

TOWN OF DRYDEN

TOMPKINS COUNTY, NEW YORK

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ENGINEER'S REPORT

**Proposed Town of Dryden
Pinckney Road Water District**

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SECTION 1 – INTRODUCTION

Interest has been expressed from persons owning land and businesses along Hall Road for the extension of public water to their neighborhood. The Town Board authorized this Engineering Report to provide the information necessary to describe the extension of public water to Hall and Pinckney Roads for public review and comment prior to a public hearing. The following pages indicate the basic information needed to assess the project and costs so both the landowners and the Town Board may express comments. The Board will complete a review of environmental impacts pursuant to Article 8 of the Environmental Conservation Law and determine whether to proceed with an order to form the district. Pursuant to Article 12-A of New York State Town Law, the Town may adopt an order to form the District and, following the necessary public hearings, may adopt a resolution forming the District. If established by the resolution, the Board's determination will be subject to a permissive referendum.

SECTION 2 – HISTORY OF WATER SERVICE

All properties within the proposed district are served by on site wells or have no water service. The existing Monkey Run and Hall Road Water Districts are immediately adjacent to the proposed district. The existing water system in the Town of Dryden is composed of six districts; Hall Road Water District, Monkey Run Water District, Royal Road Water District, Snyder Hill Water District, Turkey Hill Water District and Water District #1 (See attached Water Service Areas Map). All of the districts except the Snyder Hill Water District will be impacted by the proposed district. The extension of municipal services will allow for the best use of the commercial lands without creating possible adverse sanitary conditions. Furthermore, septic system separation distances to well water supplies render some lots too small to be practically developed.

SECTION 3 – EXISTING WATER SYSTEM

The Town of Dryden is a member of the Southern Cayuga Lake Intermunicipal Water Commission (SCLIWC). The Commission was established in 1974 as an Intermunicipal cooperative organization under the provision of State Enabling Law. The purpose of the Commission is to supply high quality treated water in adequate quantities to meet the needs of the participating municipalities, which presently include the Towns of Dryden, Ithaca, and Lansing and the Villages of Lansing and Cayuga Heights. The Commission provides a system of uniform regulations, standards, and procedures, as well as operation and maintenance assistance as requested by the participating municipalities. The Commission derives its income through the sale of water, service charges, and special connection charges.

The treated water from the Bolton Point Filtration Plant is pumped into the Transmission System which supplies the various SCLIWC member municipal distribution systems. The Town of Dryden's distribution network traverses three separate tank grids, commonly referred to as the Sapsucker Woods Road Tank grid, the NYSEG Tank grid, and the Hungerford Hill Tank grid. The proposed water district is an extension of the NYSEG Tank grid.

NYSEG Tank Grid

In 1988, prompted by the NYS Armory's interest in obtaining municipal water, the Town of Dryden formed the Monkey Run Water District. Due to the topography, it was necessary to establish a separate tank grid for this District. At that time, NYSEG maintained and operated their own on-site water treatment plant for their facility on NYS Route 13. The existing 0.2 million gallon (mg) NYSEG Tank was at an elevation adequate to provide service to the proposed Monkey Run District. As such, the Town of Dryden purchased the NYSEG Tank and the NYSEG facility was included in the District. The Monkey Run District water mains extend from the terminus of the Sapsucker Road Tank grid on NYS Route 366, along the abandoned railroad bed, easterly to NYS Route 13, and along NYS Route 13 from the NYSEG facility northwesterly to Hanshaw Road. In order to pump water from the Sapsucker Woods Tank grid to the higher elevation NYSEG Tank grid, the Varna Pump Station was constructed. The Varna Pump Station is located on Route 366 roughly midway between Freese and Turkey Hill Roads. Telemetry between the NYSEG Tank and the Pump Station automatically controls power to the Varna pumps.

In 1990 the Hall Road Water District was created to include a water main extension from the Monkey Run Water District to the Wilcox Press facility on Hall Road. At that time it was determined that the existing 0.2 mg tank was insufficient to meet the fire fighting needs of this facility. Consequently a 0.4 mg tank was constructed near the existing 0.2 mg tank. The new tank was constructed with an overflow elevation equal to that of the existing tank.

In 1994/95 the Turkey Hill Water District was created and connected to the Monkey Run Water District to serve portions of NYS Route 366, Turkey Hill Road, Forest Lane, Monkey Run Road, Baker Hill Road, and Mount Pleasant Road. Additional storage was not required for this District as the 0.4 mg tank constructed as part of the Hall Road District extension was determined adequate.

SECTION 4 – SERVICE AREA

The proposed service area includes a total of seven tax parcels encompassing 55 acres. Land within the district is zoned M-A (retail, manufacturing, industrial). The total 2005 assessed value of all land and improvements within the proposed district is \$4,422,081.

