TABLE OF CONTENTS

1.0 SITE AND PROJECT DESCRIPTIONS

1.1 Location

The site is located on the southeastern side of Jewell Drive in the City of Watertown and is Phase III of the Ives Hill Planned Development District. The proposed driveway to the Enriched Living Facility is located on Jewell Drive approximately 700 feet from the intersection of Jewell Drive and Weldon Drive. The site is located on City of Watertown tax parcels 14-49-101.000, 14-49-101.101, and 14-49-101.005. The proposed disturbed area for the development is 5.5 acres.

1.2 Project Description

The proposed project involves the development of Phase III of the Ives Hill Planned Development District. A 13,720 sf Enriched Living Facility (ELF) will be constructed along with (2) Type A (2,920 sf) Duplexes and (3) Type B (3,370 sf) Duplexes. Phase I included the development of a 47,400 square feet (sf) Congregate Building, four (4) 2,920 sf Duplex Buildings, and two (2) 3,370 sf Duplex Buildings.

Phase II of the project involved the development of seven (7) 2,920 sf Duplex Buildings and five (5) 3,370 sf duplex buildings. Phase III also includes an additional 13,720 sf Enriched Living Facility, for which site plan approval is not sought at this time.

City of Watertown Site Plan Approval is anticipated for Phase III and where the remaining building involved in Phase III is discussed, it is for informational purposes of future development only. No site plan approval is sought for the remaining building of Phase III.

The access roads, water, sanitary sewer, storm sewers, site lighting, landscaping and parking areas necessary for Phase III will be constructed as the initial part of Phase III. This infrastructure is being designed with the future building in mind. Sanitary sewer, and water systems will be discussed in more detail in other sections of this report. Storm sewer will be discussed in detail in the Storm Water Pollution Prevention Plan (SWPPP) report.

1.3 Zoning/Parking/Employees

Zoning of the project area is currently Planned Development District (PDD), which allows for multifamily housing. An amendment to the current PDD will be necessary for this project and will be submitted under separate cover to the City of Watertown to allow for Enriched Living Faciliteis. Parking for this project was analyzed for the ELF, which is to be constructed. The multifamily Duplexes will each have private driveways for parking.

As the residents of the ELF will not have cars onsite, it is proposed that only parking for the ELF employees is constructed. Zoning for Nursing Home classification requires one parking space per three beds plus one space per ten beds for guest (18 units* 1/3 + 18/10). This equates to 8 spaces.

Employees for the ELF are scheduled as follows:

7 Employees – Day shift 7 a.m. 3 p.m.
3 Employees Evening Shift – 3 to 11
2 Employees Night Shift – 11 to 1
One LPN will be on staff day and evening shift.

As it is possible to have up to 11 employees overlapping, 13 parking spaces are proposed, with two of the spaces handicapped reserved. This is in excess of the zoning requirements.

1.4 Site Topography

The highest point within the disturbed area is at the southeastern most portion of the project, at an elevation of 488. The sight slopes downward predominantly in a northerly direction to approximate elevation 473 at Jewell Drive. The eastern area drains to a City of Watertown catch basin on Jewell Drive at the northeast corner of the project. The City of Watertown storm sewer flows via stormwater piping northeast along Jewell Drive to Weldon Drive. From there, the storm sewer is piped north to a detention basin constructed during Phase I. The western portion of the project flows to a low point on the south side of Jewell Drive, where is it then piped under Jewell Drive and flows through Phase II via piping to a storm water detention area that was constructed during Phase II.

1.5 Soil Classification

According to the United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS), working from the western end of the site to the eastern end of the site, you will find: NIC-Nellis Loam (54.1% of area of interest), CnC-Collamer Silt Loam – 3 to 8% slopes (30.9%), and CnB-Collamer Silt Loam – 8 to 15% slopes (14.7%). Trace amounts of NoA – Niagara Silt Loam (0.3%) are expected.

According to the Jefferson County Soil Survey, CnB and CnC are class C soils and NIC is classified as class B soil. This amounts to the majority of the project soils being classified as hydrologic class B soils (54.1%). See the attached USDA/NRCS Jefferson County Soil Survey descriptions for more information on the specific soil type properties in Appendix #1.

The soil has been disturbed by human activities. The site is currently undeveloped, and groundcover is mainly overgrown grassland, and brush with some small saplings.

2.0 WATER FACILITIES

2.1 Existing Water Facilities

An eight-inch ductile iron pipe (DIP) travels along Jewell Drive north of the site within the City of Watertown Right-of-Way. In addition, an eight-inch DIP travels along the gravel road to the east of the site within a 20-foot City of Watertown easement. The eight inch main to the east of the project tees into the eight-inch main along Jewell Drive, and ultimately ends up looping Kieff Drive to the south, Jewell Drive and Weldon Drive to the east. The main along Jewell Drive continues west before looping Phase II.

There are hydrants along Jewell Drive. In addition to these hydrants, there are hydrants along the Phase II loop. Also, there is a hydrant on Kieff Drive, approximately 260 feet southeast of the southeast corner of the project.

2.2 Proposed Water Facilities (Enriched Living Facility)

Both the eight-inch main on Jewell Drive and the eight-inch main to the east of the site will be utilized for connection of the proposed water supply. The project sponsor proposes ±574-feet of eight-inch DIP water main with two six-inch laterals for the ELF

portion of the project. One six-inch lateral will serve the ELF and the remaining six-inch lateral will serve a future Phase III building. The eight-inch DI will loop around the ELF as shown on the civil plans in Appendix #2. As the entire proposed ELF is within 300 feet of an existing hydrant, no new hydrants are proposed at this time, for the ELF portion of the project.

The eight-inch water main, six-inch laterals, and one-inch laterals are proposed to be owned, operated, and maintained by the owner. The water lines will remain as private lines, will be the property owner's responsibility and will be installed to City of Watertown Specifications. GYMO, P.C. will explain to the developer that project inspection will be required for Engineers Certification of installed facilities.

2.3 Proposed Water Facilities (Multifamily)

The eight-inch main along Jewell Drive will be extended along the Jewell Drive Extension. From there, a new eight-inch Ductile Iron main will loop the proposed Multifamily road and connect back into the eight-inch main along Jewell Drive. Two new hydrants will be installed – one near the current end of Jewell Drive, and one near the midpoint of the proposed multifamily road. The duplex units will each be served by one-inch copper lines. Approximately 773 LF of eight-inch Ductile Iron main, and 546 LF of one-inch copper services will be constructed.

2.4 Water Demand

For design purposes, water demands are assumed to be equivalent to average daily sewage flows generated.

2.4.1 NYS Department of Environmental Conservation (DEC)

Water demands can be determined utilizing NYS DEC guidelines. According to NYS DEC a one bedroom unit would generate 150 gpd and two bedroom unit would generate 300 gpd. These requirements can be reduced by twenty percent if new fixtures are being used.

2.4.2 City of Watertown

The City of Watertown has indicated that their meter readings and calculations of similar City projects (Maple Courts, Fairway West, and Ives Hill Manor) result in water usage of 85 gpd for a one bedroom unit and 125 gpd from a two bedroom unit.

BUILDING	APPLICATION RATE	FACTOR	FLOW [gpd]
ELF Building	85 GPD/UNIT	18 UNITS	1,530
Future ELF BLDG	85 GPD/UNIT	18 UNITS	1,530
Duplexes	125 GPD/UNIT	10 UNITS	1,250
TOTAL			**4,310**

The average flow equates to 2.99 GPM. Using a peaking factor of 4, the peak demand is calculated to be 11.97 GPM. Calculations are shown below.

4,310 GPD/1440 min/day = 2.99 GPM (average)

4 = peaking factor

2.99 GPM * 4 = 11.97 GPM (peak)

2.5 Hydraulic Analysis

A hydrant flow test was conducted by GYMO, P.C. on 14 July, 2010 with the hydrant near the proposed driveway connection to Jewell Drive on the eight-inch main acting as the monitored hydrant and the hydrant approximately 293 feet east on the eight-inch water main serving as the flowed hydrant. The flowed hydrant, at an approximate elevation of 475.5 ft, was flowed at a value of 1,120 gpm, while the pressure dropped from 69 to 53 pounds per square inch (psi). The projected available fire flow at the flowed hydrant was 2,050 GPM at 20 psi. This hydrant flow test data was utilized in a hydraulic WaterCAD model. The additional 18 unit future building (similar to the ELF facility) demands were considered for this analysis.

Two scenarios were modeled for the project. Scenario A contained domestic demands for multifamily and two Enriched Living buildings, while simultaneously modeling an outside hose connection of 500 gpm (at hydrant near proposed entrance to ELF on Jewell). Scenario A shows that 1290 gpm is available at 20 psi, at the ELF, in addition to the 500 gpm outside hose connection that can be dedicated to fire flow in the building. The building classification, for the ELF, will require sprinklers. Refer to Appendix #3 for the hydraulic analysis and hydraulic modeling report.

Scenario B modeled domestic flows for the multifamily units and Enriched Living facilities, whiles simultaneously simulating fire at the multifamily housing. An outside hose connection of 500 gpm, placed at the highest proposed hydrant located on multifamily road, was included in the model. Scenario B shows that 1278 gpm is available at 20 psi in addition to the 500 gpm outside hose flow for fire prevention.

3.0 SANITARY SEWER FACILITIES

3.1 Existing Sanitary Sewer Facilities

An eight-inch gravity sanitary sewer main and manhole exists at the location of the proposed entrance to the ELF on Jewell Drive. The eight-inch gravity flows east along Jewell Drive to a pumping station designed during Phase I.

The Phase I pump station was designed for Phase I (5,720gpd), Phase II (3,000gpd), and future Phase III (10,720 gpd) as well as ten-unit, two-bedroom Priests apartment complex (3000gpd) located adjacent to Immaculate Heart Central High School. Phase III was anticipated to be 32 one-bedroom and 64 two bedroom units.

There is an eight-inch PVC stub-out on the south side of Jewell Drive. This eight-inch sanitary sewer flows via gravity to the Phase I pump station, where it is pumped to the aforementioned manhole located on Jewell Drive near the proposed entrance to the ELF. The Phase II pump station was designed to handle Phase II plus a portion of Phase III (20 duplexes or 5000 gpd) plus the Priest's apartment complex.

