

**MAP PLAN AND ENGINEERING REPORT
TO ESTABLISH A WATER DISTRICT TO
SERVE THE RICHFIELD SPRINGS
ECO-INDUSTRIAL BUSINESS PARK**

**TOWN OF RICHFIELD
OTSEGO COUNTY, NEW YORK**

PREPARED FOR:

County of Otsego Industrial Development Agency
242 Main Street
Oneonta, New York 13820



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I. INTRODUCTION

I.1 Background

The project consists of the development of the Richfield Springs Eco-Industrial Business Park in the Town of Richfield, on property totaling 55.057 acres of land owned by the County of Otsego Industrial Development Agency of Oneonta, New York (IDA). The property is identified in general as Tax Map No. 24.00-18.31, a portion of the old railroad right-of-way formerly owned by Central N.Y. R.R. Corp. and a single family residence on Elm Street Extension (Tax Map No. 24-00-1-18.32). The property is intended to be subdivided into five (5) lot numbers and the residential property identified as an out parcel (Tax Map No. 24.00-1-18.32). Please refer to the Property Area Summary in the Appendix on Figure No. 3: Master Plan. Two (2) lots are being designed as manufacturing, identified as Lot No.'s 1 and 2, which total 11.717 acres. The use for the remaining property is as identified in the Property Area Summary mentioned above. Please refer to Figure No. 1 – USGS Location Map and Figure No. 2 – Tax Map, in the Appendix.

The proposed access road intersects NYS Route 28 approximately 525 feet southwest of the intersection of Union Street and NYS Route 28. This is also the approximate location of where the railroad tracks crossed NYS Route 28. The access road is approximately 1,100 feet long with 2-12' wide paved driving lanes, 4 foot shoulders on each side, roadside swales and culverts for drainage within a 66 foot wide right-of-way. The access terminates via a cul-de-sac southeast of the access point to Lot No. 2. Please refer to Figure No. 3 – Master Plan and Figure No. 4 – Park Plan and Access Road Profile, in the Appendix.

Potable water service will be extended to the Richfield Springs Eco-Industrial Business Park from an existing 8" diameter main located in the southern shoulder of NYS Route 28. The existing 8" main ends on the southern shoulder at the intersection of Lakeview Avenue, approximately 1,285 feet from the proposed access road. The existing line will be extended southwest along the shoulder approximately 1,285 feet to the intersection of the above access road and NYS Route 28. A master meter and a backflow prevention device will be installed in a below grade vault adjacent to the intersection. From the vault the 8" main will proceed into the site along the southside of the access road approximately 1,100 feet to service Lot No.'s 1 and 2. Approximately 785 L.F. from the intersection of the access road and NYS Route 28, a tee will direct the 8" main northeast across the access road. The line will then proceed along the old railroad right-of-way to Elm Street Extension approximately 1,950 feet to connect to an existing 8" main, which will loop the service to the Business Park. A second meter pit and backflow prevention device will be required prior to the connection. Refer to Figure No. 3 Master Plan.

The IDA is interested in assisting the Town of Richfield in establishing a water district to provide water services to the Richfield Springs Eco-Industrial Business Park. The purpose of this report is to provide details to create the Town of Richfield Consolidated Water District.

2. SCOPE

The scope of this report is intended to present specific engineering information, property descriptions and construction and operational costs associated with the establishment of the water district to service the Richfield Springs Eco-Industrial Business Park. The total area proposed for the district is 11.717 acres out of the 55.057 acres owned by the IDA. The area consists of Lot No.'s 1 and 2 which are intended for business use. Since the infrastructure cost of the district formation will be the responsibility of the IDA, detailed financing and debt service charge calculations for infrastructure construction as it relates to the Town of Richfield are not included in this report. Please refer to Figure No. 5 – Water District Map and Figure No. 6 – Description of Town of Richfield Water District.

3. EXISTING DISTRICTS

The Village of Richfield Springs receives water from the Allen Lake Reservoir located in the Town of Richfield, southeast of the Village. Water is transmitted via gravity to the two reservoirs (the upper and lower reservoirs) located adjacent to the Water Treatment Plant, located east of the Village/Town border. Water from the lower reservoir is pumped to the Water Treatment Plant for treatment and distribution. Please refer to Figure No. 7 – Water System Schematic in the Appendix.

