

TOWN OF DRYDEN

TOMPKINS COUNTY, NEW YORK

April 2006

**INTERIM
ENGINEER'S REPORT**

**Proposed Town of Dryden
Ellis Hollow Road Water District**

PREPARED BY:
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SECTION 1 – INTRODUCTION

On September 15, 2005 a petition was received by the Town of Dryden from Arthur Berkley and Cathi Calori, both residents of Ellis Hollow Road, requesting a study for the extension of public water to their neighborhood. This, and subsequent petitions, requested the study cover Ellis Hollow Road between the Town of Ithaca and Turkey Hill Road, including Game Farm, Fox Hollow, and Snyder Heights Roads. This area will be considered the **Base Service Area** in this report. On November 10, 2005 the Town Board authorized T. G. Miller P. C. to prepare a Map, Plan, and Report to provide the information necessary to describe the extension of public water to in this area for public review and comment. This authorization was subject to a 30-day permissive referendum that ended on December 10, 2005. No vote was requested during the referendum thus allowing the study to commence. The following pages constitute an interim report containing basic information needed to assess the project and associated costs so both the landowners and the Town Board may express comments prior to completing the full Map, Plan, and Report.

Three tank zones (Bolton Point's East Hill Tank, Town of Ithaca's Hungerford Hill Tank, and the Town's NYSEG Tanks) were investigated to see which could provide water to the proposed service area at the least cost. The contour elevations of the service limits for all three tank zones, based on USGS Mapping, are shown on the attached maps.

None of the properties included in the proposed service area are within the Tompkins County Agricultural District No. 1.

SECTION 2 – HISTORY OF WATER SERVICE

All properties within the proposed area are served by on site wells. In the past few years concerns about the quality and quantity of well water have been expressed to the Town. Debbie Gross, the Town's former environmental planner, compiled a draft well study dated January 20, 2006. The study indicated concerns over increased silt, hard water, iron, bacteria, sulfur and water quantity.

No existing Town of Dryden Water District or Town of Ithaca Water Service Area is adjacent to the Base Service Area identified by the petitioners.

SECTION 3 – TANK SERVICE AREAS

East Hill Tank

USGS Mapping indicates that the East Hill Tank (now under construction) could provide water service to the north side of Ellis Hollow Road to 16 lots (See Map 1). This assumes the water main is constructed behind the homes between Fox Hollow and Dodge Roads. Because of the limited service area this option was not investigated further.

NYSEG and Hungerford Hill Tank Systems

USGS Mapping indicates both tank systems will provide water at sufficient domestic pressures to the intersection of Ellis Hollow Road and Turkey Hill Road. Although the Hungerford Hill

Tank is at a higher elevation than the NYSEG Tanks it will only provide service to one additional home or business (the stone quarry). 9 lots on Hungerford Road cannot be serviced by either tank without construction of a pump station and additional piping. Accordingly, these lots were not included in the base service area.

Both tank systems will have the ability to provide domestic service to the intersection of Ellis Hollow Road and Genung Road and the area of Ellis Hollow Road east of Hartwood Road. However neither system can provide service to the section of Ellis Hollow Road between Genung and Hartwood Roads.

Connection to the Hungerford system would need approval from the Town of Ithaca and may require upgrades to their system.

Since both tank systems can provide service to an almost identical service area south of Ellis Hollow Road they were both investigated for the most economical alternative. The economical service area north of Ellis Hollow Road varies depending on which tank system is the source of water.

SECTION 4 – DESIGN CONSIDERATIONS

The source of water is either a connection to the end of the Turkey Hill Water District 8-inch water main at the intersection of Stevenson Road and Turkey Hill Road (the terminus of the NYSEG Tank System) or the at the Hungerford Hill Tank. However, there are limitations within both systems that need to be corrected before any extension to the Ellis Hollow area can be considered.