3.2 Proposed Sanitary Sewer Facilities (ELF)

The Enriched Living Facility sanitary sewers are proposed to be constructed with a series of eight-inch SDR-35 PVC gravity sewers and precast manholes throughout the site

which lead to the aforementioned manhole on Jewell Drive and eventually to the Phase I pump station. The approximately 200 linear foot proposed gravity sewer running south to north through the project will serve the ELF. This section of gravity sanitary sewer and the pump station has been designed to accommodate an additional building similar to the ELF building, if necessary.

As mentioned in the previous section, the pump station was designed to handle the flows from the ELF. It is anticipated that the pump floats will be adjusted to meet project requirements. Additional details of the pump station design can be reviewed in the attached calculations (Appendix #4) and site plans.

3.3 Proposed Sanitary Sewer Facilities (Multifamily)

The multifamily sanitary sewers are proposed to be constructed with a series of eight-inch SDR-35 PVC gravity sewers and precast manholes throughout the site which lead to a new manhole at the existing eight-inch PVC stub south of Jewell Drive and eventually to the Phase II pump station. The approximately 628 linear foot proposed gravity sewer running along the center of the proposed private street will serve the multifamily housing. Four-inch PVC laterals will connect into the main to service the buildings.

As mentioned in the previous sections, the Phase I and Phase II pump stations were designed to handle the flows from the multifamily housing. It is anticipated that the pump floats will be adjusted to meet project requirements. Additional details of the pump station designs can be reviewed in the attached calculations (Appendix #4).

4.0 HYDROLOGIC AND HYDRAULIC ANALYSES

4.1 Existing Drainage

As described briefly in the beginning of the report, Phase I and Phase II have been constructed. Phase I of the project drains by a series of catch basins and storm lines that discharge to an existing detention basin on the north side of the site. Phase II is drained by a series of catch basins and storm lines that discharge to an existing detention basin on the west corner of the site.

The existing drainage for the ELF site sheet flows from south to north to catch basins along Jewell Drive, where it then travels via stormwater piping east toward Weldon Drive and eventually is discharged to the Phase I detention basin.

There is a low lying area west of the site that collects runoff from the western portion of Phase III and discharges under Jewell Drive before eventually discharging to the Phase II detention pond.

4.2 Proposed Drainage

The proposed drainage analysis will be performed as part of the Stormwater Pollution Prevention Plan (SWPPP) report. The aforementioned low area to the west will be utilized for a stormwater treatment area, and the required stormwater quality and quantity treatment. The increase in peak flow will be attenuated in accordance with the NYS State Pollutant Discharge Elimination System (SPDES) requirements of no increase of the peak runoff from existing to proposed conditions of the 100 year - 24 hour storm event. The SWPPP will be prepared to include the total projected Phase III build out including the second ELF building. The stormwater treatment area will designed for the Phase III build out as well.

4.3 Proposed Storm Sewer Piping

The storm drainage piping will be designed to carry, at a minimum, the peak runoff of the 10 year - 24 hour storm event. Critical piping such as any roof drain leaders will carry the peak runoff of the 100 year - 1 hour storm event in accordance with building permit requirements. In addition, a 100-year overland flood route will be designed to avoid flooding of the building.

4.4 Proposed Storm Water Management

A control structure will be designed as part of the stormwater treatment area to comply with NYS SPDES guidelines for discharges from construction projects. The SWM pond will provide quantity control of the peak runoff from a 100 year - 24 hour storm event, and provide quality treatment of the first 0.9-inch of runoff from all new impervious surfaces, through the use of 24 hour extended detention.

5.0 TRAFFIC ANALYSIS

5.1 Estimated Additional Daily Traffic

By using the Trip Generation, 8th Edition by the Institute of Transportation Engineers, the amount of additional traffic that would be generated by an assisted living building is 48 Average Daily Trip ends, with four PM peak hour trip ends on adjacent street. The multifamily housing would generate an additional 74 average daily trip ends, with five PM peak hour trip ends on adjacent street. See Appendix #5 for calculations.

6.0 LIGHTING

6.1 Site Lighting

The site will generally be lit by 350 Watt pulse start metal halide lights installed 30' above finished grade. Light spillage over the property line has been kept under 0.5 footcandles as required. Refer to Sheet C101 of the site plans in Appendix #1.

7.0 LANDSCAPING

7.1 Existing Landscaping

There is no desirable landscaping on the project site. The site is currently undeveloped, and groundcover is mainly overgrown grassland, and brush with some small saplings.

7.2 Proposed Landscaping

Landscaping will be provided to comply with City of Watertown requirements. Landscaping will be chosen that is native to the area, grows well in the soil conditions of the project and fits in with the overall theme of the area.

8.0 SUMMARY

The Ives Hill Phase III will continue to build on the success that Phase I and Phase II has had in the City of Watertown. Phase III will not cause the City of Watertown's infrastructure to be exceeded, provided the improvements discussed in this report are performed. Additionally, we believe this project, as is Phase I and Phase II, to be of great value to the City of Watertown.

Patrick J. Scordo, P.E.
Director of Engineering

Brian J. Drake, I.E.
Project Engineer

APPENDIX #1

USDA/NRCS SOILS INFORMATION

other urban uses. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIw.

CmB—Claverack loamy fine sand, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in short, concave, sloping areas on the sides of ridges, knolls, and benches. Areas range from 10 to 50 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 8 inches thick. The subsoil is mottled and about 32 inches thick. It is pale brown and brown loamy sand in the upper part and dark grayish brown silty clay in the lower part. The substratum is dark grayish brown silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping, where the soil deposits are loamy rather than sandy, are small areas of moderately well drained Galen and Elmridge soils. Also included, in areas that do not have a sandy mantle, are somewhat poorly drained Rhinebeck soils and moderately well drained Hudson soils. Also included are small clay spots.

The seasonal high water table in this Claverack soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is rapid in the upper part of the subsoil and slow or very slow in the lower part of the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops. Some previously cleared areas have been planted to conifers. Some areas are used as pasture or woodland. A few areas are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. In cultivated areas drainage is commonly needed for wet spots. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve water needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

The seasonal high water table, seepage, the clayey texture, and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. Also, the seasonal high water table and poor stability are limitations for shallow excavations and buildings with basements. The seasonal high water table, potential frost action, and droughty conditions are limitations to other urban uses. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIw.

CnB—Collamer silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in convex, sloping areas on plains. Areas range from 2 to 60 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The subsoil is mottled and about 18 inches thick. It is light brownish gray to brown silt loam and silty clay loam. The substratum is mottled, grayish brown, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils in flat areas and in depressions. Also included, where bedrock is within 40 to 72 inches of the surface, are small areas of Collamer soils. Also included are small areas that have a clayey surface texture. Also included are small sandy areas.

The seasonal high water table of this Collamer soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and the subsurface layers and slow or moderately slow in the subsoil and the substratum. Runoff is medium. The capacity for the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are highly productive, farm woodlots. Some areas are in urban use. A few areas are in pasture.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed in areas used for cultivated crops. Conservation tillage, till and plant on the contour for short slopes, and strip cropping on the contour for longer slopes are suitable management practices. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing

when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no management concerns for woodland uses.

The seasonal high water table, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to use of this soil for most urban uses. Erosion is a severe hazard on building sites. Low soil strength is also a limitation for some urban uses. There are few limitations on sites for sewage lagoons and area landfills and for lawns and landscaping. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIe.

CnC—Collamer silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly on the shoulders of short and narrow, convex ridges, knolls, and benches on lowland plains. Areas range from 8 to 100 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The subsoil is mottled and about 18 inches thick. It is light grayish brown to brown silt loam to silty clay loam. The substratum is mottled, grayish brown, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils in low, flat areas and in depressions. Also included, where bedrock is within 40 to 72 inches of the surface, are small areas of Collamer soils. Also included are small areas of soils that have a clay surface layer. Also included are small sandy areas.

The seasonal high water table of this Collamer soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and subsurface layers and slow or moderately slow in the subsoil and the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are in urban use or are highly productive, farm woodlots. A few areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops, but requires careful management to control erosion. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, till and plant on the contour on the short slopes, and stripcropping on the contour on the longer slopes are suitable management practices. Crop rotation with long periods of hay, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. Erosion is a moderate hazard. During logging operations careful management is required to control erosion.

The seasonal high water table, slope, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to use of this soil for most urban uses. Erosion is a severe hazard on building sites. Low soil strength is also a limitation for some urban uses. There are few limitations on sites for area landfills and shallow excavations and for lawns and landscaping. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIIe.

CnC3—Collamer silt loam, 8 to 15 percent slopes, severely eroded. This is a sloping, very deep, moderately well drained, severely eroded soil mainly on the shoulders of short and narrow, convex ridges, knolls, and benches on lowland plains. The surface layer commonly incorporates the upper part of the subsoil. Areas range from 10 to 150 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. It is not as dark as that of the uneroded Collamer soils, and is as little as 2 inches thick. The subsoil is mottled and extends to a depth of 32 inches. It is light grayish brown to brown silt loam and silty clay loam. The substratum is mottled, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils on foot slopes and small areas of Collamer soils that have bedrock within 40 to 72 inches of the surface. Also included are small areas of soils where the surface layer is not severely eroded.

The seasonal high water table in this Collamer soil is commonly within a depth of 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and subsurface layers, and slow or moderately slow in the subsoil and the substratum. Runoff is rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil are in pasture, have been replanted to conifers, or are idle. Some areas are used for cultivated crops.

NlC—Nellis loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly in long, narrow, convex areas on flanks of hilltops and ridges on uplands. Areas range from 8 to 45 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Amenia soils on somewhat wetter parts of the landscape and, where the soils have a silty mantle, well drained Lowville soils. Also included are small areas of moderately deep, well drained and moderately well drained Galway soils. Also included are small areas where cobbly or flaggy rock fragments are in the surface layer and areas of rock outcrops.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil are used for cultivated row crops in dairy farming. Some areas are highly productive woodlots or are sugarbushes. Some areas are in urban use.

This soil is moderately suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Field strips or stripcropping help to control erosion. Crop rotation with long-term hay crops or sod, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Slope is a limitation for sewage lagoons and for both trench and area sanitary landfills. Slope and potential frost action are limitations for other urban uses. Potential for habitat is good for woodland wildlife.

The capability subclass is IIIe.

NlD—Nellis loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil mainly in long, narrow areas on the sides of ridges and hills on uplands. Areas range from 8 to 30 acres.

