#16-0043

Town of Sterling
Final Map, Plan and Report

for

Proposed Water District #3

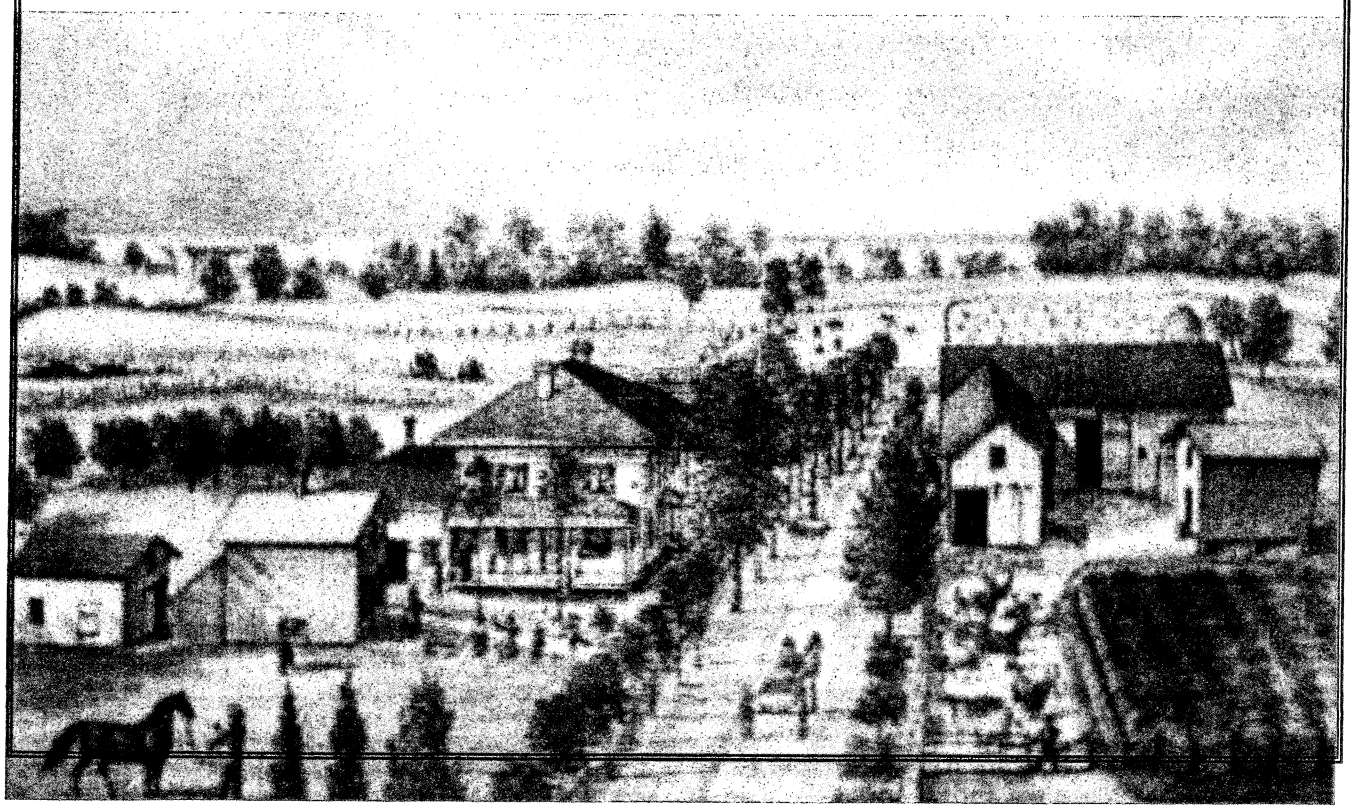
in the

Town of Sterling
Cayuga County, New York

January 2017
April 2017 - Revised

Prepared by:

c2ae
elevating human achievement
PO Box 368, 70 Main Street, Canton, NY 13617
315-386-2623, fax: 386-2632



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Appendix:

1. PROJECT PLANNING

The Town of Sterling has retained the services of Capital Consultants Architecture and Engineering, Inc. (C2AE) to evaluate the potential of developing a public water system to serve the project area identified as Water District #3. This area was considered as a result of interest expressed by the property owners to the Town Board in a recent questionnaire. This area has also been targeted to provide the best funding opportunity for the least amount of cost.

A. Location

This area includes portions along State Route 104A and other local side streets. See map in Appendix A.

The Town of Sterling is located in the northern section of Cayuga County and borders Lake Ontario to the north, Oswego County to the east and Wayne County to the west.

All of the residents in the planning area primarily rely on private residential wells to meet their domestic water needs. Having experienced problems with their own wells and knowing of problems with many area wells, the Town Board looked into the potential for providing affordable municipal water to areas of the Town in need.

B. Environmental Resources Present

Federal Wetlands – A preliminary review of records indicate that the project area is adjacent to federal wetlands. Proposed piping would be installed within the road shoulder and right of way; therefore any impact can be mitigated. Stream crossings will be constructed using trenchless methods. All Federal permits including Army Corps of Engineers would be secured, if required, prior to any construction. See attached Federal Wetland Map in Appendix D.

New York State Wetlands - A preliminary review of records indicate that the project area is adjacent to New York State wetlands. Proposed piping would be installed within the road shoulder and right of way; therefore any impact can be mitigated. Stream crossings will be constructed using trenchless methods, thereby mitigating any wetland or stream disturbance. All State permits, including New York State DEC permits, would be secured prior to any construction. See attached New York State Wetland Map in Appendix D.

Agricultural Districts - A preliminary review of records indicate that the project area is adjacent to Ag District parcels. The Town understands that this project could impact these parcels and will make every effort to minimize any impact to those parcels. For example, all the proposed piping will be installed within the road right of way and should not disturb or impact any agricultural parcels. The construction will comply with the guidelines entitled "Guidelines/Special Permit Conditions for Water/Sewer Transmission Mains Located Partially or Wholly in an Agricultural District". See attached Ag District Map in Appendix E.

Flood Insurance Rate Maps - A preliminary review of records indicate that the project area is not in a flood hazard area except at a creek or drainage crossing. See attached flood maps in Appendix F. No buildings are required for this project.

Archaeological: The New York State Office of Parks, Recreation and Historical Preservation (SHPO) has reviewed the project and stated that a portion of the proposed project area will require a Phase 1 archaeological survey. SHPO further states a Phase 1B archaeological survey is recommended for all portions of the project route that does not fall between the edge of pavement and the far edge of an existing excavated ditch or existing utility lines. The Town of Sterling intends to obtain quotes from qualified archaeologists to conduct a Phase 1 survey for the required portions of the project area. This work will be completed once the proposed District passes public vote. The Town will provide the results of the study when it is complete.

C. Population Trends

The population of the Town of Sterling, based on the 2010 Census, is 3,116. In 2000 it was 3,432. The 1990 Census listed a population of 3,210. Growth in the Town is minor at best.

In the project area, very little growth is anticipated. Like most towns in Cayuga County, growth is dependent on employment, and most recent employment is new business outside of the Town.

The project area presently contains 104 equivalent dwelling units (EDU's) of which 24 are vacant parcels, which are considered 0.5 EDU's each.

D. Community Engagement

Prior to beginning the process of developing a public water system in the Town of Sterling, a questionnaire was sent out to property owners that were not on public water. This was driven by the written and verbal requests received by the Town to pursue future public water systems. As a result of the surveys received by the town, the proposed Water District #3 project area has been determined to be a viable option. Approximately 40% of the property owners in this area responded. Of the respondents, approximately 65% were interested in pursuing a public water system.

2. EXISTING FACILITIES

A. Community Engagement

Presently, the Town of Sterling has one (1) existing water district (Water District #1). District #1 is located in the northern part of town near the Oswego County border. Water is currently provided to that District by the Onondaga County Water Authority (OCWA).

Due to the location of the proposed Water District #3, it is proposed that water be provided from the Village of Fair Haven public water supply for this District.

B. History

Within the Town of Sterling, many documented well water problems exist which has stimulated the pursuit of public water service. Over the past several years, federal and state funding became available and the Town has started developing new water districts. The Town of Sterling Water District #1 was subsequently constructed in 2015.

C. Condition of Existing Facilities

The residents in the proposed project area presently obtain their water supply from groundwater sources. Many use dug wells, which are shallow and tend to be subjected to surface water infiltration. Residents have complained about low flow periods and poor water quality issues.

D. Financial Status of Existing Facilities

The proposed Water District #3 has no existing financial obligation.

E. Water Audits

Not applicable.

3. NEED FOR PROJECT

A. Health, Sanitation and Security

As part of our questionnaire, numerous respondents stated the water obtained from their wells is of poor taste/quality or that they have had contaminated wells in the past. Several stated they have had issues with their wells running dry during summer months. A number of respondents indicated they have been required to purchase bottled or bulk water due to these issues.

There are also many dug wells found in the project area. Of the respondents to the questionnaire, 56% indicated they currently have dug wells. Dug wells are no longer appropriate unless designed and operated as required by NYSDOH with proper treatment (NYSDOH Fact Sheet #5). See Appendix H.

B. Aging Infrastructure

Not applicable – new water system.

C. Reasonable Growth

By designing this project using Department of Health standards, it will support reasonable future growth.

4. ALTERNATIVES CONSIDERED

A. The proposed water district is intended to provide an acceptable water supply to a new area of the Town. Three alternatives were considered for the proposed project area. A summary of these alternatives are discussed below:

1. Purchase Water From the Village of Fair Haven:

This alternative involves installation of a municipal water system in the areas shown on the General Plan included in Appendix A. This area includes, but is not limited to: the State Route 104A corridor, parts of State Route 38, Sterling Station Road, Curtis Co-Op Road, Williams Road, Center Road, and New Street. The proposed project includes a total of 92 EDU's which are currently developed, 24 vacant parcels (0.5 EDU's each), for a total of 104 EDU's.