Table 1 - Properties in the Service Area

Parcel No.	Owner	Use	Assessment	Acreage
52.-1-1.11	Saunders Concrete Co.	Ind.	\$365,000	20.11
52.-1-4.111	281 Development Corp.	Ind.	\$70,000	1.21
52.-1-4.12	Marchell, John T.	Comm.	\$440,000	1.38
52.-1-4.122	281 Development Corp.	Vac.	\$35,000	2.25
52.-1-4.2	Seneca Supply & Equip.	Comm.	\$345,000	2.43
52.-1-4.52	281 Development Corp.	Ind.	\$480,000	3.57
52.-1-5	NYSEG	Ind.	\$2,687,081	23.99
		Total	\$4,422,081	54.94

The attached "Map of Proposed Pinckney Road Water District and Plan of System to be Constructed" identifies the boundary of the proposed district and the parcels to be benefited. The

Hydroponic Lettuce facility on part of the NYSEG parcel 52.-1-5 has service as an “Out of District Contract User” and connects to the Monkey Run Water District by a 1-inch service line under Route 13. This service will remain and any future service connections will be extended from the mains constructed within the boundaries of the Pinckney Road Water District.

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

SECTION 5 – DESIGN CONSIDERATIONS

Water Demand

Commercial uses in the proposed district include warehouses, storefronts, a mechanical contractor’s office, a concrete mixing plant, and a hydroponic lettuce greenhouse. Available water use records for the greenhouse have been used to estimate a current water demand of 1200 gallons per day (gpd). For Saunders Concrete estimates were based on interviews with the batch plant manager which resulted in an average day consumption of 5000 gpd. For those properties presently on well water (Parcels 4.111, 4.12, 4.2 and 4.52) the average day consumption was determined using a sewer discharge rate of 15 gallons per day per employee from the NYSDEC Design Standards for Treatment Works resulting in an aggregate average day consumption of 420 gpd for all 4 parcels. For undeveloped lot 52.-1-4.122 a future business with 12 employees was assumed which resulted in an average day consumption of 180 gpd. Estimated average daily and annual water use is summarized in the following Table:

Table 2 – Estimated Water Use

Parcel No.	Owners name	Use	Estimated Average Daily Water Use (gpd)	Estimated Annual Water Use (gallons)
52.-1-1.11	Saunders Concrete Co.	Ind.	5,000	1,825,000
52.-1-4.111	281 Development Corp	Ind.	30	10,950
52.-1-4.12	Marchell, John T	Comm.	90	32,850
52.-1-4.122	281 Development Corp	Vac. Comm.	180	65,700
52.-1-4.2	Seneca Supply & Equip.	Comm.	225	82,125
52.-1-4.52	281 Development Corp	Ind.	75	27,375
52.-1-5	NYSEG	Ind.	1,200	438,000
			6,800	2,482,000

The total estimated average day consumption is 6,800 gallons per day (gpd). The maximum day consumption is the average daily consumption multiplied by 1.5. Users in the proposed district operate during regular business hours on average six days per week. Based on a nine-hour day the average hour consumption is approximately 756 gallons per hour (gph). The peak consumption, expressed in gallons per minute, is the average hour consumption multiplied by a peak factor of 3.5 and divided by 60.

$$\text{Estimated average day consumption} = 6,800\text{gpd}$$

Estimated maximum day consumption = 10,200gpd
 Estimated average hour consumption = 756gph
 Estimated peak hour consumption = 44gpm

Future water use of the district is difficult to predict for two reasons. First, much of the area is undeveloped and the future development in terms of function and extent is unknown. Second, water consumption habits may change when public water becomes more accessible. Daily water consumption is unlikely to affect the source of supply given the capacity of the NYSEG tanks, however, required fire flows for some uses may be very large. An ISO analysis of needed fire flows for the largest building (Marchell) resulted in a required fire flow of approximately 3,400 gpm. Therefore 8 inch, 10 inch and 12 inch extensions off of the existing 12 inch main were modeled using the Cybernet Hydraulic computer program.

System Capacity

The Cybernet Hydraulic computer model for the existing Town of Dryden Water Distribution System was modified to include servicing the proposed extension. Hydraulic analyses were performed to determine the minimum acceptable size of the water mains and are summarized in the following table:

Table 3 – Hydraulic Analysis

Design Option	Water main diameter	Peak hourly		Fire Supply	
		Flow (gpm)	Pressure (psi)	Flow (gpm)	Pressure (psi)
1	8-inch	44	110	1,550	20
2	10-inch	44	110	2,500	20
3	12-inch	44	110	3,500	20

Assumptions:

1. NYSEG Tanks water surface elevation 1,283.5 feet USGS.
2. Minimum residual pressure anywhere in the system does not fall below 20 pounds per square inch (psi).

Supply will be adequate to meet domestic demand under all three system designs presented above. Option 3 is recommended to meet the ISO fire flow requirements.