Typically, the surface layer is brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of well drained Lowville soils that have a silty mantle. Also included are small very severely eroded areas. Also included are small areas of rock outcrops and small areas where large stones are on the surface.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil are used for pasture. Some areas are used for crops or are small woodlots. Some areas are in urban use.

This soil is poorly suited to cultivated crops because of slope. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, crop rotation with long-term hay crops or sod, using cover crops, returning crop residue to the soil, and installing diversions help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The main management concerns are the moderate erosion hazard and the equipment limitation, both because of slope. Careful management helps to control erosion during logging operations.

Slope is a limitation of this soil for most urban uses. Potential for habitat is good for woodland wildlife.

The capability subclass is IVe.

NmE—Nellis and Madrid soils, steep. This map unit consists of steep, very deep, well drained Nellis and Madrid soils mainly on the sides of hills and ridges on uplands. Areas range from 20 to 100 acres. Some areas are mostly Nellis soils, some are mostly Madrid soils, and some consist of both. Slope ranges from 25 to 50 percent.

The total acreage of the map unit is about 60 percent Nellis soils, 30 percent Madrid soils, and 10 percent other soils. These soils were mapped together because they are similar in use and management.

Typically, the surface layer of the Nellis soil is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam to a depth of about 21 inches. The

substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of the Madrid soil is grayish brown sandy loam about 8 inches thick. In the upper part the subsoil is brown sandy loam to dark brown fine sandy loam about 11 inches thick. In the lower part it is dark brown fine sandy loam about 6 inches thick. The substratum is dark brown, firm gravelly fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Lowville soils. Also included are small severely eroded areas. Also included are areas where few stones or boulders are on the surface and areas of rock outcrops.

The rate of water movement through the Nellis soil is moderate in the subsoil and moderately slow or slow in the substratum, and through the Madrid soil is moderate in the surface layer and the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is rapid. The capacity of these soils to store water available for plant growth is high. The surface layer is moderately acid to neutral in the Nellis soils and strongly acid to neutral in the Madrid soils.

Most areas of these soils are woodland or are reverting to brush. Some areas are in permanent pasture or are idle.

These soils are not suited to cultivated crops because of slope.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry or too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. The main management concerns are the moderate erosion hazard and the moderate equipment limitation, both because of slope. Careful management is needed to control erosion during logging operations.

Slope is a limitation of these soils for urban use. Potential for habitat is good for woodland wildlife.

The capability subclass is VIIe.

Nn—Newstead silt loam. This is a nearly level, moderately deep, somewhat poorly drained and poorly drained soil in long, narrow or large, irregularly shaped areas on uplands. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent. Areas range from 10 to 100 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 14 inches thick. It is grayish brown silt loam in the upper part and grayish brown gravelly loam in the lower part. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 30 inches. Gray limestone bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of very deep, somewhat poorly drained and poorly drained Massena soils and very poorly drained and poorly drained Sun soils. Also included are small areas of somewhat excessively drained and excessively drained Benson soils and well drained and moderately well drained Galway soils on the drier parts of the landscape. Also included are small stony areas.

The seasonal high water table in this Newstead soil is commonly within 1/2 to 1 foot of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer, the subsoil, and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer ranges from moderately acid to mildly alkaline.

Most areas of this soil are used for hay crops or pasture. Some areas are forest or are reverting to brush. This is a prime farmland soil, where drained.

This soil is moderately suited to cultivated crops. The seasonal high water table is the main limitation. Drainage is needed if the soil is used for cultivated crops. Using cover crops and returning crop residue and applying manure to the soil help to improve soil tilth in the surface layer and to maintain the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, depth to bedrock, and potential frost action are limitations of this soil for urban uses. Potential for habitat is fair for wetland wildlife.

The capability subclass is IIIw.

NoA—Niagara silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil in smooth, broad, irregularly shaped areas on lowland plains. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 22 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown to dark brown silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Collamer soils, poorly drained and very poorly drained Canandaigua soils, and, where bedrock is at a depth of 40 to 72 inches, Niagara soils.

Also included are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions.

The seasonal high water table in this Niagara soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are used as pasture or forest.

This soil is moderately suited to crops. The main limitation is the seasonal high water table. If the soil is properly managed, row crops can be grown intensively. Drainage is needed if the soil is used for cultivated crops. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the soil, and potential frost action are limitations of this soil for urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

NoB—Niagara silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil in concave, oblong areas on lowland plains. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 22 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Collamer soils, poorly drained and very poorly drained Canandaigua soils, and Niagara soils where bedrock is at a depth of 40 to 72 inches. Also included are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions.

The seasonal high water table in this Niagara soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, if drained. Some areas are used as pasture or forest.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. If the soil is properly managed, row crops can be grown intensively. Drainage is needed if the soil is used for cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the soil, and potential frost action are limitations of this soil for urban use. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

NpB—Niagara silt loam, bedrock substratum, 2 to 6 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil in concave or undulating areas on lake plains. Areas range from 10 to 20 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 16 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown silt loam to a depth of 48 inches. Bedrock is at a depth of 48 inches.

Included with this soil in mapping are small areas of moderately well drained Collamer soils and, where bedrock is at a depth of 40 to 72 inches, poorly drained and very poorly drained Canandaigua and Niagara soils.

TABLE 17.--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				
NbF*:												
Nassau	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Manlius	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
N1A, N1B, N1C, N1D Nellis	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Low.
NmE*:												
Nellis	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Low.
Madrid	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Nn Newstead	C	None	---	---	0.5-1.0	Perched	Dec-May	20-40	Hard	High	High	Low.
NoA, NoB Niagara	C	None	---	---	0.5-1.5	Apparent	Dec-May	>60	---	High	High	Low.
NpB Niagara	C	None	---	---	0.5-1.5	Apparent	Dec-May	40-60	Hard	High	High	Low.
Pa Palms	A/D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High	Moderate.
PhA, PhB Phelps	B	None	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High	Moderate	Low.
PkB*:												
Pinckney	C	None	---	---	1.5-2.0	Perched	Feb-May	>60	---	Moderate	Low	Moderate.
Ensley	B/D	None	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	High	High	Low.
Pm*, Pn*. Pits												
PoB, PoC Plainfield	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
PpD*:												
Plainfield	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Windsor	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Ps Pootatuck	B	Frequent	Brief	Nov-Apr	1.5-2.5	Apparent	Nov-Apr	>60	---	Moderate	Moderate	Moderate.

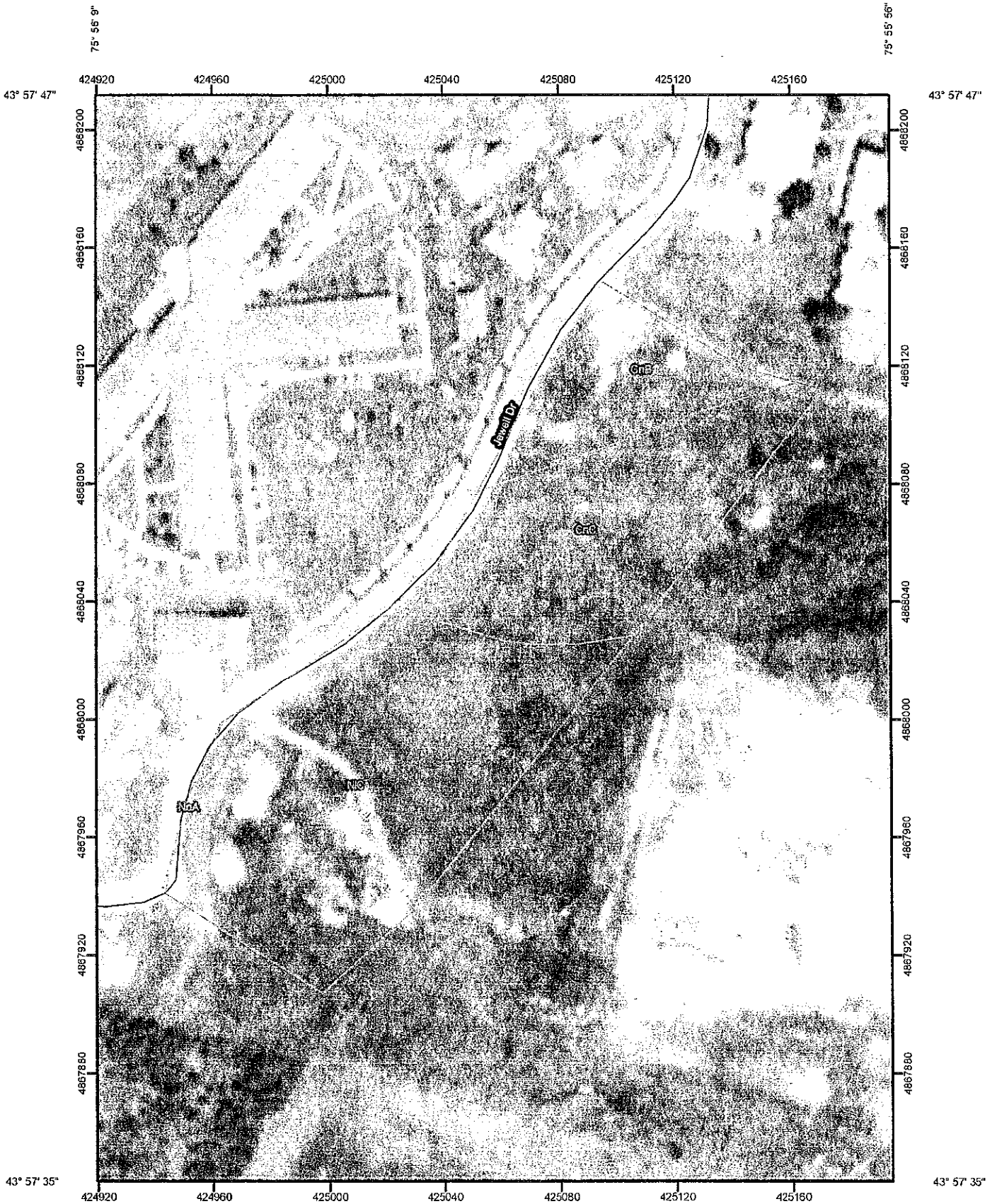
See footnote at end of table.