Connection would be made to the Village of Fair Haven existing public water supply near the Fair Haven/Sterling town line. Water mains would be installed along the State Route 104A corridor and associated side streets to provide water service to the required properties. Shutoffs and meter pits would be installed for each service at each property line at locations agreed to by each property owner.

Some improvements would be required to the existing Village of Fair Haven pumphouse. This would include rehabilitation of an existing well and pumps.

This alternative would have little impact on the environment due to the type of work. No land purchase would be required and disturbance would be in the road rights-of-way. Construction would be straight forward in concept with the contractor dealing with glacial till and cobble rich subsoils in many areas.

Operation and maintenance (O&M) costs would be minimal for the Town of Sterling for this alternative. The majority of O&M would be required at the Village of Fair Haven pumphouse and would be the responsibility of the Village of Fair Haven. The Town intends to include a charge of $50/EDU/year to help pay for O&M required to be performed by the Town to maintain the water system.

The projected cost for this alternative is as follows:

CAPITAL - $1,820,000
O&M costs - $5,200/year

Based on preliminary calculations, the estimated water usage + O&M fees for developed properties will be $252/EDU/year. Please note that a full breakdown of the capital and user costs for this alternative is included as Appendix G.

2. Develop a Groundwater Source:

An attempt to develop a groundwater source with a pumping system and a water storage tank could be considered. A hydrogeological study would be required to determine the best places to drill test wells and final production wells. This could cost between $100,000 and $200,000. If successful, the same distribution system would be required, as well as a pumping system and a small water storage tank. The projected capital costs for this option are as follows:

Water Distribution System	$1,480,000
Hydrogeological Study	$ 150,000
Pumping System	$ 50,000
Water Storage Tank	$ 700,000
	$2,400,000 (rounded)
Engineering, Legal & Administrative	$ 460,000
TOTAL	$2,860,000

O&M costs would be greater than Alternative No. 1. The Town would have to contract O&M services or start a Town Water Department. Additional costs would be incurred to pay for pumping costs, chemical treatment, and required testing. O&M costs are estimated to be $15,000/year for this alternative.

This alternative could also require additional environmental evaluation, depending on where groundwater sources are located.

3. Install a Water Treatment Plant System:

This alternative would include the installation of a water treatment plant at or near Sterling Creek. The Town would have to purchase land for the plant, install a new intake pipe, build the water treatment plant and install an approximate 5,000' transmission main to the distribution system.

The projected costs for this alternative would be as follows:

- Distribution System	$1,480,000
- Water Storage Tank	$700,000
- Land Purchase	$15,000
- Water Treatment Plant	$1,000,000
- Transmission Main – 5,000 feet	$500,000
	$3,700,000 (rounded)
Engineering, Legal & Administrative	$ 700,000
TOTAL	$4,400,000

O&M Costs:

- Electrical & Chemicals	$12,000 per year
- Labor	$32,000 per year
- Equipment & material	$6,000 per year
	$50,000 per year

This alternative results in a substantial capital cost to produce water for the proposed project area. It also results in a much higher O&M cost due to labor and materials required to operate a treatment plant.

5. SELECTION OF AN ALTERNATIVE

After a preliminary evaluation, it is apparent one reasonable alternative is available for this project. Alternative #2 and #3 results in a substantial capital cost to produce water for the proposed project area. Alternative #3 results in a much higher O&M cost due to labor and materials required to operate a treatment plant.

The table below provides a life cycle cost comparison of each alternative evaluated. Life cycle costs are based on using the real federal interest rate from Appendix C of OMB Circular A-94:

Sterling (T)	Alternative #1 - Water from Fair Haven	Alternative #2 - New Groundwater Source	Alternative #3 - New Water Treatment Plant
Capital Costs	$1,820,000	$2,860,000	$4,400,000
Total Annual O&M	$5,200	$15,000	$50,000
Life Cycle Analysis			
30 Yr OMB Real Interest Rate	0.7%	0.7%	0.7%
Planning Period YR's	30	30	30
Present Worth Calculation	$140,268	$404,620	$1,348,732
Salvage	$0	$0	$0
30-year Life Cycle Analysis	$1,960,268	$3,264,620	$5,748,732

Based on the evaluation of alternatives discussed in Chapter 4 and the information presented above, Alternative #1 – Purchase water from Fair Haven is the most economically feasible and viable option and is therefore recommended for the proposed project area.

Should the project bids be low, the Town would consider including the purchase of extra meters, meter pits, pressure reducing valves (PRV's), gate valves, hydrants, curb stops and corporation stops.

6. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

As discussed in Chapters 4 and 5, it is recommended that the Town of Sterling proceed with Alternative No. 1 – Purchase water from Fair Haven.

The proposed project includes installation of approximately 25,000± linear feet of 8" and 10" distribution water main. The project will consider using Ductile Iron pipe, PVC pipe or HDPE pipe. The material used will be based on the lowest bid price. Water mains will generally be installed 6-8 feet off of pavement or within road shoulders within the existing cleared road rights-of-way. All stream crossings will be performed by directional drilling. Disturbance would be kept to a minimum. All disturbed areas will be restored to an equal or better condition following installation. New fire hydrants and gate valves will be installed along the water main approximately 600 and 800 feet apart respectively, as required by Ten States Standards. A construction period of 4 months is anticipated for this project.

The projected average daily flow (ADF) for the project area is 15,640 gpd (10.8 gpm). This is based on a flow of 170 gpd per EDU. Peak daily flows of approximately 31,280 gpd (21.7 gpm) could be expected, as well as a peak hour flow of 62,560 gpd (43.4 gpm). Should the twenty-four (24) vacant parcels be developed, additional average daily flows of 4,080 gallons could be expected.

A new pump station or water tank is not required for this project. As previously discussed, The Village of Fair Haven's existing water system will be used to serve the proposed water district.

The Village of Fair Haven's water source is groundwater drawn from two groundwater wells (Well #1 and Well #2). These wells are located within the Town of Sterling adjacent to the proposed new water district. Water is drawn from these wells and is chlorinated on-site prior to distribution.

Based on evaluation of flow data provided by the Village of Fair Haven for 2013 - 2016, a peak daily flow of 264,200 gpd (183 gpm) was recorded for July 2015. This equates to an estimated peak hourly flow of 528,400 gpd (367 gpm) for the existing system. Adding the estimated current and future peak flows for the proposed Water District No. 3, the total peak daily flow for the entire system is estimated to be 295,480 gpd (205 gpm) and the peak hourly flow is estimated to be 590,960 gpd (410 gpm). Should the 24 vacant parcels be developed, peak hourly flows are estimated to be 607,280 gpd (422 gpm).

The pumps for Well #1 and Well #2 have a maximum combined pumping capacity of approximately 835,200 gpd (580 gpm). The Village of Fair Haven is permitted a maximum withdrawal of 750 gpm by their NYSDEC water withdrawal permit. During recent inspections (by others) the pumps were observed operating at maximum flow rate with little to no drawdown in the wells. The existing Village of Fair Haven system also has three (3) water storage tanks, providing a combined storage capacity of approximately 690,000 gallons. Based on this information, it is anticipated the existing Village of Fair Haven water system has adequate capacity to provide water to the proposed Water District No. 3.

Based on the high water level of the existing Village of Fair Haven east tank (471.5' HWL), static water pressures within the system will range from 43 to 88 psi. The available fire flow for the proposed Water District No. 3 system will be approximately 500 to 3,000 gallons per minute. A copy of the hydraulic modeling map and associated data is included as Appendix B.

The Village of Fair Haven recently hired a contractor to perform an inspection of Well #2. It was determined that plugging and encrustation within the well was affecting pumping performance. It was also determined that the pump and motor had reached the end of their useful service life. Cleaning and equipment replacement for Well #2 was subsequently performed. This resulted in an increased flow rate of approximately 55%. A service contract was also performed for Well #1's pump at that time. This included general maintenance and repair to the pump and motor.

It is anticipated that similar conditions are occurring within Well #1. Additionally, Well #1's pump is not currently equipped with a Variable Frequency Drive (VFD) and the existing control valve on the pump discharge line has been problematic. This has an impact on the overall efficiency and useful life of the pumping system. Cleaning of the well, installation of a VFD, removal and replacement of the existing control valve, and pump maintenance and repair, is recommended to be performed as part of the project.

As discussed in Chapter 4, it is anticipated that an approximate water usage + O&M cost of $252/year will be assessed to each EDU. The projected capital cost for the project is $1,820,000.

Combining the estimated debt and considering the preliminary funding estimate received from USDA-RD, the estimated total cost for water per EDU is approximately $735/EDU annually.

The Village of Fair Haven, via an IMA, will obtain water service charges from each user. Fair Haven's charges will be based on water meter readings at each connection. Also, operation and maintenance of new equipment that may be installed at the Fair Haven well as part of this project will be performed by the Village of Fair Haven via the IMA.

Because the Town is purchasing services from the Village of Fair Haven, and the project consists of piping, valves, and hydrants, no major short lived asset reserve is required.

7. CONCLUSIONS & RECOMMENDATIONS

With the continuation of federal funding for small, rural populations, it is apparent that expansion to select areas within the Town is possible to assure that residents have a safe and adequate water supply plus firefighting capabilities. It is also evident that due to the costs of such an undertaking, the residents in the Town of Sterling will require the available financial assistance to consider any of these planned improvements. Based on these considerations, C2AE would recommend that the Town of Sterling take the following steps when pursuing this project.

- Prepare and submit a Preliminary Application for Financial Assistance for the project from the U.S. Department of Agriculture Rural Development.

- The results of the findings documented in this report should be presented to the residents of the project area. It is the opinion of the board that it would be appropriate to await the outcome on potential funding prior to presenting the project to the residents. An area-wide survey (questionnaire) was conducted several years ago and it shows good support for an affordable water system.