TANK SYSTEM LIMITATIONS

NYSEG

- A 1993 hydraulic analysis revealed that the NYSEG Tank system could provide a fire flow of approximately 675gpm at the intersection of Ellis Hollow and Turkey Hill Roads. The Insurance Service Office (ISO) recommended minimum fire flow is 750 to 1,000gpm for single and two family homes 31 to 100 feet apart.
- Because of additional domestic demand either the existing Varna pump station will need to be upgraded or a new pump station constructed.
- An upgrade to the Varna pump station might not be able supply all of the domestic water needed for the additional customers due to hydraulic limitations of the water mains in the area of the pump station.
- A new pump station on the East Hill Tank system would be able to resolve the above problems.
- A new tank on the Ellis Hollow end of the system would also resolve the fire flow problem, but a pump station would still be required. As a pump station is already required a new tank was not considered as part of this report.

Hungerford Hill

- The Town of Ithaca is unable to allow additional connections to this system at the present time due to hydraulic limitations caused by the location of the existing pump station that fills the tank.
- The Town of Ithaca has proposed constructing a new pump station near the East Hill Tank along with a water main from the pump station to the Hungerford Hill Tank to correct the problem. They have not scheduled this project, but hope to have it funded as a 2007 capital project.

CONNECTION REQUIREMENTS

NYSEG

- 5,000± feet of water main along Turkey Hill Road from Stevenson Road to Ellis Hollow Road.
- Connection to the Bolton Point Transmission Main at the intersection of Ellis Hollow Road and Hungerford Road.
- Construction of a pump station.
- 1,500± feet of water main in the Town of Ithaca to the Town of Dryden line.

Hungerford Hill

- The Town of Ithaca must complete the construction of the proposed pump station and the main connecting the East Hill Tank.
- 1,700± feet of water main in the Town of Ithaca from the Hungerford Hill tank to Ellis Hollow Road along with an easement from Cornell. There may be a cost associated with this easement.
- There will be a capital cost to connect to this system along with a yearly transmission or O&M fee to the Town of Ithaca. These costs are unknown at this time.

SECTION 5 – SERVICE AREA

The **Base Service Area** was investigated using either the Hungerford Hill or NYSEG tank systems as a source. Improvements for these options are described below:

NYSEG Tank System (Map 2) to the intersection of Ellis Hollow Road and Turkey Hill Road would include the following:

1. Connection at the end of the Turkey Hill Water District 8-inch water main at the intersection of Stevenson Road and 5,000 feet of water main along Turkey Hill Road to Ellis Hollow Road.
2. Water mains on Ellis Hollow Road (Town of Ithaca to Turkey Hill), Snyder Heights Road, Fox Hollow Road, 400 feet south on Quarry Road, 500 feet north on Game Farm Road, and part of Hungerford Road. Approximately 10,000 feet of water main.
3. Connection to the East Hill Tank System
4. A booster pump station and 1,500 feet of water main in the Town of Ithaca
5. Service to 111 tax parcels
6. Does not include Dodge Road.

Hungerford Hill Tank System (Map 1) to the intersection of Ellis Hollow Road and Turkey Hill Road would include the following:

1. Water mains on Ellis Hollow Road (Town of Ithaca to Turkey Hill), Snyder Heights Road, Fox Hollow Road, 400 feet south on Quarry Road, 500 feet north on Game Farm Road, and part of Hungerford Road. Approximately 10,000 feet of water main.
2. Connection to the Hungerford Hill Tank System
3. About 1,700 feet of water main in the Town of Ithaca
4. Service to 89 tax parcels
5. Does not include Dodge Road.

Expanded Service Area

The draft of the well report identified problems outside of the Base Service Area. We looked at servicing additional areas from the NYSEG Tanks to see if there would be a cost savings per tax parcel. The following are the additional improvements required to supply the Expanded Service Area (Map 3):

1. Water mains on Ellis Hollow Road from Turkey Hill to Genung Roads, Genung Road, Knoll Tree Road, Sunny Knoll Road, and Ellis Hollow Creek Road from Turkey Hill Road to Dominion Gas. Approximately 10,900 additional feet of water main.
2. Service to 198 tax parcels.