TABLE 17.--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				
BmC*, BmD*: Bice	B	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Pinckney	C	None	---	---	1.5-2.0	---	Feb-May	>60	---	Moderate	Low	Moderate.
BnA, BnB, BnC Blasdell	A	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
BoA, BoB Bombay	B	None	---	---	1.5-2.0	Perched	Mar-May	>60	---	Moderate	Moderate	Low.
BpB, BpC Bonaparte	A	None	---	---	>6.0	---	---	>60	---	Low	Low	Moderate.
Bt Boots	A/D	Occasional	Long	Nov-May	+1-1.0	Apparent	Nov-Aug	>60	---	High	Moderate	Low.
Ca, Cb Canandaigua	D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High	Low.
Cc Carbondale	A/D	None	---	---	+1-1.0	Apparent	Sep-May	>60	---	High	High	Moderate.
Cd Carlisle	A/D	None	---	---	+.5-1.0	Apparent	Sep-Jun	>60	---	High	High	Low.
ChB Chatfield	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
CkC*, CkE*: Chatfield	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
Rock outcrop.												
ClA, ClB Chaumont	D	None	---	---	0.5-1.5	Perched	Dec-May	20-40	Hard	High	High	Low.
CmA, CmB Claverack	C	None	---	---	1.5-2.0	Perched	Nov-May	>60	---	Moderate	Low	Moderate.
CnB, CnC, CnC3 Collamer	C	None	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High	Moderate	Low.
CoB Collamer	C	None	---	---	1.5-2.0	Apparent	Mar-May	40-60	Hard	High	Moderate	Low.
Cp Covington	D	None	---	---	0.5-1.0	Apparent	Oct-May	>60	---	Moderate	High	Moderate.

See footnote at end of table.

Soil Map—Jefferson County, New York
(IVES HILL PHASE III SOILS MAP)



Map Unit Legend

Jefferson County, New York (NY045)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CnB	Collamer silt loam, 3 to 8 percent slopes	0.7	14.7%
CnC	Collamer silt loam, 8 to 15 percent slopes	1.5	30.9%
NIC	Nellis loam, 8 to 15 percent slopes	2.7	54.1%
NoA	Niagara silt loam, 0 to 3 percent slopes	0.0	0.3%
Totals for Area of Interest		**5.0**	**100.0%**

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:1,760 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jefferson County, New York
Survey Area Data: Version 7, Feb 5, 2010

Date(s) aerial images were photographed: 7/30/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

APPENDIX #2

CIVIL PLANS

APPENDIX #3

FLOW TEST DATA
HYDRAULIC CALCULATIONS

WATER COMPANY

FLOW TEST REPORT

G·Y·M·O
ARCHITECTURE, ENGINEERING & LAND SURVEYING,P.C.
220 Sterling Street, Watertown, New York 13601
tel.315.788.3900 fax.315.788.0668 e-mail. gymopc@gymopc.com

LOCATION: IVES HILL ENRICHED LIVING FACILITY DATE: 7/14/10

TEST MADE BY: THR/BSD (GYMO, PC) TIME: 9:00 am

REPRESENTATIVE OF: GYMO, PC

WITNESS: City Water Dept.

PURPOSE OF TEST: FLOW CHARACTERISTICS IN PROJECT AREA

CONSUMPTION RATE DURING TEST: 1120 gpm

IF PUMPS AFFECT TEST, INDICATE PUMPS OPERATING: NA

FLOW HYDRANTS:

	A1	A2	A3	TOTAL
SIZE NOZZLE				
PITOT READING				
GPM				

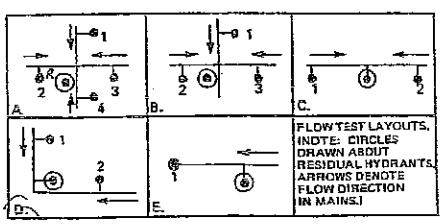
STATIC B: 69 PSI RESIDUAL B: 53 PSI PSI

PROJECTED RESULTS: @ 20 PSI RESIDUAL 2080 GPM; OR @ _____ PSI RESIDUAL _____ GPM

REMARKS: _____

LOCATION MAP: SHOW LINE SIZES AND DISTANCE TO NEXT CROSS CONNECTED LINE. SHOW VALVES AND HYDRANT BRANCH SIZE. INDICATE NORTH, SHOW FLOWING HYDRANTS – LABEL A1, A2, A3. SHOW LOCATION OF STATIC AND RESIDUAL – LABEL B.

INDICATE B HYDRANT_____ SPRINKLER_____ OTHER (IDENTIFY)_____



LAYOUT OF TEST. AFTER THE LOCATION AT WHICH THE TEST IS TO BE RUN HAS BEEN DETERMINED, A GROUP OF TEST HYDRANTS IN THE VICINITY IS SELECTED. ONCE SELECTED, DUE CONSIDERATION SHOULD BE GIVEN TO POTENTIAL INTERFERENCE TO TRAFFIC FLOW PATTERNS, DAMAGE TO SURROUNDINGS (E.G., ROADWAYS, SIDEWALKS, LANDSCAPES, VEHICLES, AND PEDESTRIANS), AND POTENTIAL FLOODING PROBLEMS BOTH LOCAL AND REMOTE FROM THE TEST SITE. ONE HYDRANT IS CHOSEN TO BE THE RESIDUAL HYDRANT AT WHICH THE NORMAL PRESSURE WILL BE OBSERVED WITH THE OTHER HYDRANTS IN THE GROUP CLOSED, AND THE RESIDUAL PRESSURE WILL BE OBSERVED WITH THE OTHER HYDRANTS FLOWING. THIS HYDRANT IS CHOSEN SO THAT THE HYDRANTS WHICH WILL BE FLOWED ARE THE NEXT HYDRANTS BETWEEN IT AND THE LARGER MAINS, WHICH CONSTITUTE THE IMMEDIATE SOURCES OF SUPPLY IN THE AREA.
THE NUMBER OF HYDRANTS TO BE USED IN ANY TEST DEPENDS UPON THE STRENGTH OF THE DISTRIBUTION SYSTEM IN THE VICINITY OF THE TEST LOCATION. TO OBTAIN SATISFACTORY TEST RESULTS FOR THEORETICAL CALCULATION OF EXPECTED FLOWS OR RATED CAPACITIES, SUFFICIENT DISCHARGE SHOULD BE ACHIEVED TO CAUSE A DROP IN PRESSURE AT THE RESIDUAL HYDRANT OF AT LEAST 25 PERCENT OR TO FLOW THE TOTAL DEMAND NECESSARY FOR FIRE FIGHTING PURPOSES. IF THE MAINS ARE SMALL AND THE SYSTEM ID WEAK, ONLY ONE OR TWO HYDRANTS NEED TO BE FLOWED. IF, ON THE OTHER HAND, THE MAINS ARE LARGE AND THE SYSTEM IS STRONG, IT MAY BE NECESSARY TO FLOW AS MANY AS SEVEN OR EIGHT HYDRANTS.

IVES HILL ENRICHED LIVING FACILITY 7/14/10 2010-077

FLOW TEST ANALYSIS

$$Q_o = Q_t \left(\frac{P_s - P_o}{P_s - P_t} \right)^{0.54}$$

Q_o = flow at pressure P_o (gpm)
Q_t = hydrant test flow (gpm)
P_s = static pressure during test (psi)
P_o = Pressure at which Q_o is to be calculated (psi)
P_t = residual pressure during test (psi)

Q_t = 1120 gpm
P_s = 69 psi
P_o = 20 psi
P_t = 53 psi

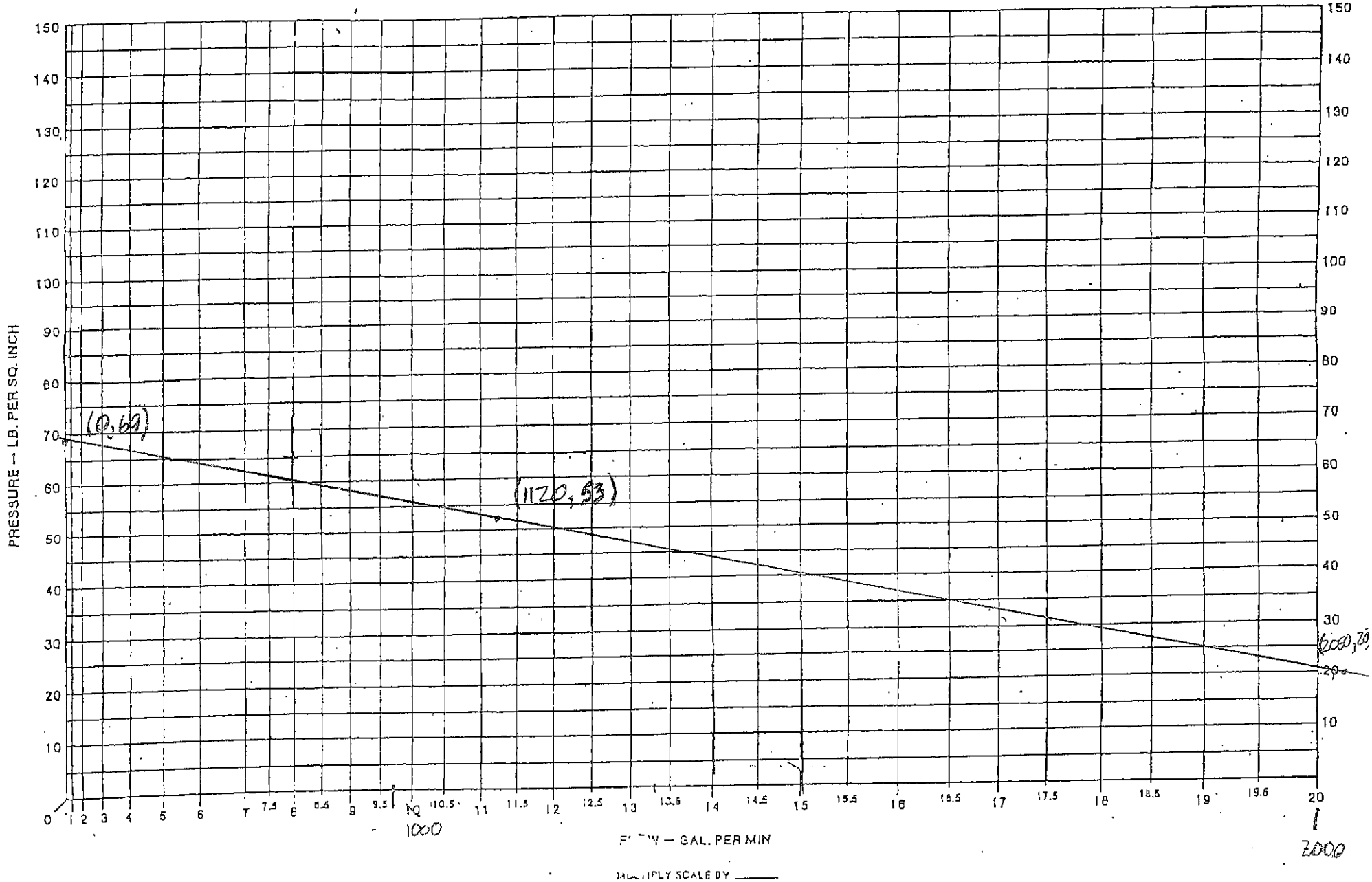
$$Q_o = 1120 \left(\frac{69 - 20}{69 - 53} \right)^{0.54} = 2049.74 \text{ gpm}$$

head (ft)	Flow (gpm)
159.39 (69 psi)	0 gpm
122.43 (53 psi)	1120 gpm
46.20 (20 psi)	2050 gpm

Gozalkowski, Yaussi, Moncrief & Olley
ARCHITECTURE, ENGINEERING & LAND SURVEYING, P.C.