The proposed improvements discussed in this report are directed towards providing an adequate water distribution system and supply in areas designated.

The project area includes parts of State Route 104A and associated side streets. See drawing in Appendix A.

- The distribution system will be designed to the latest engineering standards and to the standards of the reviewing agencies involved.

- The distribution system will be designed to meet the immediate needs of the Town of Sterling and will consider the possible needs of the future.

The Town did receive a letter from Rural Development with a preliminary funding estimate:

Potential Project Costs:		
Total Project Cost Estimate	=	$1,820,000
USDA RD Grant	=	$491,000
USDA RD Loan	=	$1,329,000 at 2.0% for 38 years
Estimated EDUs	=	104
Annual Debt Cost: $1,329,000 x .03783	=	$50,276/year
Cost per EDU = $50,276/104	=	$483/year
Projected User Cost/EDU (See Appendix G)	=	$252/year
Projected Total Costs	=	**$735/year/EDU**
Vacant Projected Total Costs = $483/2 + $50/2	=	$266/year

Appendix A
General Plan and Water District Map

Proposed Town of Sterling – Water District #3

ALL THAT TRACT OR PARCELS OF LAND in the Town of Sterling, County of Cayuga and State of New York as depicted on the Town of Sterling Tax Maps Number 9.00, 10.00, 10.01, 10.03, 12.00, and 13.00;

'POINT OF BEGINNING'

BEGINNING AT A POINT, said point being the northwest corner of Parcel Number 10.00-1-09;

THENCE, northerly along the westerly bounds of Parcel Number 10.00-1-10.11, to the northwest corner of said Parcel, a distance of 1195 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Number 10.00-1-10.11, to a northeast corner of said Parcel, said point also being a point on the southerly bounds of Sterling Creek, a distance of 565 feet, more or less;

THENCE, meandering southwesterly along the Sterling Creek, to a northeast corner of Parcel Number 10.00-1-10.11, a distance of 545 feet, more or less;

THENCE, southerly along the easterly bounds of Parcel Number 10.00-1-10.11, to a southwest corner of Parcel Number 10.00-1-07.21, a distance of 560 feet, more or less;

THENCE, southeasterly along the easterly bounds of Parcel Number 10.00-1-10.11, to a northeast corner of said Parcel, a distance of 720 feet, more or less;

THENCE, southerly along the easterly bounds of Parcel Number 10.00-1-10.11, to a southeast corner of said Parcel, a distance of 755 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Numbers 10.00-1-11 and 10.01-1-01 across the Sterling Creek to a point on the easterly bounds of Sterling Creek, a distance of 655 feet, more or less;

THENCE, northeasterly along the westerly bounds of Parcel Number 10.01-1-03.1 to the northwest corner of said Parcel, said point also being a point on the easterly bounds of Sterling Creek, a distance of 125 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Numbers 10.01-1-17.2 and 10.01-1-17.11 to a point on the easterly bounds of Sterling Creek and the westerly bounds of Center Road right-of-way, a distance of 650 feet, more or less;

THENCE, northerly along the westerly bounds of the Center Road right-of-way to a southeast corner of Parcel Number 10.00-1-07.21, a distance of 120 feet, more or less;

THENCE, crossing Center Road right-of-way easterly and continuing easterly along the southerly bounds of Parcel Numbers 10.00-1-15.11 and 10.00-1-18 to the southeast corner of Parcel Number 10.00-1-18, a distance of 2880 feet, more or less;

THENCE, southerly along the westerly bounds of Parcel Number 10.00-1-20 to the southwest corner of said Parcel, a distance of 720 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Number 10.00-01-21.2, to the northeast corner of said Parcel, said point also being a point on the westerly bounds of the State Route 104A right-of-way, a distance of 1950 feet, more or less;

THENCE, southwesterly along the westerly bounds of the State Route 104A right-of-way to a southeast corner of Parcel Number 10.00-01-21.2, a distance of 670 feet, more or less;

THENCE, southerly across the State Route 104A right-of-way to the southwest corner of Parcel Number 10.00-1-21.1, said point also being on the westerly bounds of Penn Central Railroad right-of-way, a distance of 80 feet more or less;

THENCE, southwesterly along the westerly bounds of the Penn Central Railroad right-of-way, crossing Goodrich Road right-of-way and continuing southwesterly along the westerly bounds of Penn Central Railroad right-of-way, to the southeast corner of Parcel Number 10.00-1-22, a distance of 2010 feet, more or less;

THENCE, southerly across the Penn Central Railroad right-of-way, along the westerly bounds of Parcel Number 10.00-1-67.11 to the northeast corner of Parcel Number 10.00-1-66.4, a distance of 1745 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 10.00-1-63.2, across the Penn Central Railroad right-of-way to a southwest corner of Parcel Number 10.00-1-63.2, a distance of 1335 feet, more or less;

THENCE, southerly along the easterly bounds of Parcel Number 10.00-1-63.2, to a southeast corner of said parcel, a distance of 710 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 10.00-1-63.2, across Sterling Creek, to the northeast corner of Parcel Number 10.00-1-61.1, a distance of 420 feet, more or less;

THENCE, meandering southwesterly along the westerly bounds of Sterling Creek, across the Onionville Road right-of-way, to the northeast corner of Parcel Number 13.00-1-17.2, a distance of 1460 feet, more or less;

THENCE, westerly along the southerly bounds of Onionville Road right-of-way, to the northwest corner of Parcel Number 13.00-1-17.2, a distance of 165 feet, more or less;

THENCE, southerly along the westerly bounds of Parcel Number 13.00-1-17.2 to the southwest corner of said Parcel, a distance of 445 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 10.00-1-61.1, across the State Route 38 right-of-way, to a point on the easterly bounds of Parcel Number 13.00-1-16.1, said point also on the westerly bounds of the State Route 38 right-of-way, a distance of 470 feet, more or less;

THENCE, southerly along the westerly bounds of the State Route 38 right-of-way, to a point on the northerly bounds of the Penn Central Railroad right-of-way, a distance of 740 feet, more or less;

THENCE, westerly along the northerly bounds of the Penn Central Railroad right-of-way, to a point on the southerly bounds of Parcel Number 13.00-1-16.1, a distance of 1100 feet, more or less;

THENCE, northerly along a westerly bounds of Parcel Number 13.00-1-16.1 to a southwest corner of said parcel, a distance of 250 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 13.00-1-16.1 to a southwest corner of said Parcel, a distance of 870 feet, more or less;

THENCE, southerly along a westerly bounds of Parcel Number 13.00-1-10.11 to a southwest corner of said Parcel, said point also on the northerly bounds of the Penn Central Railroad right-of-way, a distance of 160 feet, more or less;

THENCE, westerly along the northerly bounds of the Penn Central Railroad right-of-way, to the southwest corner of Parcel Number 13.00-1-16.1, a distance of 365 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Numbers 13.00-1-16.1 and 13.00-1-16.2 while also crossing Sterling Station Road right-of-way, to the northwest corner of Parcel Number 13.00-1-16.2, a distance of 1550 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Number 13.00-1-16.2 the southwest corner of Parcel Number 13.00-1-07, a distance of 140 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 13.00-1-07 to a northwest corner of said Parcel, a distance of 455 feet, more or less;

THENCE, easterly along a northerly bounds of Parcel Number 13.00-1-07 to a northwest corner of said Parcel, a distance of 70 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 13.00-1-07 to the northwest corner of said Parcel, a distance of 80 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 13.00-1-02.121 to the southwest corner of said Parcel, a distance of 735 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 10.00-1-02.121 to a southeast corner of Parcel Number 9.00-1-38.1, a distance of 90 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 9.00-1-38.1, to the southwest corner of said Parcel, a distance of 530 feet, more or less;

THENCE, southerly along the easterly bounds of Parcel Number 9.00-1-41.2 to the southeast corner of said Parcel, a distance of 500 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Number 9.00-1-41.2 , to the southwest corner of said Parcel, said point also being a point on the easterly bounds of the Teachout Road right-of-way, a distance of 1520 feet, more or less;

THENCE, northerly along the easterly bounds of the Teachout Road right-of-way, to a point on the westerly bounds of Parcel Number 9.00-1-41.2, a distance of 205 feet, more or less;

THENCE, westerly across the Teachout Road right-of-way, along the southerly bounds of Parcel Number 9.00-1-35.11 to the southwest corner of said Parcel, a distance of 990 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 9.00-1-35.11 to the southeast corner of Parcel Number 9.00-1-42, a distance of 310 feet, more or less;

THENCE, westerly along the southerly bounds of Parcel Numbers 9.00-1-42 and 9.00-1-43.1 to the southwest corner of Parcel Number 9.00-1-43.1, a distance of 2400 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 9.00-1-43.1 to a point on the southerly bounds of Parcel Number 9.00-1-47, a distance of 790 feet, more or less;

THENCE, easterly along the southerly bounds of Parcel Number 9.00-1-47 to the southeast corner of said Parcel, a distance of 125 feet, more or less;

THENCE, northerly along the easterly bounds of Parcel Number 9.00-1-47 to the southwest corner of Parcel Number 9.00-1-32.111, a distance of 225 feet, more or less;

THENCE, southeasterly along the southerly bounds of Parcel Number 9.00-1-32.111 to the southeast corner of said Parcel, a distance of 900 feet, more or less;

THENCE, northeasterly along the easterly bounds of Parcel Number 9.00-1-32.111, across the State Route 104A right-of-way, to a point on the southerly bounds of Parcel number 9.00-1-33, said point also on the northerly bounds of the State Route 104A right-of-way, a distance of 565 feet, more or less;

THENCE, northwesterly along the northerly bounds of the State Route 104A right-of-way to the southwest corner of Parcel Number 9.00-1-28, a distance of 2740 feet, more or less;

THENCE, northerly along the easterly bounds of Parcel Number 9.00-1-28 to the northeast corner of said Parcel, said point also on the southerly bounds of the Old State Road right-of-way, a distance of 395 feet, more or less;