The treatment plant was constructed in 1994 and has a design treatment capacity of 1.0 MGD. However, currently the Village is permitted to operate one half of the plant equating to a water treatment capacity of 500,000 gpd. The treatment process includes chemical addition, clarification, filtration and disinfection. Treated water is stored in a 350,000 gallon clear well below the treatment plant which feeds the Village distribution system by gravity. Daily operation data indicates that the Water Treatment Plant treats an average of 120,000 gpd or 24% of its permitted capacity.

Water storage for the system is via a 350,000 gallon water storage tank located in the northwest corner of the Village. The tank is filled by gravity as the treatment plant is at a higher elevation. With the water storage tank combined with the clear well, the Village has a combined storage capacity of 700,000 gallons. The distribution system for the Village of Richfield Springs consists of approximately 60,823 feet (11.5 miles) of water main. The distribution system has been modeled using EPAnet, Hydraulic Modeling Software which provides flows and pressures at various points throughout the system.

4. PROPOSED WATER DEMAND FROM PROPOSED DISTRICT

4.1 Water Demand Origin

Water demand will be from the businesses that will occupy Lot No.'s 1 and 2. As a result of multiple restrictions on the overall property involving wetlands and archaeological resources primarily, 11.717 acres out of the total 55.057 acres are able to be developed, as mentioned in the Introduction. Please refer to Figure No. 4 – Park Plan and Access Road Profile in the Appendix. The figure indicates the location of the lots, their individual acreage and the maximum development of building and parking. The type of businesses that may develop this park are unknown therefore, the maximum building size is used to anticipate water demands.

4.2 Water Demand

As indicated in Figure No. 4, the maximum building development is 135,000 s.f. Using 0.1 gallons per day, per square foot of factory building floor space (2014 NYSDEC Design Standards For Intermediate Size Wastewater Treatment Systems), the average daily water demand is estimated at 13,500 gpd (9.4 gpm) ($135,000 \text{ s.f.} \times 0.1 \text{ gals/day/s.f.}$). Using a peaking factor of 4.3 produces a peak demand of 40.3 gpm ($13,500 \text{ gpd} \div 24 \text{ hours/day} \div 60 \text{ min./hr.} \times 4.3$).

As stated above, without knowing the businesses that will occupy the site we have to assume the use of water in a manufacturing process as a possibility. For the purpose of this report, 1,000 gpd will be assigned to the manufacturing process, which increases the average daily demand to 14,500 gpd (10.1 gpm) and the peak demand to 43.3 gpm. Fire flow demand is estimated to be 500 gpm.

The new distribution system will consist of approximately 1,385 feet of 8" Class 52 Ductile Iron water main with two (2) hydrants and main line valves for isolation purposes along NYS Route 28. Approximately 1,100 feet of 8" Class 52 Ductile Iron water main, two (2) hydrants, valves, a meter pit and two (2) – 6 inch service connections will be along the new access road. The 1,950 feet of water main along the old railroad bed to Elm Street Extension will also be 8" Class 52 Ductile Iron and include two (2) hydrants, a meter pit and isolation valves.

Based upon records supplied by the Village, the static pressure at the end of the existing 8" water main along NYS Route 28 is 80 psi. Calculations indicate that the peak water demand is met at approximately 81 psi residual pressure. The residual pressure is greater than the static pressure as result of many factors but largely due to the relatively low flow demand and the reduction in elevation head at the connect point to the delivery point of approximately 4 feet, equating to about 1.7 psi increase. The fire flow of 500 gpm is calculated to be delivered at about 71 psi. The minimum storage capacity required for a fire flow of 500 gpm is 60,000 gallons which is a two (2) hour event duration. As indicated above, the system has a storage capacity of 700,000 gallons which more than meets fire flow requirements.

The increase of 14,500 gpd referenced above reflects an approximate 12% increase on the demand of the system for a total demand of 134,500 gpd. This total represents 26.9% of the permitted capacity of the system. Therefore, the water demand of the new district can be met.

5. Proposed Operation and Maintenance Expenses

In accordance with the financial data provided by the Village of Richfield Springs in 2020 for the years 2018, 2019 and 2020, the average cost to operate the water system per year is \$221,613.00. The cost includes administration, insurance, treatment, employee payroll and benefits and general operation and maintenance of the system. Village flow records at the water treatment plant indicate that the Village treats and supplies approximately 120,000 gpd. However, they cannot charge and receive fees for everything they process due to leaks, hydrant flushing, municipal use and other miscellaneous factors. According to Village officials, approximately half of the water produced is billable.