HYDRANT FLOW DATA SUMMARY

City Watertown State NY Zip 13601 ~~Witnessed~~ PERFORMED by BJD, DTP, City Water Dept Date 7/14/2010



Proposed water line

Existing water line

Scenario B Hydrant

Scenario A Hydrant

PHASE I
PHASE II

CONGREGATE BUILDING

IVES HILL SENIOR LIVING CONGREGATE BUILDING

CB #21
T.S. 477.50
INV. 469.16

CB #18
T.S. 479.21
INV. 469.70

S.D. CPP

TRANSFORMER

GARAGE

JEWELL DRIVE

REGIONAL HYDRANT
60 PSI RESIDUAL
65 PSI RESIDUAL

FUTURE SENIOR LIVING FACILITY

PHASE III

PHASE IV

IVES HILL LAND COMPANY
(L.958 P.333)
14-46-101

MAPLE COURT APARTMENTS
(L.832 P.384)
14-49-101.3

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft.

FOR APPROVALS ONLY
NOT FOR CONSTRUCTION

PROPOSED
MULTIFAMILY
HOUSING

NORTH

18' WIDE ACCESS EASEMENT

INV. 470.28

X:\2010\2010-077A-ives hills retrem\Drawings\Final\Engineering\watermodel_scenarioB.dwg, 7/18/2010 2:03:51 PM, SHARP MX-2300N PCL6

ARCHITECTURE, ENGINEERING & LAND SURVEYING P.C.
220 STERLING STREET
WATERTOWN, NEW YORK, 13601
TEL (315) 788-6500
FAX (315) 788-0466
www.gymoassociates.com
GYMO

HYDRAULIC ANALYSIS

IVES HILL-PHASE III
IVES HILL - JEWELL DRIVE
CITY OF WATERTOWN, NY

Project No:	2010-077
Scale:	As Noted
Date:	6/18/10
Drawn By:	BJD
Designed By:	BJD
Checked By:	
Date Issued:	7/20/10
Drwg. No.	A

SCENARIO A

Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	
30	J-1	476.50	<None>	<Collection: 1 item>	500	545.24	29.7	
32	J-2	476.00	<None>	<Collection: 0 items>	0	544.67	29.7	
34	J-3	479.00	<None>	<Collection: 0 items>	0	541.85	27.2	
36	J-4	479.50	<None>	<Collection: 0 items>	0	543.41	27.7	
39	J-5	476.00	<None>	<Collection: 0 items>	0	544.63	29.7	
44	J-7	473.00	<None>	<Collection: 0 items>	0	544.63	31.0	
46	J-8	471.00	<None>	<Collection: 0 items>	0	544.57	31.8	
48	J-9	471.00	<None>	<Collection: 0 items>	0	544.57	31.8	
50	J-10	471.00	<None>	<Collection: 0 items>	0	544.57	31.8	
56	J-13	470.20	<None>	<Collection: 0 items>	0	544.55	32.2	
58	J-14	471.50	<None>	<Collection: 0 items>	0	544.54	31.6	
60	J-15	471.50	<None>	<Collection: 0 items>	0	544.54	31.6	
62	J-16	471.00	<None>	<Collection: 0 items>	0	544.53	31.8	
64	J-17	471.80	<None>	<Collection: 0 items>	0	544.52	31.5	
66	J-18	475.50	<None>	<Collection: 0 items>	0	544.48	29.8	
70	J-19	470.00	<None>	<Collection: 0 items>	0	544.52	32.2	
72	J-20	469.50	<None>	<Collection: 0 items>	0	544.52	32.5	
74	J-21	469.50	<None>	<Collection: 0 items>	0	544.52	32.5	
76	J-22	469.50	<None>	<Collection: 0 items>	0	544.52	32.5	
78	J-23	473.00	<None>	<Collection: 0 items>	0	544.57	31.0	
80	J-24	472.50	<None>	<Collection: 0 items>	0	544.63	31.2	
82	J-25	472.00	<None>	<Collection: 0 items>	0	544.63	31.4	
84	J-26	470.50	<None>	<Collection: 0 items>	0	544.63	32.1	
86	J-27	469.90	<None>	<Collection: 0 items>	0	544.63	32.3	
88	J-28	468.50	<None>	<Collection: 0 items>	0	544.63	32.9	
90	J-29	468.00	<None>	<Collection: 0 items>	0	544.63	33.2	
92	J-30	468.00	<None>	<Collection: 0 items>	0	544.63	33.2	
94	J-31	468.00	<None>	<Collection: 0 items>	0	544.63	33.2	
96	J-32	468.20	<None>	<Collection: 0 items>	0	544.63	33.1	
98	J-33	468.00	<None>	<Collection: 0 items>	0	544.63	33.2	
101	J-35	467.90	<None>	<Collection: 0 items>	0	544.63	33.2	
103	J-36	468.10	<None>	<Collection: 0 items>	0	544.63	33.1	
105	J-37	469.00	<None>	<Collection: 0 items>	0	544.63	32.7	
107	J-38	469.30	<None>	<Collection: 0 items>	0	544.63	32.6	
109	J-39	470.00	<None>	<Collection: 0 items>	0	544.63	32.3	
111	J-40	470.10	<None>	<Collection: 0 items>	0	544.63	32.2	
113	J-41	470.80	<None>	<Collection: 0 items>	0	544.63	31.9	
119	J-43	480.75	<None>	<Collection: 2 items>	1,294	531.55	22.0	← E.L
121	J-44	480.75	<None>	<Collection: 1 item>	4	541.85	26.4	
124	J-45	474.00	<None>	<Collection: 0 items>	0	544.63	30.6	
132	J-49	474.00	<None>	<Collection: 0 items>	0	544.64	30.6	
135	J-50	478.50	<None>	<Collection: 0 items>	0	544.63	28.6	
137	J-51	479.00	<None>	<Collection: 1 item>	0	544.63	28.4	
139	J-52	482.20	<None>	<Collection: 0 items>	0	544.63	27.0	
141	J-53	482.20	<None>	<Collection: 0 items>	0	544.63	27.0	
143	J-54	482.20	<None>	<Collection: 0 items>	0	544.63	27.0	
145	J-55	482.40	<None>	<Collection: 0 items>	0	544.63	26.9	
147	J-56	483.40	<None>	<Collection: 0 items>	0	544.63	26.5	
149	J-57	484.50	<None>	<Collection: 0 items>	0	544.63	26.0	
151	J-58	484.50	<None>	<Collection: 0 items>	0	544.63	26.0	
153	J-59	483.50	<None>	<Collection: 0 items>	0	544.63	26.4	
155	J-60	472.00	<None>	<Collection: 0 items>	0	544.63	31.4	
157	J-61	471.00	<None>	<Collection: 0 items>	0	544.63	31.9	
161	J-62	484.50	<None>	<Collection: 0 items>	0	544.63	26.0	
163	J-63	485.00	<None>	<Collection: 1 item>	0	544.62	25.8	
167	J-64	485.00	<None>	<Collection: 1 item>	0	544.62	25.8	

173	J-66	485.00	<None>	<Collection: 1 item>	0	544.63	25.8
175	J-67	483.60	<None>	<Collection: 0 items>	0	544.63	26.4
177	J-68	483.00	<None>	<Collection: 1 item>	0	544.63	26.7
179	J-69	483.00	<None>	<Collection: 1 item>	0	544.63	26.7
181	J-70	483.00	<None>	<Collection: 1 item>	0	544.62	26.7
183	J-71	483.00	<None>	<Collection: 1 item>	0	544.62	26.7
185	J-72	478.75	<None>	<Collection: 0 items>	0	544.63	28.5
188	J-73	479.00	<None>	<Collection: 1 item>	0	544.63	28.4
190	J-74	485.00	<None>	<Collection: 1 item>	0	544.63	25.8

x :2010\2010-077A-tves hills retirem\Drawings\Final\Engineering\watermodel_scenarioA.wtg

Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has Us Define Length
29	P-1	14.08	R-3	PMP-1	42.0	Ductile Iron	130.0	False	0.000	1,802	0.42	0.000	True
31	P-2	15.26	PMP-1	J-1	42.0	Ductile Iron	130.0	False	0.000	1,802	0.42	0.000	True
33	P-3	37.17	J-1	J-2	8.0	Ductile Iron	130.0	False	0.000	910	5.81	0.015	False
35	P-4	212.72	J-2	J-3	8.0	Ductile Iron	130.0	False	0.000	840	5.36	0.013	False
37	P-5	351.69	J-3	J-4	8.0	Ductile Iron	130.0	False	0.000	-458	2.93	0.004	False
41	P-8	189.22	J-5	J-1	8.0	Ductile Iron	130.0	False	0.000	-392	2.50	0.003	False
45	P-10	57.79	J-45	J-7	8.0	Ductile Iron	130.0	False	0.000	54	0.35	0.000	False
47	P-11	450.29	J-7	J-8	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
49	P-12	68.82	J-8	J-9	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
51	P-13	10.68	J-9	J-10	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
57	P-16	132.84	J-10	J-13	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
59	P-17	93.47	J-13	J-14	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
61	P-18	6.38	J-14	J-15	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
63	P-19	51.77	J-15	J-16	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
65	P-20	99.38	J-16	J-17	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
67	P-21	248.13	J-4	J-18	8.0	Ductile Iron	130.0	False	0.000	-458	2.93	0.004	False
68	P-22	45.16	J-18	J-5	8.0	Ductile Iron	130.0	False	0.000	-392	2.50	0.003	False
69	P-23	320.66	J-17	J-18	8.0	Ductile Iron	130.0	False	0.000	66	0.42	0.000	False
71	P-24	127.53	J-17	J-19	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
73	P-25	28.08	J-19	J-20	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
75	P-26	70.11	J-20	J-21	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
77	P-27	19.10	J-20	J-22	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
79	P-28	210.33	J-8	J-23	4.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
81	P-29	175.03	J-7	J-24	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
83	P-30	39.67	J-24	J-25	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
85	P-31	96.04	J-25	J-26	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
87	P-32	113.47	J-26	J-27	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
89	P-33	61.85	J-27	J-28	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
91	P-34	64.60	J-28	J-29	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
93	P-35	17.26	J-29	J-30	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
95	P-36	8.67	J-30	J-31	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
97	P-37	30.00	J-31	J-32	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
99	P-38	18.82	J-32	J-33	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
104	P-40	63.35	J-35	J-36	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
106	P-41	38.67	J-36	J-37	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
108	P-42	26.80	J-37	J-38	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
110	P-43	36.00	J-38	J-39	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
112	P-44	7.35	J-39	J-40	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
114	P-45	20.48	J-40	J-41	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
120	P-48	86.21	J-3	J-43	6.0	Ductile Iron	130.0	True	0.000	1,294	14.69	0.120	False
122	P-49	20.00	J-3	J-44	6.0	Ductile Iron	130.0	True	0.000	4	0.05	0.000	False
123	P-50	14.86	J-35	J-33	8.0	Ductile Iron	130.0	False	0.000	12	0.07	0.000	False
133	P-55	257.15	J-2	J-49	8.0	Ductile Iron	130.0	False	0.000	70	0.44	0.000	False
134	P-56	19.89	J-49	J-45	8.0	Ductile Iron	130.0	False	0.000	59	0.38	0.000	False
136	P-57	134.10	J-49	J-50	8.0	Ductile Iron	130.0	False	0.000	11	0.07	0.000	False
138	P-58	21.63	J-50	J-51	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
142	P-60	17.90	J-52	J-53	8.0	Ductile Iron	130.0	False	0.000	10	0.06	0.000	False
144	P-61	6.00	J-53	J-54	8.0	Ductile Iron	130.0	False	0.000	9	0.06	0.000	False
146	P-62	10.51	J-54	J-55	8.0	Ductile Iron	130.0	False	0.000	9	0.06	0.000	False
148	P-63	62.06	J-55	J-56	8.0	Ductile Iron	130.0	False	0.000	9	0.05	0.000	False
150	P-64	63.73	J-56	J-57	8.0	Ductile Iron	130.0	False	0.000	9	0.05	0.000	False
152	P-65	15.49	J-57	J-58	8.0	Ductile Iron	130.0	False	0.000	8	0.05	0.000	False
154	P-66	124.18	J-58	J-59	8.0	Ductile Iron	130.0	False	0.000	7	0.05	0.000	False
156	P-67	243.12	J-59	J-60	8.0	Ductile Iron	130.0	False	0.000	7	0.05	0.000	False
158	P-68	94.75	J-41	J-61	8.0	Ductile Iron	130.0	False	0.000	-12	0.07	0.000	False
159	P-69	352.98	J-61	J-45	8.0	Ductile Iron	130.0	False	0.000	-5	0.03	0.000	False
160	P-70	51.08	J-60	J-61	8.0	Ductile Iron	130.0	False	0.000	7	0.05	0.000	False
162	P-71	31.31	J-59	J-62	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
164	P-72	83.05	J-58	J-63	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
168	P-75	83.19	J-64	J-57	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
174	P-79	39.61	J-57	J-66	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
176	P-80	8.25	J-56	J-67	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
178	P-81	40.30	J-68	J-55	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
180	P-82	38.09	J-53	J-69	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
182	P-83	64.93	J-70	J-54	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
184	P-84	64.84	J-52	J-71	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
187	P-86	88.57	J-72	J-52	8.0	Ductile Iron	130.0	False	0.000	10	0.06	0.000	False
189	P-87	20.40	J-72	J-73	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
191	P-88	37.55	J-58	J-74	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
193	P-89	12.06	J-72	J-50	8.0	Ductile Iron	130.0	False	0.000	-10	0.07	0.000	False

Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
28	PMP-1	475.00	Pump Definition - 1	On	475.00	545.24	1,802	70.24

SCENARIO B

Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	
30	J-1	476.50	<None>	<Collection: 1 item>	0	546.33	30.2	
32	J-2	476.00	<None>	<Collection: 0 items>	0	545.23	30.0	
34	J-3	479.00	<None>	<Collection: 0 items>	0	545.22	28.6	
36	J-4	479.50	<None>	<Collection: 0 items>	0	545.20	28.4	
39	J-5	476.00	<None>	<Collection: 0 items>	0	545.41	30.0	
44	J-7	473.00	<None>	<Collection: 0 items>	0	538.20	28.2	
46	J-8	471.00	<None>	<Collection: 0 items>	0	540.75	30.2	
48	J-9	471.00	<None>	<Collection: 0 items>	0	541.14	30.3	
50	J-10	471.00	<None>	<Collection: 0 items>	0	541.20	30.4	
56	J-13	470.20	<None>	<Collection: 0 items>	0	541.95	31.0	
58	J-14	471.50	<None>	<Collection: 0 items>	0	542.48	30.7	
60	J-15	471.50	<None>	<Collection: 0 items>	0	542.52	30.7	
62	J-16	471.00	<None>	<Collection: 0 items>	0	542.81	31.1	
64	J-17	471.80	<None>	<Collection: 0 items>	0	543.37	31.0	
66	J-18	475.50	<None>	<Collection: 0 items>	0	545.19	30.2	
70	J-19	470.00	<None>	<Collection: 0 items>	0	543.37	31.7	
72	J-20	469.50	<None>	<Collection: 0 items>	0	543.37	32.0	
74	J-21	469.50	<None>	<Collection: 0 items>	0	543.37	32.0	
76	J-22	469.50	<None>	<Collection: 0 items>	0	543.37	32.0	
78	J-23	473.00	<None>	<Collection: 0 items>	0	540.75	29.3	
80	J-24	472.50	<None>	<Collection: 0 items>	0	537.90	28.3	
82	J-25	472.00	<None>	<Collection: 0 items>	0	537.83	28.5	
84	J-26	470.50	<None>	<Collection: 0 items>	0	537.67	29.1	
86	J-27	469.90	<None>	<Collection: 0 items>	0	537.47	29.2	
88	J-28	468.50	<None>	<Collection: 0 items>	0	537.37	29.8	
90	J-29	468.00	<None>	<Collection: 0 items>	0	537.26	30.0	
92	J-30	468.00	<None>	<Collection: 0 items>	0	537.23	30.0	
94	J-31	468.00	<None>	<Collection: 0 items>	0	537.21	29.9	
96	J-32	468.20	<None>	<Collection: 0 items>	0	537.16	29.8	
98	J-33	468.00	<None>	<Collection: 0 items>	0	537.13	29.9	
101	J-35	467.90	<None>	<Collection: 0 items>	0	537.11	29.9	
103	J-36	468.10	<None>	<Collection: 0 items>	0	537.00	29.8	
105	J-37	469.00	<None>	<Collection: 0 items>	0	536.93	29.4	
107	J-38	469.30	<None>	<Collection: 0 items>	0	536.89	29.2	
109	J-39	470.00	<None>	<Collection: 0 items>	0	536.83	28.9	
111	J-40	470.10	<None>	<Collection: 0 items>	0	536.81	28.9	
113	J-41	470.80	<None>	<Collection: 0 items>	0	536.78	28.5	
119	J-43	480.75	<None>	<Collection: 2 items>	4	545.22	27.9	← E.L.f
121	J-44	480.75	<None>	<Collection: 1 item>	4	545.22	27.9	
124	J-45	474.00	<None>	<Collection: 0 items>	0	538.11	27.7	
132	J-49	474.00	<None>	<Collection: 0 items>	0	538.13	27.7	
135	J-50	478.50	<None>	<Collection: 0 items>	0	535.45	24.6	
137	J-51	479.00	<None>	<Collection: 1 item>	0	535.45	24.4	
139	J-52	482.20	<None>	<Collection: 0 items>	0	533.44	22.2	
141	J-53	482.20	<None>	<Collection: 0 items>	0	533.09	22.0	
143	J-54	482.20	<None>	<Collection: 0 items>	0	532.97	22.0	
145	J-55	482.40	<None>	<Collection: 0 items>	0	532.76	21.8	
147	J-56	483.40	<None>	<Collection: 0 items>	0	531.52	20.8	
149	J-57	484.50	<None>	<Collection: 0 items>	0	532.17	20.6	
151	J-58	484.50	<None>	<Collection: 0 items>	0	532.33	20.7	
153	J-59	483.50	<None>	<Collection: 0 items>	0	533.60	21.7	
155	J-60	472.00	<None>	<Collection: 0 items>	0	536.09	27.7	
157	J-61	471.00	<None>	<Collection: 0 items>	0	536.62	28.4	
161	J-62	484.50	<None>	<Collection: 0 items>	0	533.60	21.2	
163	J-63	485.00	<None>	<Collection: 1 item>	0	532.32	20.5	
167	J-64	485.00	<None>	<Collection: 1 item>	0	532.16	20.4	

173	J-66	485.00	<None>	<Collection: 1 item>	0	532.17	20.4
175	J-67	483.60	<None>	<Collection: 2 items>	1,778	529.75	20.0
177	J-68	483.00	<None>	<Collection: 1 item>	0	532.75	21.5
179	J-69	483.00	<None>	<Collection: 1 item>	0	533.08	21.7
181	J-70	483.00	<None>	<Collection: 1 item>	0	532.96	21.6
183	J-71	483.00	<None>	<Collection: 1 item>	0	533.43	21.8
185	J-72	478.75	<None>	<Collection: 0 items>	0	535.21	24.4
188	J-73	479.00	<None>	<Collection: 1 item>	0	535.21	24.3
190	J-74	485.00	<None>	<Collection: 1 item>	0	532.32	20.5