THENCE, northeasterly along the southerly bounds of the Old State Road right-of-way to a southwest corner of Parcel Number 9.00-1-32.122, a distance of 1135 feet, more or less;

THENCE, southerly along the westerly bounds of Parcel Number 9.00-1-32.122 to a southwest corner of said Parcel, a distance of 30 feet, more or less;

THENCE, easterly along the southerly bounds of Parcel Number 9.00-1-32.122 to a northeast corner of Parcel Number 9.00-1-32.121, a distance of 945 feet, more or less;

THENCE, southerly along the westerly bounds of Parcel Number 9.00-1-32.122, to the southwest corner of said Parcel, a distance of 345 feet, more or less;

THENCE, easterly along the southerly bounds of Parcel Number 9.00-1-32.122, to the southeast corner of said Parcel, a distance of 545 feet, more or less;

THENCE, northerly along the easterly bounds of Parcel Number 9.00-1-32.122 to the northeast corner of said Parcel, a distance of 390 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Numbers 9.00-1-33, 9.00-1-43.2, 9.00-1-34, to the northeast corner of Parcel Number 9.00-1-34, a distance of 2340 feet, more or less;

THENCE, southerly along the easterly bounds of Parcel Number 9.00-1-34 to the southwest corner of Parcel Number 9.00-1-23, a distance of 235 feet, more or less;

THENCE, easterly along the southerly bounds of Parcel Number 9.00-1-23 to the southeast corner of said Parcel, a distance of 1210 feet, more or less;

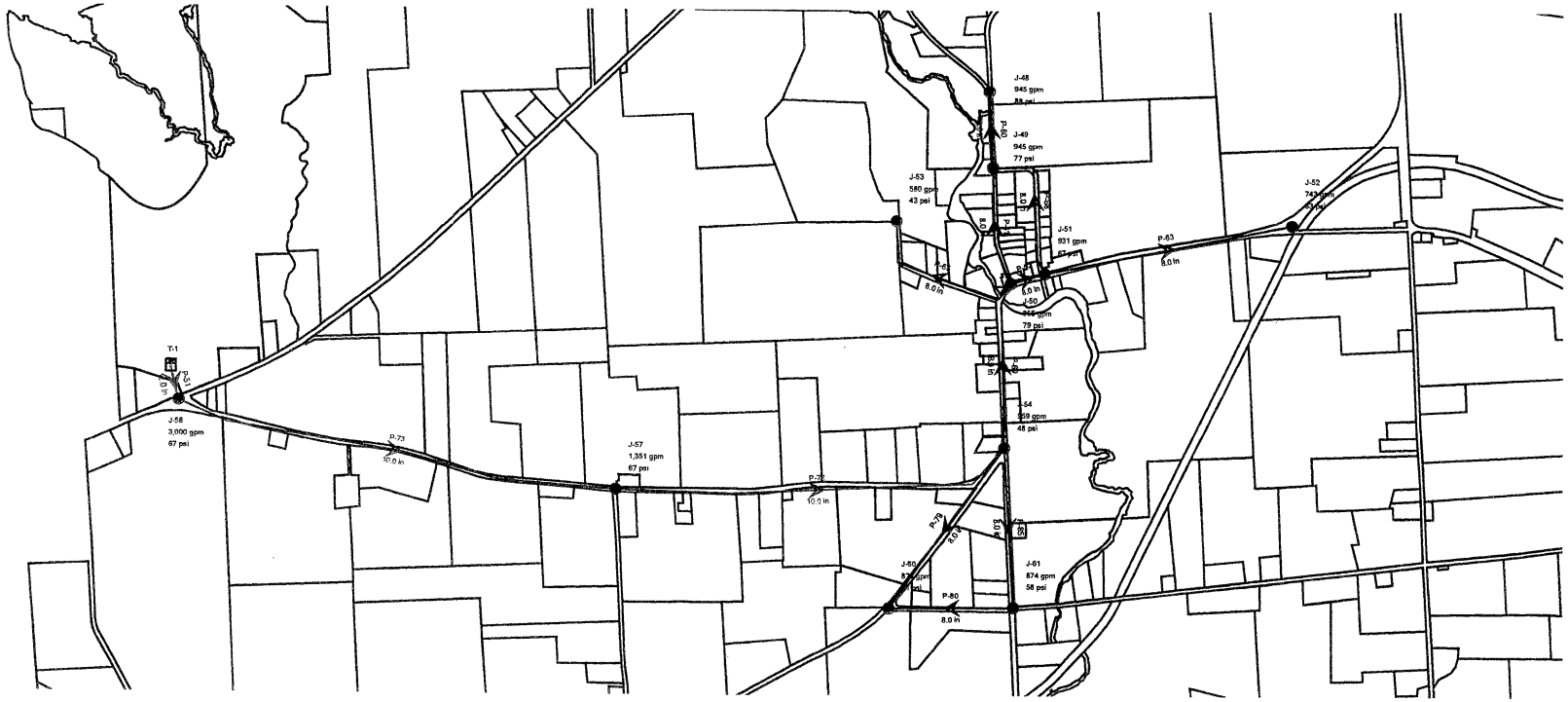
THENCE, northerly along the easterly bounds of Parcel Number 9.00-1-23 to the northwest corner of Parcel Number 10.00-1-11, a distance of 1445 feet, more or less;

THENCE, easterly along the northerly bounds of Parcel Number 10.00-1-11 to the southwest corner of Parcel Number 10.00-1-09, a distance of 1235 feet, more or less;

THENCE, northerly along the westerly bounds of Parcel Number 10.00-1-09 to the northwest corner of said Parcel, a distance of 1705 feet, more or less, back to the POINT OF BEGINNING.

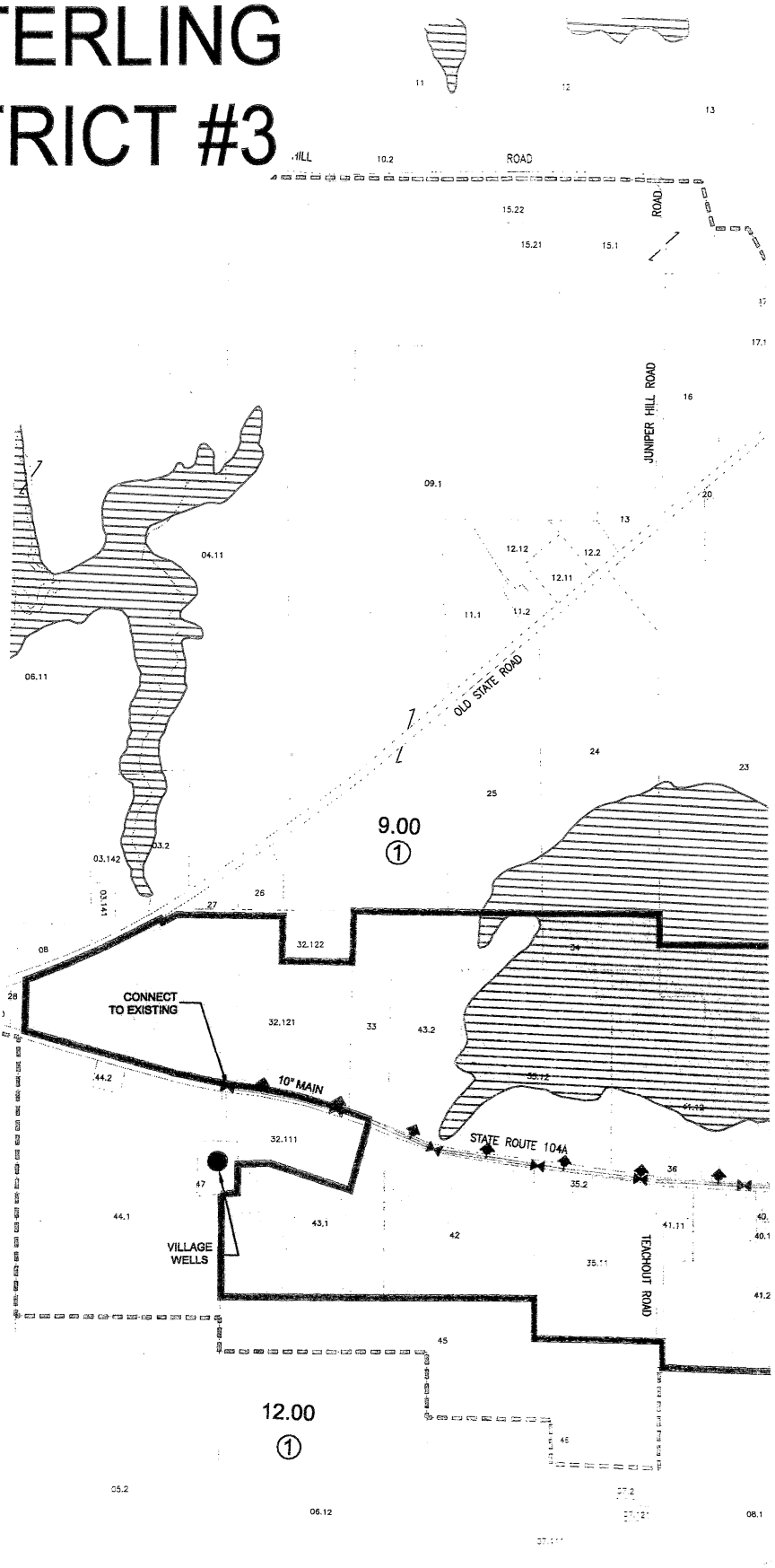
Appendix B
Hydraulic Model Area Map

Scenario: Base



Appendix C
EDU List

TOWN OF STERLING
WATER DISTRICT #3



LEGEND

- PROPERTY LINE
- BLOCK LIMIT LINE
- Z-HOOK PROPERTY PARCEL NUMBER
- ① BLOCK NUMBER
- 8.00 SECTION NUMBER
- PROJECT AREA
- PROPOSED 8" WATER MAIN
- PROPOSED 10" WATER MAIN
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- NYS FRESHWATER WETLAND