SECTION 6 – ESTIMATE OF ANNUAL COSTS

For the purposes of this interim report the estimated project costs were amortized over 20 years assuming an interest rate of 5.5% and a capital recovery factor of 0.0837 to arrive at an annual payment. These costs include estimates of Engineering, Administrative, and Legal fees required to complete the project. They do not include costs associated with land purchases, easement agreements or connection costs. The estimates assume 12-inch water mains throughout the service area. Actual main diameters will be determined through a hydraulic analysis during the preparation of the full Map, Plan and report.

Annual payments will be assessed to all properties within the district per the following benefit formula:

- 50% of Annual Payment based on Total Assessed Value of property in the District
- 35% of Annual Payment based on Acreage of property in the District
- 15% of Annual Payment based on Units within the District (1 Unit per parcel)

Each benefited property in the district must pay a proportionate share of the Annual Payment. Based on present land use and assessed values the first year charge for each property is summarized in Tables 1-3 attached to this report.

The following are the three least costly service options considered:

Base Service Area NYSEG Tanks (Map 2)

- 16,500 feet of main Pump station Total cost \$1,962,000
- 111 tax parcels
- Annual Payment \$164,220

Base Service Area Hungerford Tank System (Map 1)

- 12,000 feet of main Town of Ithaca costs Total cost \$1,400,000+
- 89 tax parcels
- Annual Payment \$117,180 plus Town of Ithaca capital and O&M costs

Expanded Service Area NYSEG Tanks (Map 3)

- 27,400 feet of main Pump station Total cost \$3,209,000
- 198 tax parcels
- Annual Payment \$268,600

SECTION 7 – SUPPLEMENTAL COSTS

Water Use Fee

The water use fee is based on metered water use. The customer will be charged per the following schedule, which includes operation and maintenance of the water system.

<u>Gallons Consumed</u>	<u>Flat Rate per Quarter</u>
0-10,000	\$31.90 (base charge)
10,001 and over	\$3.19/1000 gallons

In addition each district in the Town of Dryden is required to finance a share of the costs to operate and maintain (O&M) the Varna Pump Station based on the ratio of district water use to total water pumped. Costs exceeding the surcharge revenues will be financed based on the proportions established for capital repayment. Repayment occurs one year after the expenses occur, therefore the first year the district is formed O&M charges will not be assessed to the district.

SECTION 8 – COST OF THE DISTRICT TO A TYPICAL PROPERTY

The cost of the District to the typical property is the estimated amount that the owner of the property within the District will be required to pay for debt service, water use, operation and maintenance in the first year following the formation of the District.

In accordance with Town Law §209-a and §209-d the following costs are for the typical property. Mode-average assessment values were calculated using the assessment values listed in Tables 1-3. Utilizing these modes the corresponding average first year annual debt service for each option would be as follows:

Base Service Area NYSEG Tanks (Map 2)

- First year debt service (\$150,000 assessment) = \$928/tax parcel
- First year debt service (\$140,000 assessment) = \$864/tax parcel

Base Service Area Hungerford Tank System (Map 1)

- First year debt service (\$140,000 assessment) = \$822/tax parcel

- Plus Town of Ithaca capital and O&M costs.

Expanded Service Area NYSEG Tanks (Map 3)

- First year debt service (\$140,000 assessment) = \$810/tax parcel

Utilizing a quarterly water usage of 20,531 gallons for a typical 3-bedroom home, and the water use fees outlined in Section 7, equates to an annual water use charge of approximately \$262.

Therefore the cost of the District to the typical property would be \$1190, \$1084 and \$1072 respectively.

SECTION 9 – SUMMARY

The results of this interim report indicate the annual costs per parcel for extension of water to the Ellis Hollow Road area will be high. The 3 least costly options indicate the cost to the typical property to be between \$1,072 and \$1,190 per year (excluding costs associated with land purchases, easement agreements or connections costs) which is approximately 2-times the comptrollers consent threshold of \$579 for Districts formed in 2006.

Of the three options the Expanded NYSEG Tanks option is the most expensive in terms of construction cost but least costly to the typical property. This option would result in the largest service area while avoiding the additional Town of Ithaca capital and O&M costs associated with the Hungerford Tank option.