Therefore the cost per 1,000 gallons is \$10.45. The IDA received a matching \$1.2 million dollar grant from the U.S. Department of Commerce Economic Development Administration (EDA) to fund the infrastructure costs for the park. The IDA will bond for their matching share and estimates the bonding cost to be \$50,000.00 per year. The Village will fund the IDA's bond cost through the service charges of the sewer district. Therefore, the bonding cost of the IDA is not reflected in the Village's cost to provide water. As indicated above, the estimated water demand from the Industrial Park is 14,500 gpd. The Village's cost is \$151.52 per day or \$55,304.80 per year (14,500 gpd x \$10.45/1,000 gal = \$151.52 per day x 365 days/yr. = \$55,304.80/yr.).

6. Service Charges

In accordance with the "Village of Richfield Springs Water/Sewer Rates for June 1, 2019", the rate for water is as follows, including a "monthly water line charge" (commercial) of \$10.00.

0-1,000	\$10.20
1,001-3,000	\$10.85
3,001-7,000	\$13.95
7,001+ gallons	\$16.85

(1,000 gpd x \$10.20 + 3,000 gpd x \$10.85 + 7,000 gpd x \$13.95 + 3,500 gpd x \$16.85 ÷ 1,000 gal. + \$10.00/month x 12 mo. ÷ 365 days/yr. = \$199.70/day or \$72,891.88/yr.).

Therefore, the total estimated fees to the Village for providing water services to the Richfield Springs Eco-Industrial Business Park is \$199.70/day or \$72,891.88/yr.