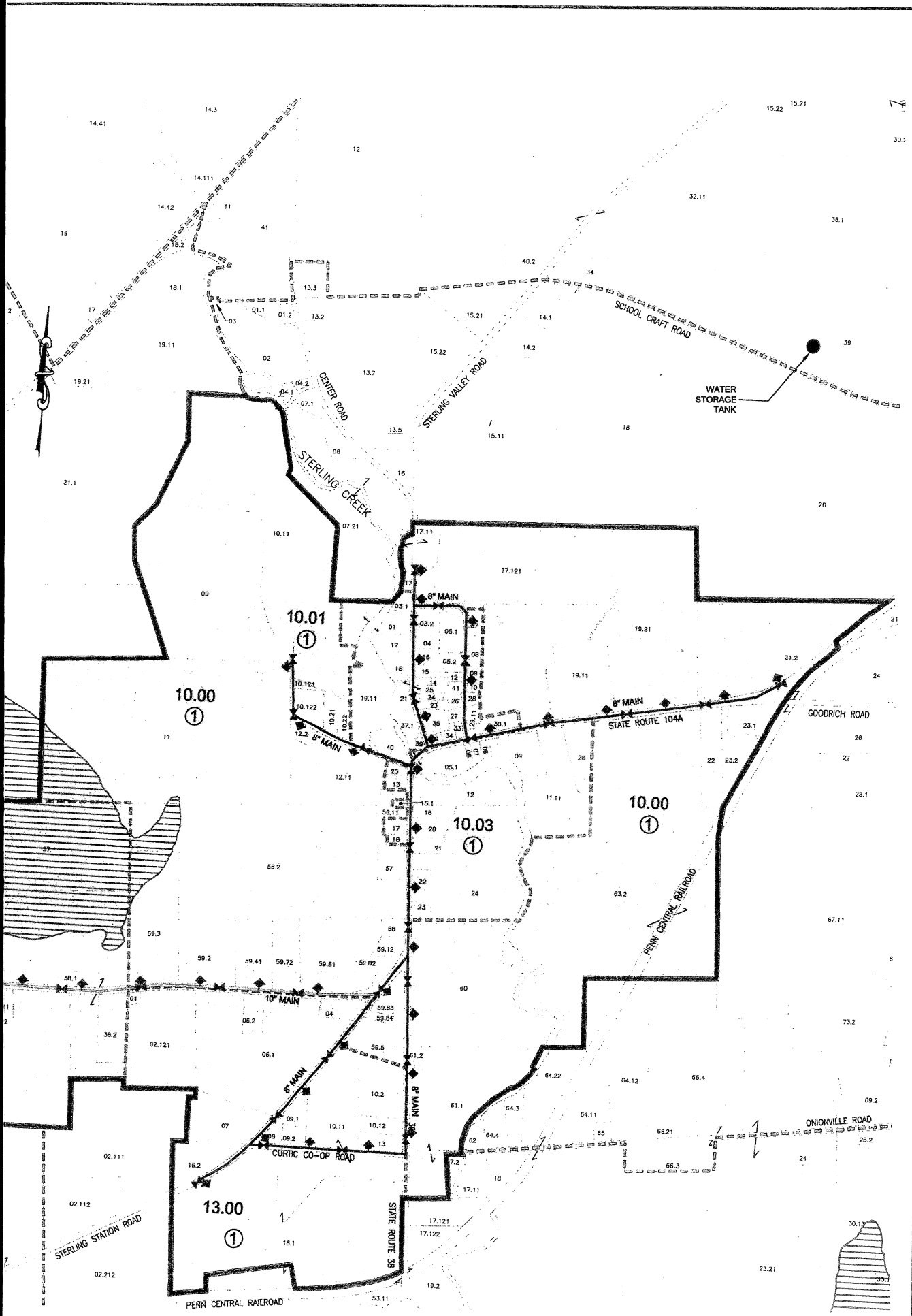
NOTE:

THE PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM COUNTY TAX MAPS. THEIR LOCATION MAY NOT BE ENTIRELY TRUE AND CORRECT AND ARE NOT INTENDED FOR USE IN THE CONVEYANCE OF LAND. THE ACTUAL LOCATION OF THESE PROPERTY LINES IS SUBJECT TO SUCH VARIATIONS AND CORRECTIONS AS MIGHT RESULT FROM AN ACCURATE INSTRUMENT SURVEY.

THE LOCATION, SIZES AND ELEVATIONS OF THE EXISTING UTILITIES SHOWN ON THIS DRAWING WERE OBTAINED FROM AVAILABLE DRAWINGS AND EVIDENCE OF ABOVE GROUND FEATURES. THEIR LOCATION, SIZE AND ELEVATION MAY NOT BE ENTIRELY TRUE AND CORRECT. OTHER UTILITIES MAY EXIST. ALL LOCAL UTILITY COMPANIES SHOULD BE NOTIFIED BEFORE EXCAVATION.

DESIGNED BY: XXX | APPROVED BY: XXX
CHECKED BY: XXX | DWGS MOD BY: XXX

WE RECYCLE



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c2ae elevating human achievement

www.c2ae.com

TOWN OF STERLING

WATER DISTRIBUTION SYSTEM
WATER DISTRICT #3

CAYUGA COUNTY, NEW YORK

NYS WETLANDS

1200' 600' 0

REVISIONS

SCALE: 1"=600'

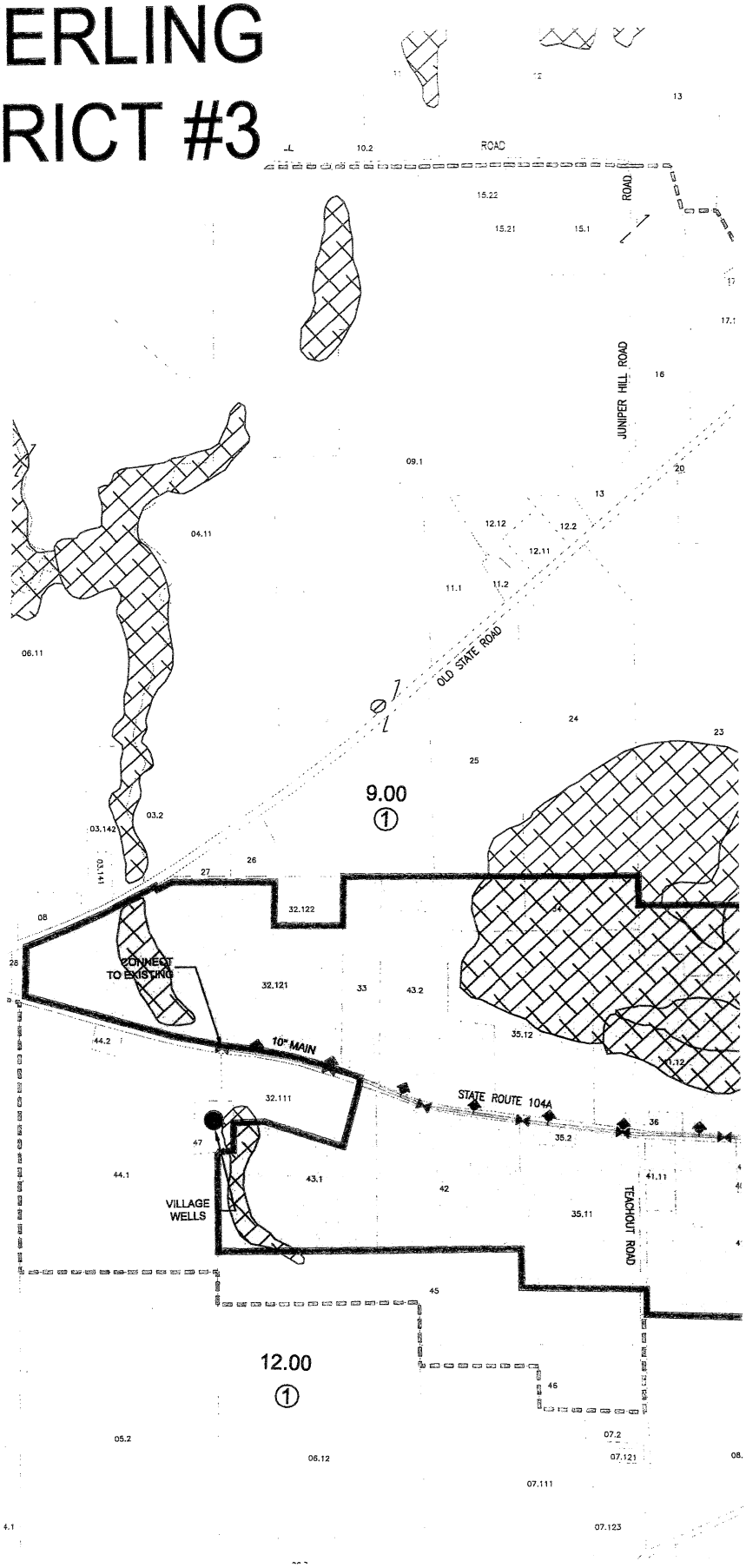
PROJ. #: 160043

DATE: 10/05/2016

SHEET

NYSWET

TOWN OF STERLING
WATER DISTRICT #3



LEGEND

- PROPERTY LINE
- BLOCK LIMIT LINE
- Z-HOOK PROPERTY PARCEL NUMBER
- BLOCK NUMBER
- SECTION NUMBER
- PROJECT AREA
- PROPOSED 8" WATER MAIN
- PROPOSED 10" WATER MAIN
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- FEDERAL WETLAND

NOTE:

THE PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM COUNTY TAX MAPS. THEIR LOCATION MAY NOT BE ENTIRELY TRUE AND CORRECT AND ARE NOT INTENDED FOR USE IN THE CONVEYANCE OF LAND. THE ACTUAL LOCATION OF THESE PROPERTY LINES IS SUBJECT TO SUCH VARIATIONS AND CORRECTIONS AS MIGHT RESULT FROM AN ACCURATE INSTRUMENT SURVEY.