The Town of Dryden is a member municipality of the Southern Cayuga Lake Intermunicipal Water Commission (Bolton Point) which is the source of supply. Sufficient capacity exists in the existing water treatment plant to allow the extension of service to this District. There is also adequate capacity in both the Varna Pump Station and the NYSEG tanks to accommodate the demands of this District.

SECTION 6 – PROPOSED WATER SYSTEM

The water system will be constructed of 12-inch ductile iron water main connected to the existing Monkey Run 12-inch main located within the southern R.O.W. of Route 13. The proposed main will run north across Route 13, west to Hall Road, north along Hall Road to the abandoned railroad grade then east to Pinckney Road as shown on the “Map of Proposed Pinckney Road Water District and Plan of System to be Constructed”.

SECTION 7 – ESTIMATE OF PROJECT COST

Table 4 – Estimated Project Cost

Item	Estimated Quantity	Unit	Cost per Unit	Item Total
12" Ductile Iron Pipe	2,805	LF	\$65	\$182,325
Fire Hydrant Assembly	4	EA	\$3,200	\$12,800
12" Gate Valves	3	EA	\$1,600	\$4,800
NYS Route 13 Crossing by Boring	90	LF	\$300	\$27,000
12" Tapping Sleeve and Valve	1	EA	\$3,000	\$3,000
1-1/2" Service Connections	5	EA	\$600	\$3,000
1-1/2" Copper Service Tubing	25	LF	\$20	\$500
1-1/2" Service Tubing Bored Under Road	100	LF	\$35	\$3,500
		Subtotal		\$236,925
		Construction Contingency @	12%	\$28,430
		Total Construction Cost		\$265,355
		Engineering, Planning, Design, and Construction @	18%	\$47,760
		Legal, Bonding, and Administration @	5%	\$13,270
		Total Estimated Project Cost		\$326,385

SECTION 8 – METHOD OF FINANCING PROJECT COSTS

The benefited landowners within the District Extension will finance the total project cost. The project will be financed by the Town of Dryden through issuance of serial bonds to mature in annual installments and will be paid by the benefited landowners of the proposed district extension.

The estimated annual payment for a 20-year bond issue is calculated as follows:

Principal	\$326,385
Interest Rate	5.5%
Term (Years)	20
Capital Recovery Factor (C.R.F.)	0.0837
Annual Payment	\$27,318

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 the following table:

Table 5 – Estimate of First Year Charge

Parcel No.	Owners name	Use	Assesment	Acreage	Equiv. Consump. Units	Debt Service Assessment	Debt Service Acreage	Debt Service Units	Total Debt Service First Year
52.-1-1.11	Saunders Concrete Co.	Ind.	\$365,000	20.11	1	\$2,163	\$3,500	\$585	\$6,248
52.-1-4.111	281 Development Corp	Ind.	\$70,000	1.21	1	\$415	\$211	\$585	\$1,211
52.-1-4.12	Marchell, John T	Comm.	\$440,000	1.38	1	\$2,607	\$240	\$585	\$3,433
52.-1-4.122	281 Development Corp	Vac. Comm.	\$35,000	2.25	1	\$207	\$392	\$585	\$1,184
52.-1-4.2	Seneca Supply & Equip.	Comm.	\$345,000	2.43	1	\$2,044	\$423	\$585	\$3,053
52.-1-4.52	281 Development Corp	Ind.	\$480,000	3.57	1	\$2,844	\$621	\$585	\$4,051
52.-1-5	NYSEG	Ind.	\$570,000	23.99	1	\$3,378	\$4,175	\$585	\$8,138
			\$2,305,000	54.94	7	\$13,659	\$9,561	\$4,098	\$27,318

The assessment for the NYSEG parcel was reduced to \$570,000 to exclude the assessed value of the existing substation.

SECTION 9 – SUPPLEMENTAL COSTS

These costs are in addition to the annual capital repayment cost.

A. One-Time Service Connection Costs

Customers will be responsible for the installation of the service line from curb stop to their building. The costs associated with the service connection are estimated below and will vary for each parcel. Some users may require larger services, meters and PRVs and the cost will increase accordingly.

Bolton Point Water Supply;	
Connection Fee (per unit)	\$250
1" Meter	\$240
1" PRV	\$120
Inspection Fee	\$170
1" Water service line from water main tap to building (cost will vary depending on size and length of service line and depth to bedrock, if encountered) estimated average: 100 lf @ \$15/lf.	\$1,500
Total	<u>\$2,280</u>

B. 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 10 – 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. A mode-average assessment value of approximately \$350,000 was calculated using the assessment values listed in Section 4 rounded to the nearest \$50,000. The closest user to this assessment is Seneca Supply and Equipment so the total first year debt service of \$3,053 was used. Utilizing Seneca Supply Equipment's quarterly water usage of 20,531 gallons equates to an annual water use charge of approximately \$262.

Therefore the cost of the District to the typical property is \$3,315.