← M.F Hydra

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Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has Use Defined Length
29	P-1	14.08	R-3	PMP-1	42.0	Ductile Iron	130.0	False	0.000	1,790	0.41	0.000	True
31	P-2	15.26	PMP-1	J-1	42.0	Ductile Iron	130.0	False	0.000	1,790	0.41	0.000	True
33	P-3	37.17	J-1	J-2	8.0	Ductile Iron	130.0	False	0.000	1,299	8.29	0.030	False
35	P-4	212.72	J-2	J-3	8.0	Ductile Iron	130.0	False	0.000	49	0.31	0.000	False
37	P-5	361.69	J-3	J-4	8.0	Ductile Iron	130.0	False	0.000	41	0.26	0.000	False
41	P-8	189.22	J-5	J-1	8.0	Ductile Iron	130.0	False	0.000	-491	3.13	0.005	False
45	P-10	57.79	J-45	J-7	8.0	Ductile Iron	130.0	False	0.000	-254	1.62	0.001	False
47	P-11	450.29	J-7	J-8	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
49	P-12	68.82	J-8	J-9	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
51	P-13	10.68	J-9	J-10	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
57	P-16	132.84	J-10	J-13	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
59	P-17	93.47	J-13	J-14	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
61	P-18	6.38	J-14	J-15	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
63	P-19	51.77	J-15	J-16	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
65	P-20	99.38	J-16	J-17	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
67	P-21	248.13	J-4	J-18	8.0	Ductile Iron	130.0	False	0.000	41	0.26	0.000	False
68	P-22	45.16	J-18	J-5	8.0	Ductile Iron	130.0	False	0.000	-491	3.13	0.005	False
69	P-23	320.66	J-17	J-18	8.0	Ductile Iron	130.0	False	0.000	-531	3.39	0.006	False
71	P-24	127.53	J-17	J-19	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
73	P-25	28.08	J-19	J-20	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
75	P-26	70.11	J-20	J-21	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
77	P-27	19.10	J-20	J-22	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
79	P-28	210.33	J-8	J-23	4.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
81	P-29	175.03	J-7	J-24	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
83	P-30	39.67	J-24	J-25	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
85	P-31	96.04	J-25	J-26	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
87	P-32	113.47	J-26	J-27	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
89	P-33	61.85	J-27	J-28	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
91	P-34	64.60	J-28	J-29	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
93	P-35	17.26	J-29	J-30	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
95	P-36	8.67	J-30	J-31	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
97	P-37	30.00	J-31	J-32	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
99	P-38	18.82	J-32	J-33	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
104	P-40	63.35	J-35	J-36	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
106	P-41	38.67	J-36	J-37	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
108	P-42	26.80	J-37	J-38	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
110	P-43	36.00	J-38	J-39	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
112	P-44	7.35	J-39	J-40	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
114	P-45	20.48	J-40	J-41	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
120	P-48	86.21	J-3	J-43	6.0	Ductile Iron	130.0	True	0.000	4	0.05	0.000	False
122	P-49	20.00	J-3	J-44	6.0	Ductile Iron	130.0	True	0.000	4	0.05	0.000	False
123	P-50	14.86	J-35	J-33	8.0	Ductile Iron	130.0	False	0.000	-278	1.77	0.002	False
133	P-55	257.15	J-2	J-49	8.0	Ductile Iron	130.0	False	0.000	1,250	7.98	0.028	False
134	P-56	19.89	J-49	J-45	8.0	Ductile Iron	130.0	False	0.000	200	1.28	0.001	False
136	P-57	134.10	J-49	J-50	8.0	Ductile Iron	130.0	False	0.000	1,050	6.70	0.020	False
138	P-58	21.63	J-50	J-51	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
142	P-60	17.90	J-52	J-53	8.0	Ductile Iron	130.0	False	0.000	1,049	6.69	0.020	False
144	P-61	6.00	J-53	J-54	8.0	Ductile Iron	130.0	False	0.000	1,048	6.69	0.020	False
146	P-62	10.51	J-54	J-55	8.0	Ductile Iron	130.0	False	0.000	1,048	6.69	0.020	False
148	P-63	62.06	J-55	J-56	8.0	Ductile Iron	130.0	False	0.000	1,048	6.69	0.020	False
150	P-64	63.73	J-56	J-57	8.0	Ductile Iron	130.0	False	0.000	-730	4.66	0.010	False
152	P-65	15.49	J-57	J-58	8.0	Ductile Iron	130.0	False	0.000	-731	4.67	0.010	False
154	P-66	124.18	J-58	J-59	8.0	Ductile Iron	130.0	False	0.000	-732	4.67	0.010	False
156	P-67	243.12	J-59	J-60	8.0	Ductile Iron	130.0	False	0.000	-732	4.67	0.010	False
158	P-68	94.75	J-41	J-61	8.0	Ductile Iron	130.0	False	0.000	278	1.77	0.002	False
159	P-69	352.98	J-61	J-45	8.0	Ductile Iron	130.0	False	0.000	-454	2.90	0.004	False
160	P-70	51.08	J-60	J-61	8.0	Ductile Iron	130.0	False	0.000	-732	4.67	0.010	False
162	P-71	31.31	J-59	J-62	8.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False
164	P-72	83.05	J-58	J-63	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
168	P-75	83.19	J-64	J-57	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
174	P-79	39.61	J-57	J-66	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
176	P-80	8.25	J-56	J-67	6.0	Ductile Iron	130.0	False	0.000	1,778	20.18	0.215	False
178	P-81	40.30	J-68	J-55	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
180	P-82	38.09	J-53	J-69	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
182	P-83	64.93	J-70	J-54	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
184	P-84	64.84	J-52	J-71	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
187	P-86	88.57	J-72	J-52	8.0	Ductile Iron	130.0	False	0.000	1,049	6.70	0.020	False
189	P-87	20.40	J-72	J-73	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
191	P-88	37.55	J-58	J-74	1.0	Copper	135.0	False	0.000	0	0.14	0.000	False
193	P-89	12.06	J-72	J-50	8.0	Ductile Iron	130.0	False	0.000	-1,049	6.70	0.020	False

Scenario: Base
Current Time Step: 0.000 Hr
FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
28	PMP-1	475.00	Pump Definition - 1	On	475.00	546.33	1,790	71.33

APPENDIX #4

SANITARY SEWER PUMPING STATION CALCULATIONS

- ORIGINAL PHASE I CALCULATIONS/DESIGN
- UPDATED PUMP STATION CALCULATIONS

ORIGINAL PUMP STATION CALCS

97-036 (1)
PJScordo
[redacted] 9/10/97

IVES PUMPING STATIONS DESIGN

NOTES: MIN 2 F/s, goal 4-5 F/s, < 15 cycles/hr, No run time concern per ITT Representative, Good for < 20 MINS IN wet well

FLOWS: Ives

Pumping Sta. #1 = Ph. I + II + III + Priests

1BR Apt. = 85 gpd 2BR Apt = 125 gpd

Phase I = 32 Sing. B.R. + 24 Obl. B.R.

= 32 (85) + 24(125) = 5720 say 6000 gpd

Phase II = — 24(125) = 3000 gpd

Phase III = 32(85) + 64 (125) = 10,720 gpd

Priests = 10 Apts @ 300 = 3000 gpd

Pumping Sta. #1 = I + II + III + Priests

= 6000 + 3000 + 10720 + 3000 = 22720 gpd

= 16 gpm

Peak = 4. Avg. = 4.16 = **64 gpm**

12/11/97: Initially only 32 conv = 32(85) + 12(125) = 4220 = 3 gpm panic = 12 gpm

Pumping Sta. #2 = II + Part III + Priests

= 3000 + 20 Dupl. · 2(125) + 3000 = 11000 gpd

= 7.6 gpm

Peak = 4. Avg = 4.7.6 = **31 gpm**

LOSSES:

Pumping Sta. #1

Static:

Low Level = 459.5 to ex. MH, El. 473.0 = 13.5' Say 15'

Dynamic:

500' to Weldon / Kieff MH

Bends / Fittings = IN: CV, GV, 3(90°), (2) 45° See Plyght pg. 12-34

$19.8 + 1.6 + 3(7.7) + 2(3.6) = 52'$ (L. SWP)

OUT: 3(45°), 1(T)

$3(3.6) + 1(15.5) = 26'$

Equiv. Length = 500' + 52' + 26' = **Say 600'**

Pumping Sta. #2

Static:

Low Level = 457.75 to new MH 472.2 = 14.5 **Say 15'**

Dynamic

1120' to New SN MH12

Bends / Fittings = IN: 52' (like PS #1)

OUT: 5(45°) (L. SWP), 3(22½°) → not listed use ± 45°, 1(T)

$5(3.6) + 3(3.6)\frac{1}{2} = 24'$

Equiv. Length = 1120' + 52' + 24' = **Say 1200'**

TOTAL LOSSES

VEL	FLOW	STATIC		DYNAMIC		TOH	
	—	P.S. #1	P.S. #2	P.S. #1	P.S. #2	P.S. #1	P.S. #2
	10	13'	15'	660' ·	1200' ·		
	20			·	·		
1.4	30			·0.3 = 2	·0.3 = 4	15	19
1.8	40			·0.5 = 3.3	·0.5 = 6	17	21
2.0	50			·0.7 = 5	·0.7 = 9	18	24
2.7	60			·1.0 = 7	·1.0 = 12	20	27
2.9	64			·1.1 = 8	·1.1 = 13	21	28
3.2	70			·1.3 = 9	·1.3 = 16	22	31
3.6	80			·1.7 = 12	·1.7 = 21	25	36
4.1	90			·2.1 = 14	·2.1 = 25	27	40
4.5	100			·2.6 = 17	·2.6 = 31	30	46
5.7	125			·4.0 = 26	·4.0 = 48	39	63
				↑			
				Loss per 100'			

See Pump charts for Plot of Q vs. TOH for P.S. #1 & P.S. #2

- per ITT try to be less than 15 cycles/hr. (4)

- < 20 mins in wet well

PUMP TIMES / RATES / CYCLES

Pumping Station #1 : Pumps at 86 gpm @ 25' TDH

Pipe Volume = 213 galls

6'ø MH Vol. = $1' \cdot \frac{6^2}{2} \cdot \pi$ = 212 galls.