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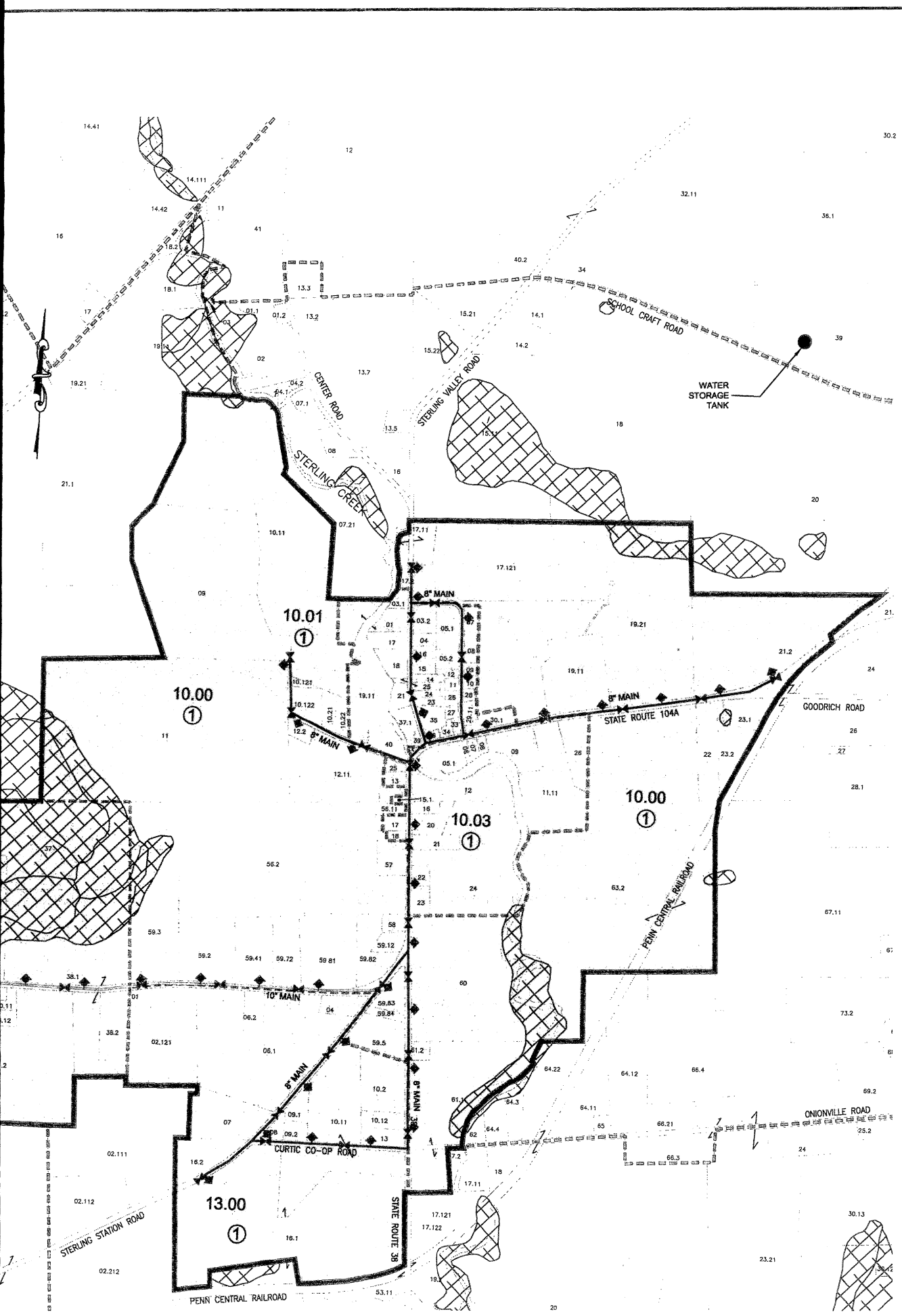

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TOWN OF STERLING

WATER DISTRIBUTION SYSTEM
WATER DISTRICT #3

CAYUGA COUNTY, NEW YORK

FED WETLANDS

0 600' 1200'

REVISIONS

SCALE: 1"=600'

PROJ. #: 160043

DATE: 10/05/2016

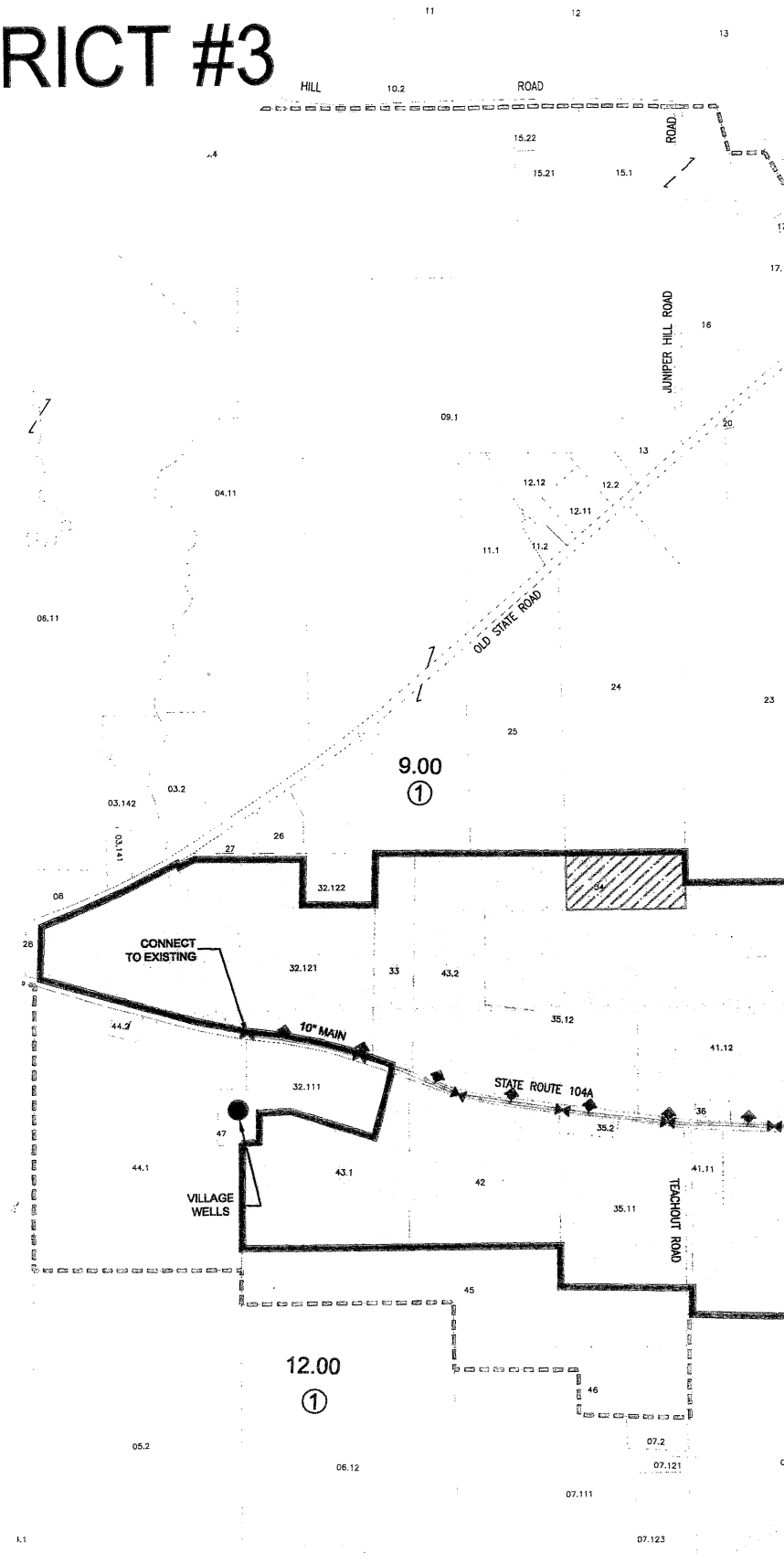
SHEET

FEDWET

Appendix E
Ag District Map

WE RECYCLE

TOWN OF STERLING
WATER DISTRICT #3



LEGEND

- PROPERTY LINE
- BLOCK LIMIT LINE
- Z-HOOK PROPERTY PARCEL NUMBER
- BLOCK NUMBER
- SECTION NUMBER
- PROJECT AREA
- PROPOSED 8" WATER MAIN
- PROPOSED 10" WATER MAIN
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- AGRICULTURAL DISTRICT PARCEL

NOTE:

THE PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM COUNTY TAX MAPS. THEIR LOCATION MAY NOT BE ENTIRELY TRUE AND CORRECT AND ARE NOT INTENDED FOR USE IN THE CONVEYANCE OF LAND. THE ACTUAL LOCATION OF THESE PROPERTY LINES IS SUBJECT TO SUCH VARIATIONS AND CORRECTIONS AS MIGHT RESULT FROM AN ACCURATE INSTRUMENT SURVEY.