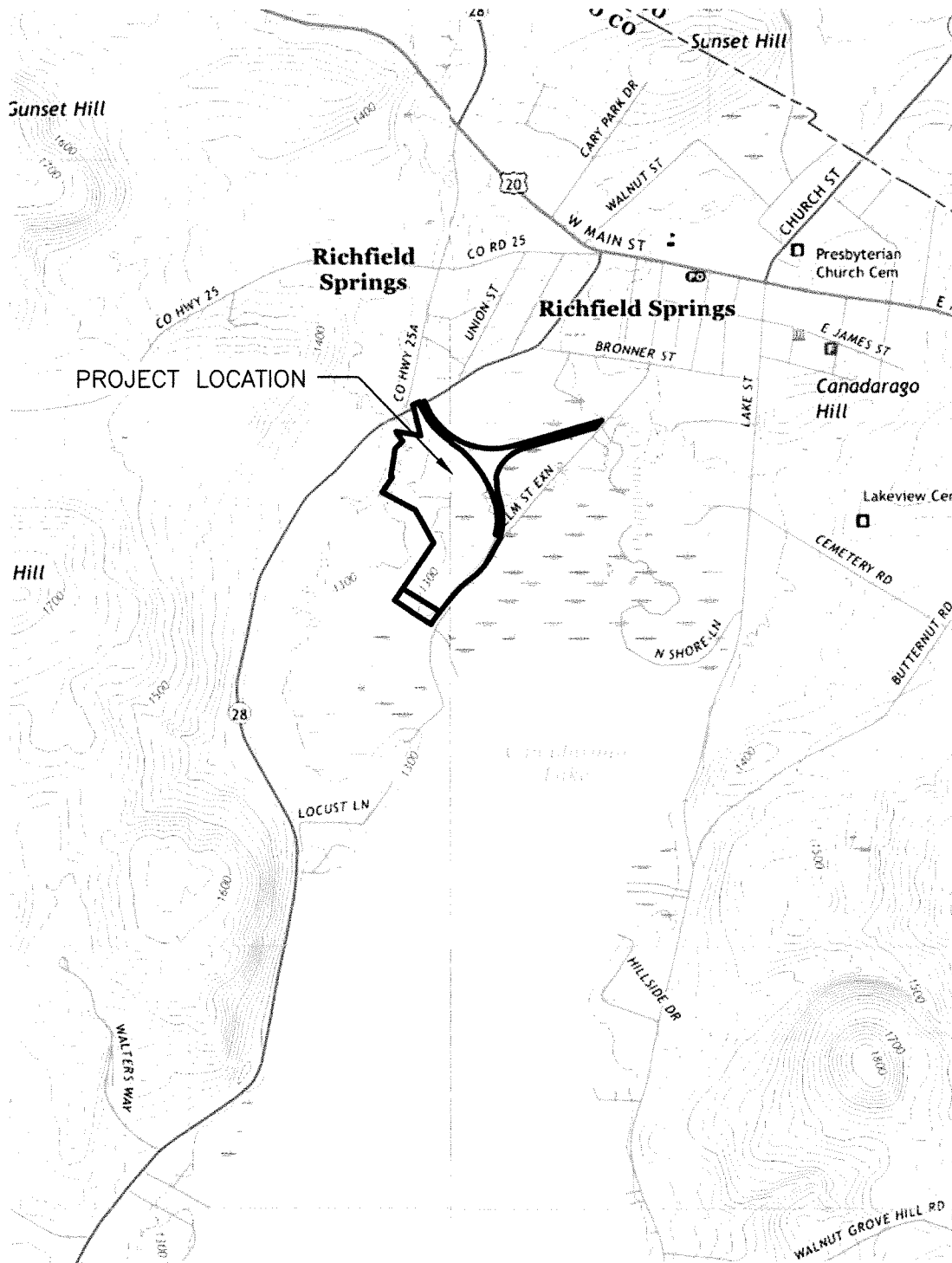
7. Summary

The estimated water fees imposed by the Village of Richfield Springs on the Richfield Springs Eco-Industrial Business Park exceeds the estimated cost to provide the water by \$17,587.08 per year. Therefore, creation of the Town of Richfield Water District to support the Business Park will not create a hardship or economic burden on