Avg	Peak
Qin = 16 gpm	Qin = 64 gpm
@1' Fill = $\frac{212}{16}$ = 13 mins	@1' Fill = $\frac{212}{64}$ = 3 mins.
Pump = $\frac{212}{86-16}$ = 3 mins	Pump = $\frac{212}{86-64}$ = 12 mins
16 mins cycle time	15 mins cycle time
= 3.75/hr. OK ✓	= 4/hr. OK. ✓

★ Look @ congregate only

Avg	Peak
Qin = 3 gpm	Qin = 12 gpm
@1' Fill = $\frac{212}{3}$ = 71 mins. Too much! Try	@.25' Fill = $\frac{53}{12}$ = 5 mins
@.5' Fill = $\frac{106}{3}$ = 35 mins. Too much	Pump = $\frac{53}{86-12}$ = 1
REVISE @.25' Fill = $\frac{53}{3}$ = 17 mins. Pump = $\frac{53}{86-3}$ = .64 = 18 mins. OK	6 mins = 10/hr OK
DOCUMENTS	

Pumping Station #2 : Pumps at 68 gpm @ 30' TDH

Pipe Volume =

6'ø MH Vol. = $0.75' \cdot \left(\frac{6}{2}\right)^2 \cdot \pi$ = 160 galls

Avg	Peak
Qin = 7.6 gpm	Qin = 31 gpm
@.75' Fill = $\frac{160}{7.6}$ = 21 mins	@.75' Fill = $\frac{160}{31}$ = 5 mins
Pump = $\frac{160}{68-7.6}$ = 3 mins	Pump = $\frac{160}{68-31}$ = 5 mins
24 mins cycle time	10 mins cycle time
= 2.5/hr. OK ✓	= 6/hr. OK ✓

Force Main

Max Pressure = For PS 1 + 2 = Say 40'

$\frac{40'}{2.3}$ = 17 psi

3" is only DR 17 = 100 psi OK

UPDATED PUMP STATION CALCS BJD 7/19/10

P.S. PHASE I

FLOW = PHASE I + PHASE II + (2) E.L.F. BUILDS + PRIESTS + DUPLEXES

= 6000 gpd + 3000 gpd + 3060 gpd + 3000 gpd + 1250 gpd = 16,310 gpd

= 11.33 gpm

Peak = 4 · Avg = 4 · 11.33 = 45.32 gpm

P.S. pumps at 86 gpm @ 25' TDH, 6' DIA WET VOL = 212 gals.

	Avg	Peak
	Q_{in} = 11.33 gpm	Q_{in} = 45.32 gpm
		Fill = 106 / 45.32 = 2.34 min
FILL	$\frac{106}{11.33}$ = 9.36 min @ 0.5' fill	Pump = 106 / (86 − 45.32) = 2.61 min
Pump	106 / (86 − 11.33) = 1.42 min	
	10.56 mins cycle	4.95 mins cycle time
	= 5.68 / hr ok ✓	12.12 / hr ok ✓

FLOATS ON EXISTING PHASE I PUMP SHOULD BE ADJUSTED TO REFLECT 0.5' FILL HEIGHT.

BSD 7/19/10

P.S. PHASE II

P.S. II = ~~PHASE II~~ + PRIESTS + M.F. DUPLEXES

= 3000 gpd + 3000 gpd + 1250 gpd = 7250 gpd

Peak = 4 · Avg = 4 · 5.03 gpm = 20.12 gpm

P.S. pumps at 68 gpm @ 30' TDH, 6' OMH = 212 gals

	Avg	Peak
	Q_{in} = 5.03 gpm	Q_{in} = 20.12 gpm
FILL	$\frac{106}{5.03}$ = 21.07 mins @ 0.5' FILL	$\frac{106}{20.12}$ = 5.27 min FILL
Pump	$\frac{106}{68-5.03}$ = 1.68 min	$\frac{106}{68-20.12}$ = 2.21 min
	22.75 min	7.48 min.
	2.64 cycles/hr ✓ ok	8.02 cycles/hr ok ✓

PHASE II P.S. FLOATS SHOULD BE ADJUSTED TO REFLECT 0.5' FILL HEIGHT.

APPENDIX #5

TRAFFIC ANALYSIS

18-Jul-10

ITE Trip Generation Rates - 8th Edition
Pass-by rates from ITE Trip Generation Handbook - 2nd Edition

Instructions: Enter Expected Unit Volumes into Column "M"

Description/ITE Code	Units	ITE Vehicle Trip Generation Rates (peak hours are for peak hour of adjacent street traffic unless highlighted)								Expected Units	Total Generated Trips			Total Distribution of Generated Trips					
		Weekday	AM	PM	Pass-By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	Pass-By	PM In	PM Out	Pass-By
Single Family Homes 210	DU	9.57	0.75	1.01		25%	75%	63%	37%		0	0	0	0	0	0	0	0	0
Single Family Homes 210	Acres	26.04	2.06	2.74		31%	69%	66%	34%		0	0	0	0	0	0	0	0	0
Single Family Homes 210	Persons	2.55	0.21	0.28		31%	69%	66%	34%		0	0	0	0	0	0	0	0	0
Single Family Homes 210	Vehicles	6.02	0.51	0.67		31%	69%	66%	34%		0	0	0	0	0	0	0	0	0
Apartment 220	DU	6.65	0.51	0.62		20%	80%	65%	35%		0	0	0	0	0	0	0	0	0
Apartment 220	Persons	3.31	0.28	0.40		NA	NA	NA	NA		0	0	0	NA	NA	0	NA	NA	0
Apartment 220	Vehicles	5.10	0.46	0.60		NA	NA	NA	NA		0	0	0	NA	NA	0	NA	NA	0
Low Rise Apartment 221	Occ.DU	6.59	0.46	0.58		21%	79%	65%	35%		0	0	0	0	0	0	0	0	0
High Rise Apartment 222	DU	4.20	0.30	0.35		25%	75%	61%	39%		0	0	0	0	0	0	0	0	0
Mid-Rise Apartment 223	DU	NA	0.30	0.39		31%	69%	58%	42%		0	0	0	0	0	0	0	0	0
Rental Townhouse 224	DU	NA	0.70	0.72		33%	67%	51%	49%		0	0	0	0	0	0	0	0	0
Resd. Condo/Townhouse 230	DU	5.81	0.44	0.52		17%	83%	67%	33%		0	0	0	0	0	0	0	0	0
Resd. Condo/Townhouse 230	Persons	2.49	0.19	0.24		16%	84%	67%	33%		0	0	0	0	0	0	0	0	0
Resd. Condo/Townhouse 230	Vehicles	3.34	0.24	0.32		16%	84%	66%	34%		0	0	0	0	0	0	0	0	0
Low Rise Resd. Condo 231	DU	NA	0.67	0.78		25%	75%	58%	42%		0	0	0	0	0	0	0	0	0
High Rise Resd. Condo 232	DU	4.18	0.34	0.38		19%	81%	62%	38%		0	0	0	0	0	0	0	0	0
Luxury Condo/Townhouse 233	Occ. DU	NA	0.56	0.55		23%	77%	63%	37%		0	0	0	0	0	0	0	0	0
Mobile Home Park 240	Occ. DU	4.99	0.44	0.59		20%	80%	62%	38%		0	0	0	0	0	0	0	0	0
Mobile Home Park 240	Persons	2.46	0.20	0.26		18%	82%	63%	37%		0	0	0	0	0	0	0	0	0
Mobile Home Park 240	Acres	39.61	3.20	4.45		18%	82%	63%	37%		0	0	0	0	0	0	0	0	0
Mobile Home Park 240	Vehicles	3.38	0.27	0.36		16%	84%	63%	37%		0	0	0	0	0	0	0	0	0
Senior Adult Housing-Detached 251	DU	3.71	0.22	0.27		35%	65%	61%	39%	20.0	74	4	5	2	3	0	3	2	0
Senior Adult Housing- Attached 252	Occ.DU	3.48	0.13	0.16		36%	64%	60%	40%		0	0	0	0	0	0	0	0	0
Congregate Care Facility 253	Occ.DU	2.15	0.06	0.17		61%	39%	56%	44%		0	0	0	0	0	0	0	0	0
Congregate Care Facility 253	DU	2.02	0.06	0.17		59%	41%	55%	45%		0	0	0	0	0	0	0	0	0
Assisted Living 254	Occ. Beds	2.74	0.17	0.29		73%	27%	52%	48%		0	0	0	0	0	0	0	0	0
Assisted Living 254	Beds	2.66	0.14	0.22		65%	35%	44%	56%	18.0	48	3	4	2	1	0	2	2	0
Assisted Living 254	Employees	3.93	NA	0.55		NA	NA	NA	NA		0	NA	0	NA	NA	0	NA	NA	0
Retirement Community 255	Occ. Units	2.81	0.18	0.29		64%	36%	48%	52%		0	0	0	0	0	0	0	0	0
Recreational Homes 260	DU	3.16	0.16	0.26		67%	33%	41%	59%		0	0	0	0	0	0	0	0	0
Recreational Homes 260	Acres	1.33	0.07	0.11		67%	33%	41%	59%		0	0	0	0	0	0	0	0	0
Timeshare 265	DU	10.03	0.48	0.75		NA	NA	NA	NA		0	0		NA	NA	0	NA	NA*	0
Residential PUD 270	DU	7.50	0.51	0.62		22%	78%	65%	35%		0	0	0	0	0	0	0	0	0
Residential PUD 270	Acres	46.78	2.88	4.05		NA	NA	NA	NA		0	0	0	NA	NA	0	NA	NA	0

RED Rates = CAUTION - Use Carefully - Small Sample Size
Green Rates = Peak Hour of Generator - (no peak rate for the rush hour of adjacent street traffic)
Blue Rates = Saturday Daily total - (no weekday daily rate)

***Pass-By % are Rates from Weekay PM Peak Period**
*The Total Pass-By Trips will be Distributed: **50% IN / 50 % OUT**

NA = Not Available
DU = Dwelling Unit
Occ.Room = Occupied Room
KSF = Units of 1,000 square feet
Fuel Position = the number of vehicles that could be fueled simultaneously