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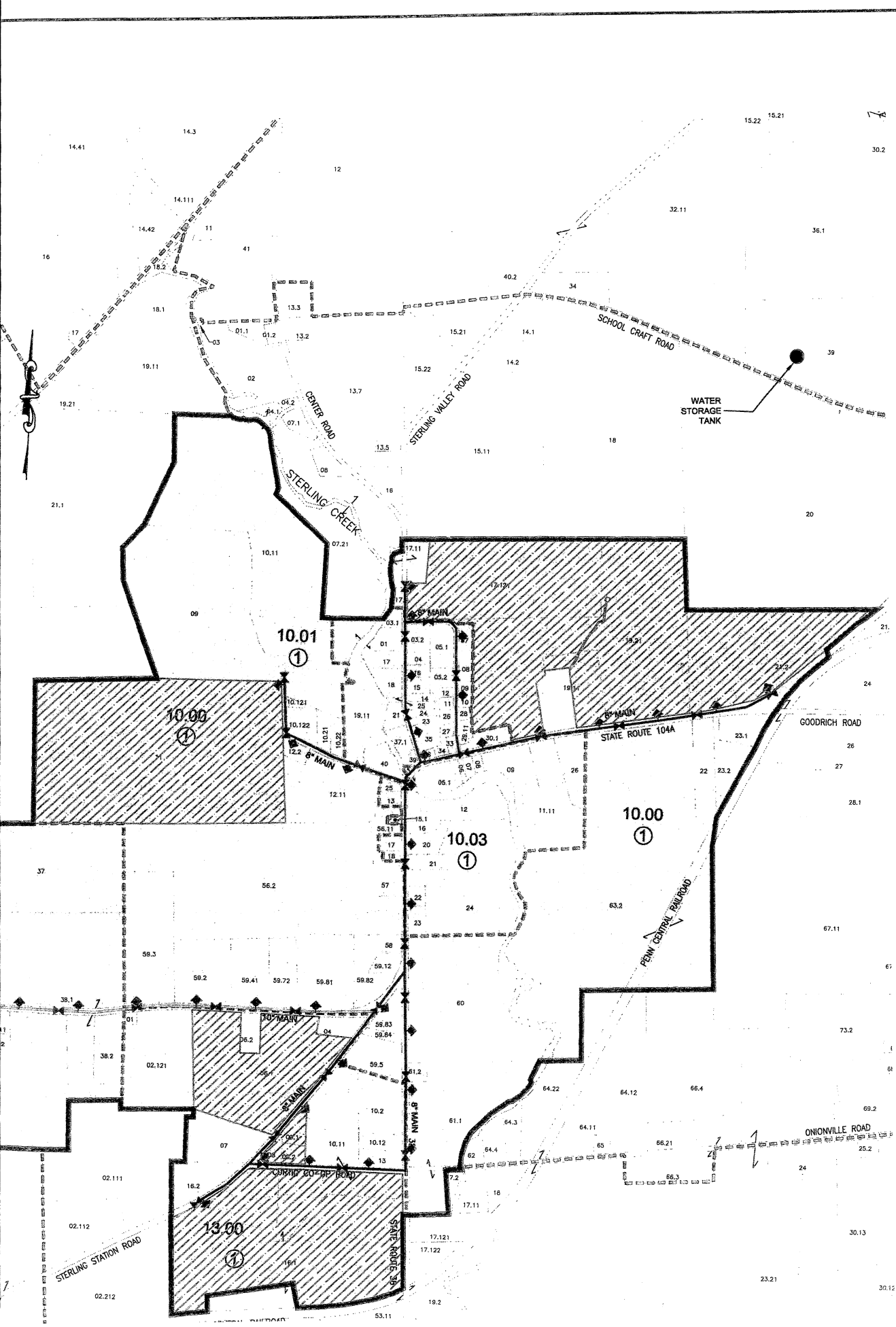
DESIGNED BY: XXX | APPROVED BY: XXX
CHECKED BY: XXX | DWG'S MOD BY: XXX



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TOWN OF STERLING

WATER DISTRIBUTION SYSTEM
WATER DISTRICT #3

CAYUGA COUNTY, NEW YORK

AG DISTRICT MAP

1200' 600' 0

REVISIONS

SCALE: 1"=600'

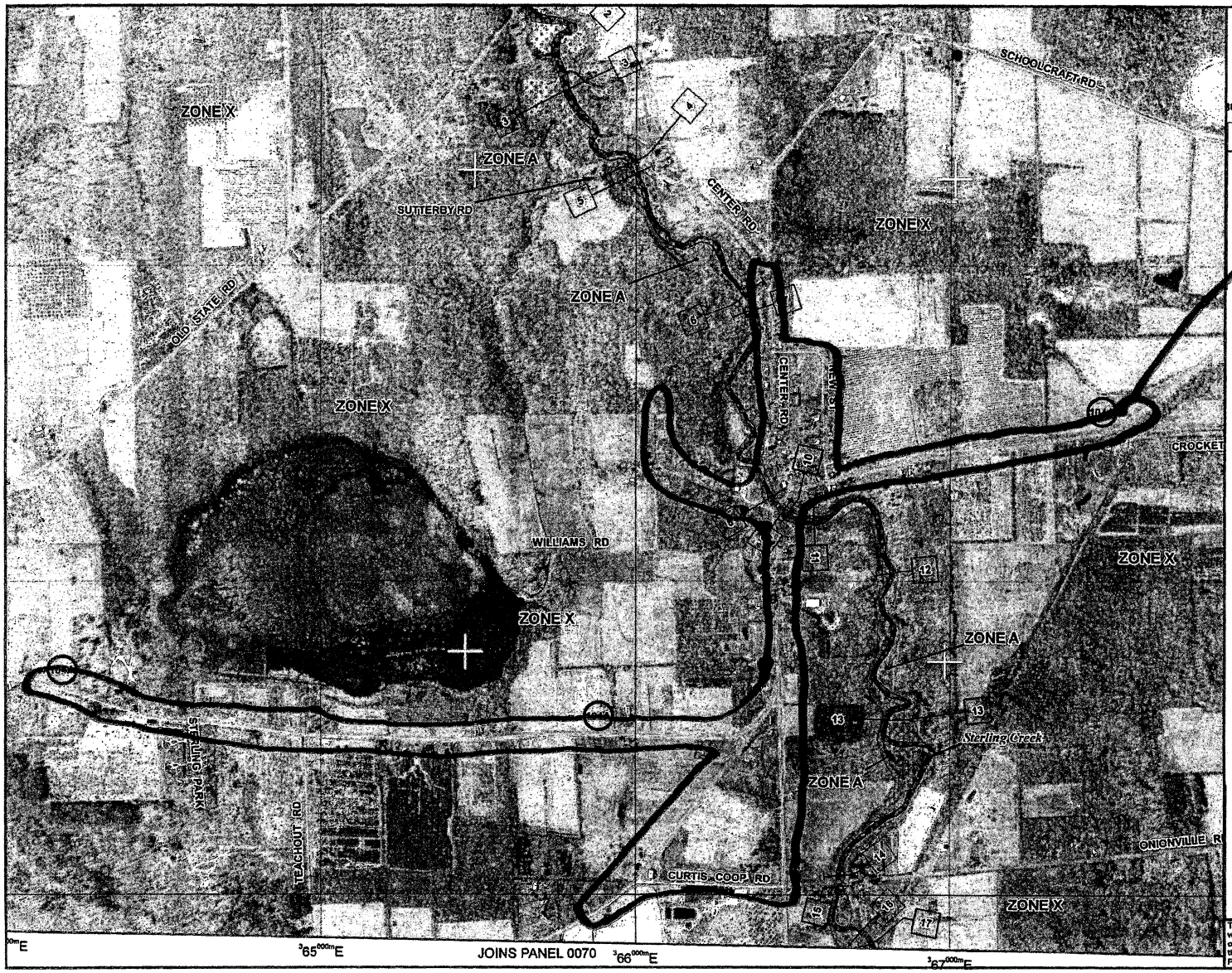
PROJ. #: 160043

DATE: 10/05/2016

SHEET

AG

Appendix F
Floodplain Map



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600

Project Area

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0060E

FIRM

FLOOD INSURANCE RATE MAP

for CAYUGA COUNTY, NEW YORK
ALL JURISDICTIONS

CONTAINS:

COMMUNITY	NUMBER
STERLING, TOWN OF	360126

PANEL 60 OF 635
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
36011C0060E

EFFECTIVE DATE
AUGUST 2, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix G
Cost Tables

Town of Sterling – Water District #3

Projected User Costs

Water from Fair Haven:

Typical usage = 170 gallons/household/day

≈ 92 households = 15,640 gpd = 475,716 gallons per month

Rate = $3.25/1,000 gallons plus $50 per EDU base rate O&M charge

Usage + O&M Fee:

$3.25/1,000 gallons x 475,716 gallons = $1,546/month = $18,553/year

Water Usage Charge = $202/EDU/year
EDU/year O&M Charge = $50/EDU/year

Estimated Annual Cost $252/EDU/year

Town of Sterling - Water District #3

PROBABLE CONSTRUCTION COSTS

Water District #3

	Quantity	*Unit*	*$/Unit*	*Tot. Cost*
Mobilization:	1	l.s.	$50,000	$50,000
8" Water Main:	17,500	l.f.	$30	$525,000
10" Water Main:	7,500	l.f.	$35	$262,500
Hydrant w/Valve:	42	ea.	$4,000	$168,000
8" Gate Valve:	22	ea.	$1,000	$22,000
10" Gate Valve	10	ea.	$1,200	$12,000
Meter Pits:	90	ea.	$900	$81,000
Service Taps:	90	ea.	$500	$45,000
1" Service Pipe:	4,500	ft.	$12	$54,000
Stream Crossing:	1	ea.	$15,000	$15,000
Road Borings:	200	l.f.	$130	$26,000
Rock Removal	10	c.y.	$70	$700
Auto Flusher	1	l.s.	$10,000	$10,000
Highway Pushes	45	ea.	$800	$36,000
Water Meters	90	ea.	$205	$18,450
Connect to Existing Main	1	ea.	$4,000	$4,000
Well #1 Rehabilitation	1	l.s.	40,000	40,000

Construction Total:	$1,370,000
Contingency:	$110,000
Construction Total:	**1,480,000**
Legal and Administration:	$55,000
Engineering :	$180,000
Environmental:	$8,000
Survey & Borings:	$32,000
Construction Services:	$65,000
Project Total:	**$1,820,000**

Appendix H
Health and Sanitation Documentation

Cayuga County Health Department

Kathleen D. Cuddy, MPH—Public Health Director
Eileen A. O'Connor, P.E.—Environmental Health Director

January 5, 2017

Randall Lawrence, Supervisor
Town of Sterling
1290 State Route 104A
Sterling, NY 13156

RE: Proposed Water District #3
Sterling (T), Cayuga County

Dear Mr. Lawrence:

This letter is in support of the proposed Town of Sterling Water District #3 which would serve the Route 104A corridor through "downtown" Sterling. According to C2AE, the Town's engineering firm, approximately 56% of the residents in this area obtain their drinking water from dug wells.