the Town or Village and will contribute to the development of taxable property in the Town.

APPENDICES

FIGURES

**FIGURE NO. 1
USGS LOCATION MAP**



QUAD NAME:
SCHUYLER LAKE, NY
2019

SCALE: 1" = 2,000'

QUAD NAME:
RICHFIELD SPRINGS, NY
2019



OTSEGO COUNTY IDA
RICHFIELD SPRINGS BUSINESS PARK

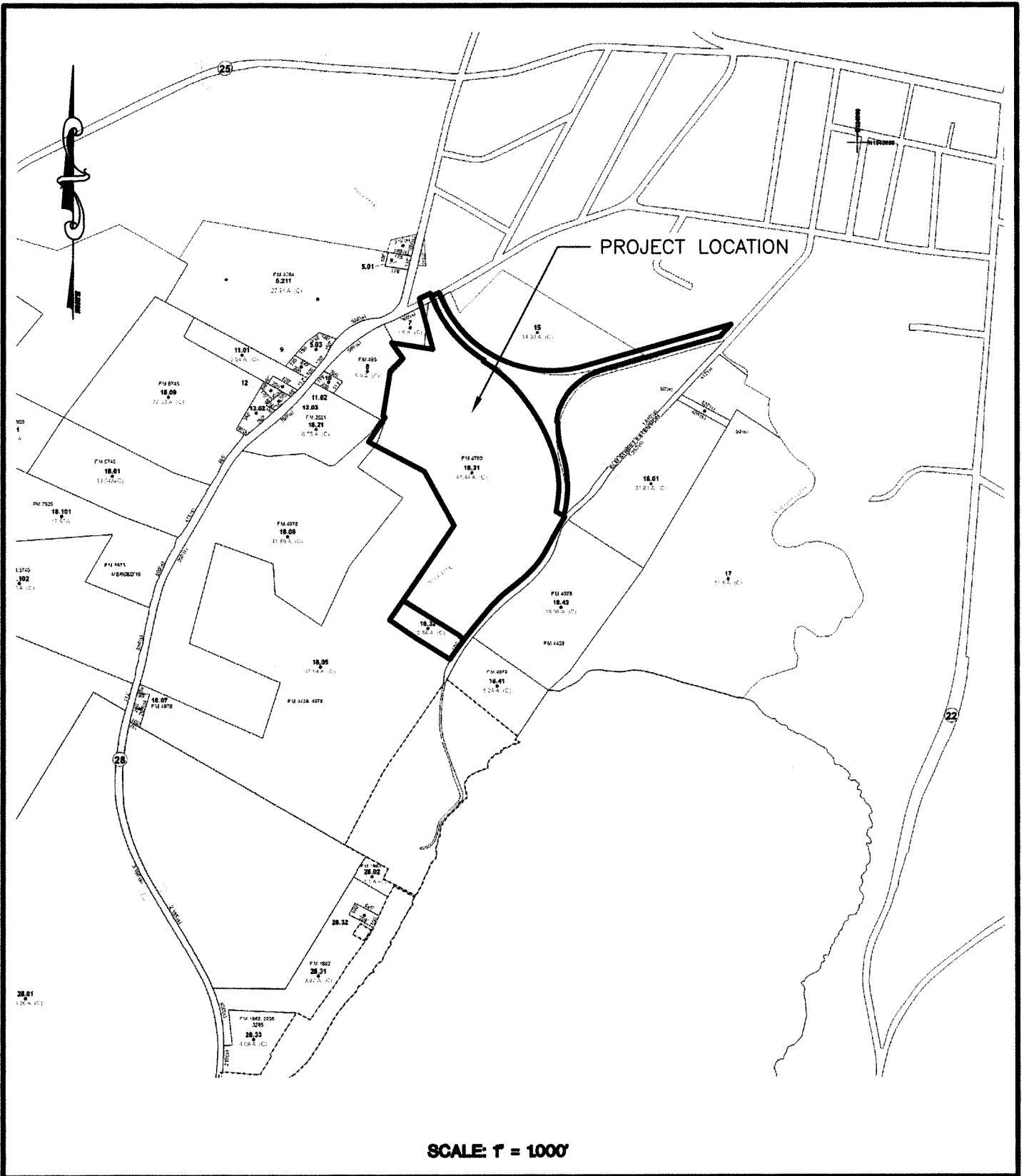
TOWN OF RICHFIELD
OTSEGO COUNTY NEW YORK STATE