Dug wells are vulnerable to contamination from pathogens and chemical spills. The NYS Department of Health has stated that the construction characteristics typical of dug wells do not comply with requirements of Sub-part 5-1, appendix 5-B of the NYS Sanitary Code. Furthermore during periods of drought conditions, homeowners with dug wells often resort to obtaining water from alternative sources, such as roadside springs, that may have poor water quality.

In addition, the homes in this area are served by individual septic systems. Based upon information collected through Cayuga County's septic system inspection program, a large percentage of septic systems in the Town of Sterling do not meet current standards or the standards that were in effect at the time of their installation. The presence of substandard septic systems on properties with dug wells increases the risk of contamination of the drinking water.

A municipal water system in the proposed Water District #3 would allow the residents in the area to have access to safe and plentiful water.

Sincerely,

Eileen O'Connor
Environmental Health Division

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Water Supply Protection
Flanigan Square, 547 River Street, Troy, New York 12180-2216

INDIVIDUAL WATER SUPPLY WELLS - FACT SHEET #5
SUSCEPTIBLE WATER SOURCES
(Well Points, Dug Wells, Springs and Shore Wells)

Individual (residential) water supplies (IWS) need to provide adequate quantities of water fit for consumption and intended uses. A drilled well, located and constructed in accordance with 10NYCRR Appendix 5-B "Standards for Water Wells", should routinely be the water supply option selected. Well points, dug wells, springs and shore wells are susceptible to contamination from pathogens, spills, etc. and the effects from drought. These water sources may be considered only as a last resort with proper protective measures and, in most cases, will require approval by County or State health department officials through issuance of a specific waiver pursuant to Part 75 of the State Health Department's Administrative Rules and Regulations or via a county sanitary code waiver provision.

SPECIFIC INFORMATION FOR SUSCEPTIBLE WATER SOURCE TYPES

The following types of water sources typically utilize surface water bodies or shallow groundwater sources. Surface waters can contain bacteria, parasites, viruses and possibly other contaminants and shallow groundwater sources are also at significant risk of contamination. These water sources typically have distinguishing construction characteristics which do not comply with Appendix 5-B requirements and would therefore require a specific waiver or other county approval if utilized.

Well Points

A well point (or "driven point") is a special type of well installed using a drive point with a built-in screen fastened to the end of a small diameter pipe (usually 1-1/4 to 2 inches) and without a protective outer casing. Well points are installed by pounding, driving or excavating down to the water table. These wells are usually constructed in shallow aquifers with sandy soils, within 10 to 30 feet of the ground surface and use a suction pump to draw water. Single pipe driven point wells under suction are not in compliance with Appendix 5-B and should be avoided.

Dug Wells

A dug well is constructed by making a large diameter excavation into a shallow aquifer, by hand digging or backhoe and shoring the excavation with large diameter concrete rings. (Shoring constructed with stone or brick are not in compliance with Appendix 5-B and should be avoided.) Dug wells are typically less than 15 feet deep and usually use a suction pump to draw water.

Springs

Springs occur where an aquifer discharges naturally at or near the ground surface, and are broadly classified as either rock or earth springs. It is often difficult to determine the true source of a spring (that is, whether it truly has the natural protection against contamination that a groundwater aquifer typically has.) Even if the source is a good aquifer, it is difficult to develop a collection device (e.g., "spring box") that reliably protects against entry of contaminants under all weather conditions. (The term "spring box" varies, and, depending on its construction, would be equivalent to, and treated the same, as either a spring, well point or shore well.) Increased yield and turbidity during rain events are indications of the source being under the direct influence of surface water.

Shore Wells

"Shore wells" (also known as "infiltration galleries" or "cassion wells") are shallow wells influenced by surface water and are installed near a waterbody in a shallow aquifer that is directly connected to surface water. Shore wells can also be shallow subsurface devices adjacent to a water body, installed to collect water through a covered stone-filled trench or similar arrangement that drains surface water to a "storage" well or tank. Soils surrounding shore wells provide minimal filtration. The risk of contamination of these water sources can be similar to those of surface water sources.

ADDITIONAL CONSIDERATIONS AND RECOMMENDATIONS

The use of susceptible sources as described above is discouraged. A properly installed drilled well should be considered first before considering the use of a susceptible source. As a last resort, when the use of a susceptible source is considered, the following is recommended:

Well Points, Dug Wells and Springs

Where shallow ground water aquifers exist, well points, dug wells and springs can be allowed if they are installed by a certified New York State Department of Environmental Conservation (NYS DEC) registered water well contractor and, in most cases, require issuance of a specific waiver by the LHD or county sanitary code approval as needed. For these sources, installation of appropriate treatment should be considered (e.g., continuous disinfection). For springs, an engineering report, which may include a hydrogeologic study, should also be provided to assure that the water source is satisfactory.

Shore Wells

In cases where satisfactory groundwater cannot be developed according to Appendix 5-B standards, a specific waiver or approvals via county sanitary code can be requested for development of a shore well. All such requests should demonstrate unsatisfactory availability of groundwater via an engineering report or other evidence (such as a hydrogeologic study) deemed acceptable by the approval authority. Since shore wells provide minimal natural filtration of surface water, all requests should include proposed design, treatment (including filtration and continuous disinfection) and an operation, maintenance and monitoring plan developed by a professional engineer. After health department approval, the shore well needs to be installed by a certified NYS DEC registered water well contractor. Inclusion of a deed amendment as a condition on the specific waiver approval should also be considered. A professional engineer should certify that the construction and installation of treatment has been provided according to plans.

WATER QUALITY TESTING

Water quality testing is important for all drinking water wells to identify water characteristics and determine treatment needs. See NYS DOH Fact Sheet #3, "Recommended Residential Water Quality Testing" for a recommended minimum list of parameters to test for. It is recommended to test for coliform bacteria every year and to periodically re-test water quality; this is particularly important for water supplies susceptible to contamination.

COUNTY OR STATE HEALTH DEPARTMENT APPROVAL PROCESS REQUIRING A SPECIFIC WAIVER FROM PART 75 OR A COUNTY SANITARY CODE PROVISION

The local health official (see below) for the geographic area where the property that will utilize the water source is located should be contacted for information about how to apply for a specific waiver or other county sanitary code approval. **It is recommended that, before an application for a waiver or other approval is submitted, the local health official be contacted regarding conceptual acceptability of the proposal.** A specific waiver or other approval IS NOT intended as a device for routinely approving individual water sources that do not meet state standards. It is intended to provide administrative flexibility to address rare cases when hardships exist and/or other circumstances that make it impractical to meet Appendix 5-B standards.

ADDITIONAL INFORMATION:

Appendix 5-B can be found at:
http://www.health.state.ny.us/environmental/water/drinking/part5/appendix5b.htm

NYSDEC registered well drillers can be found at: http://www.dec.ny.gov/cfmx/extapps/WaterWell/index.cfm

For a copy of Appendix 5-B or other Fact Sheets or questions concerning this Fact Sheet:

Contact Your Local Health Department Official
(look for environmental health contacts)
www.nysacho.org/Directory/directory.html

or

Residential Sanitation Section
Bureau of Water Supply Protection
New York State Department of Health
(518) 402-7650 or FAX (518) 402-7659

TOWN OF STERLING

OFFICE OF CODE ENFORCEMENT

1290 State Route 104A
Sterling, NY 13156

April 5, 2017

Mr. Randall Lawrence, Supervisor
Town of Sterling
1290 State Route 104A
Sterling, NY 13156

RE: Town of Sterling – Proposed Water District No. 3
Cayuga County, NY

Dear Supervisor Lawrence,

As you may know New York State has established minimum standards for the design and construction of private, on-site water systems (IWS). These standards are contained in the New York State Sanitary Code and Building Code. Residential Code subsection P2602.1.1 requires IWS wells be located and constructed according to New York State Department Sanitary Code, 10NYCRR Appendix 5-B standards. Wells that do not meet these standards pose a significant risk for public health. In addition, IWSs are also to meet standards for potable water supply set forth in SSC Subpart 5-1, Section 5-1.52.

I have reviewed the proposed Water District No. 3 project, and based on my findings, I was able to determine that a significant portion of the properties in the proposed service area do not meet these standards. As documented by resident survey results obtained from property owners throughout the proposed project area, a significant portion of properties distributed throughout the project area have dug wells that do not meet the above standards. In addition, a letter obtained from the Cayuga County Health Department (CCHD) dated January 5, 2017 (attached) re-affirms that dug wells within the project area do not comply with the above standards. CCHD also confirms that a large percentage of septic systems in the Town of Sterling do not meet current standards, increasing the risk of contamination of drinking water. As the regulatory entity for these supplies, I can say wells within the project area do not meet NYS Sanitary Code.

The primary purpose of the proposed project is to construct a new water distribution system required to allow these homes to be supplied with drinking water meeting applicable health or sanitary standards. The completion of the project will alleviate the existing health or sanitary problems.

Should you have any questions on this information, please contact me.

Sincerely,

Jay Moose, CEO