KEYSTONE PROJECT #0552.04219

FIGURE NO. 1

USGS LOCATION
MAP

FIGURE NO. 2
TAX MAP



OTSEGO COUNTY IDA
RICHFIELD SPRINGS BUSINESS PARK

TOWN OF RICHFIELD
OTSEGO COUNTY NEW YORK STATE

KEYSTONE PROJECT #0552.04219

FIGURE NO. 2
TAX MAP

**FIGURE NO. 3
MASTER PLAN**

GENERAL NOTES

- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY PERMITS AND OBTAINING ALL NECESSARY PERMITS FOR ALL UTILITIES AND ERECTION OF ALL PERMITS.
- CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES. ALL UTILITIES EXISTING ON THE SITE SHALL BE PROTECTED AND MAINTAINED AT ALL TIMES. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES. ALL UTILITIES EXISTING ON THE SITE SHALL BE PROTECTED AND MAINTAINED AT ALL TIMES. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
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ZONING NOTES

ZONING DISTRICT: R-40 ONE ACRE COMMERCIAL DISTRICT

REQUIRED:

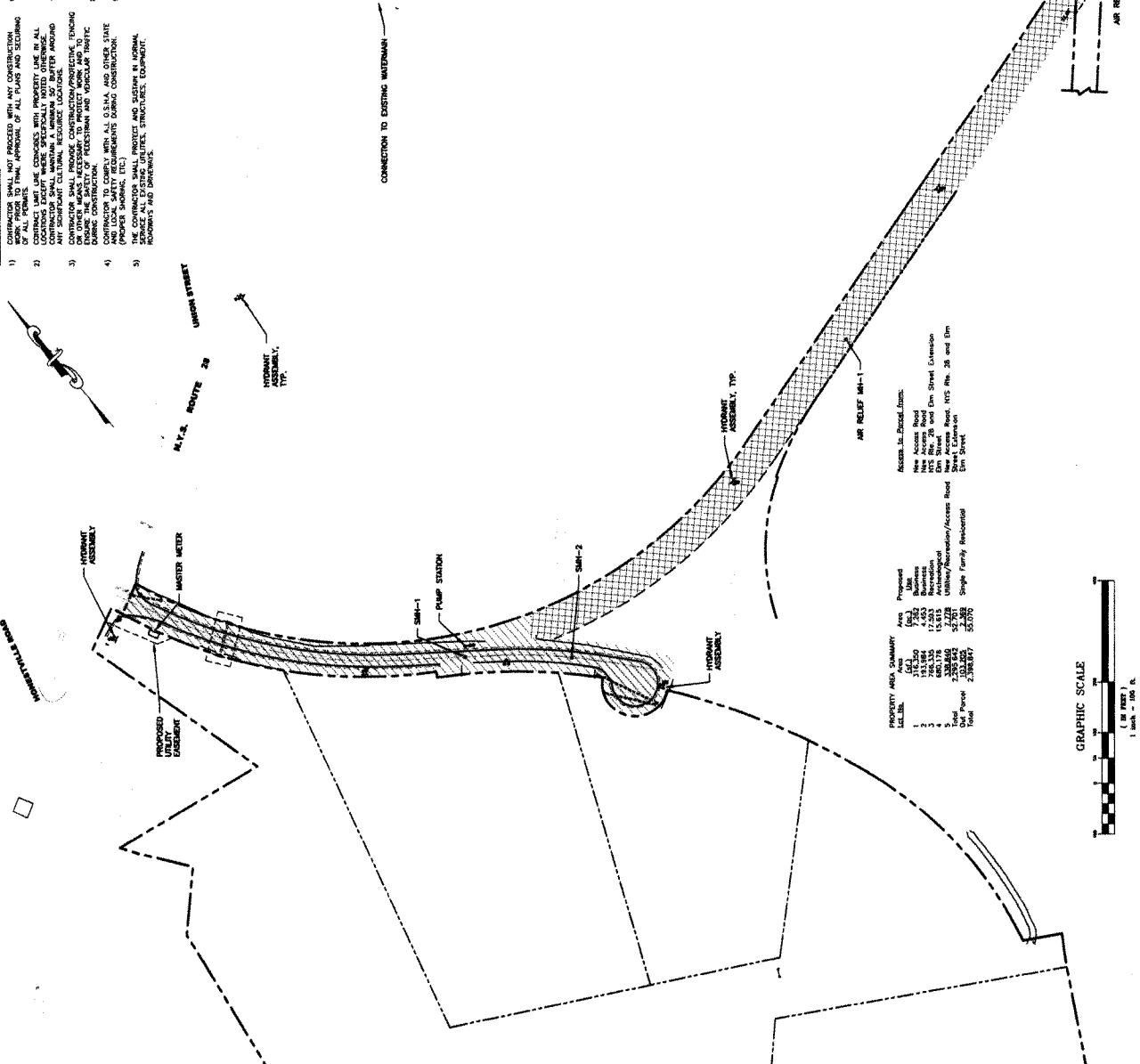
- MINIMUM LOT SIZE: 43,560 SF
- MINIMUM LOT DENSITY: 40 U/P
- MINIMUM YARD DIMENSIONS:
 - FRONT: 50 FT FROM EDGE OF ROAD
 - REAR: 50 FT
 - SIDE: 25 FT
- DE-SHREET PARKING: 1 PER 100 SF FLOOR AREA
- DE-SHREET STORAGE: 1 PER 200 SF FLOOR AREA
- DE-SHREET LOADING: 1 FOR EVERY RECEIVING DOOR

UTILITY EASEMENT LEGEND

- UTILITY EASEMENT GRANTED TO RICHFIELD SPRINGS TOWN OF RICHFIELD
- UTILITY EASEMENT GRANTED TO RICHFIELD SPRINGS TOWN OF RICHFIELD
- UTILITY EASEMENT GRANTED TO RICHFIELD SPRINGS TOWN OF RICHFIELD

CONTRACTOR RESPONSIBLE FOR OBTAINING HOUSING AND STREET WORK PERMITS.

CONTRACTOR SHALL ADD ALL ENVIRONMENTAL SENSITIVE AREAS FROM THE STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND THE STATE DEPARTMENT OF CONSERVATION AND RECREATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND OBTAINING ALL NECESSARY PERMITS FOR ALL UTILITIES AND ERECTION OF ALL PERMITS.



PROPERTY AREA SUMMARY

Parcel	Area	Proposed Use
1	13,184	Office
2	2,565	Business
3	1,115	Warehouse
4	15,415	Archaeological
Total	23,279	
Total	23,279	Single Family Residential

Access to Road/Junction:
 New Access Road
 New Access Road Elm Street Extension
 Elm Street
 New Access Road
 Elm Street
 New Access Road
 Elm Street

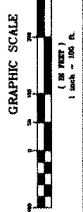
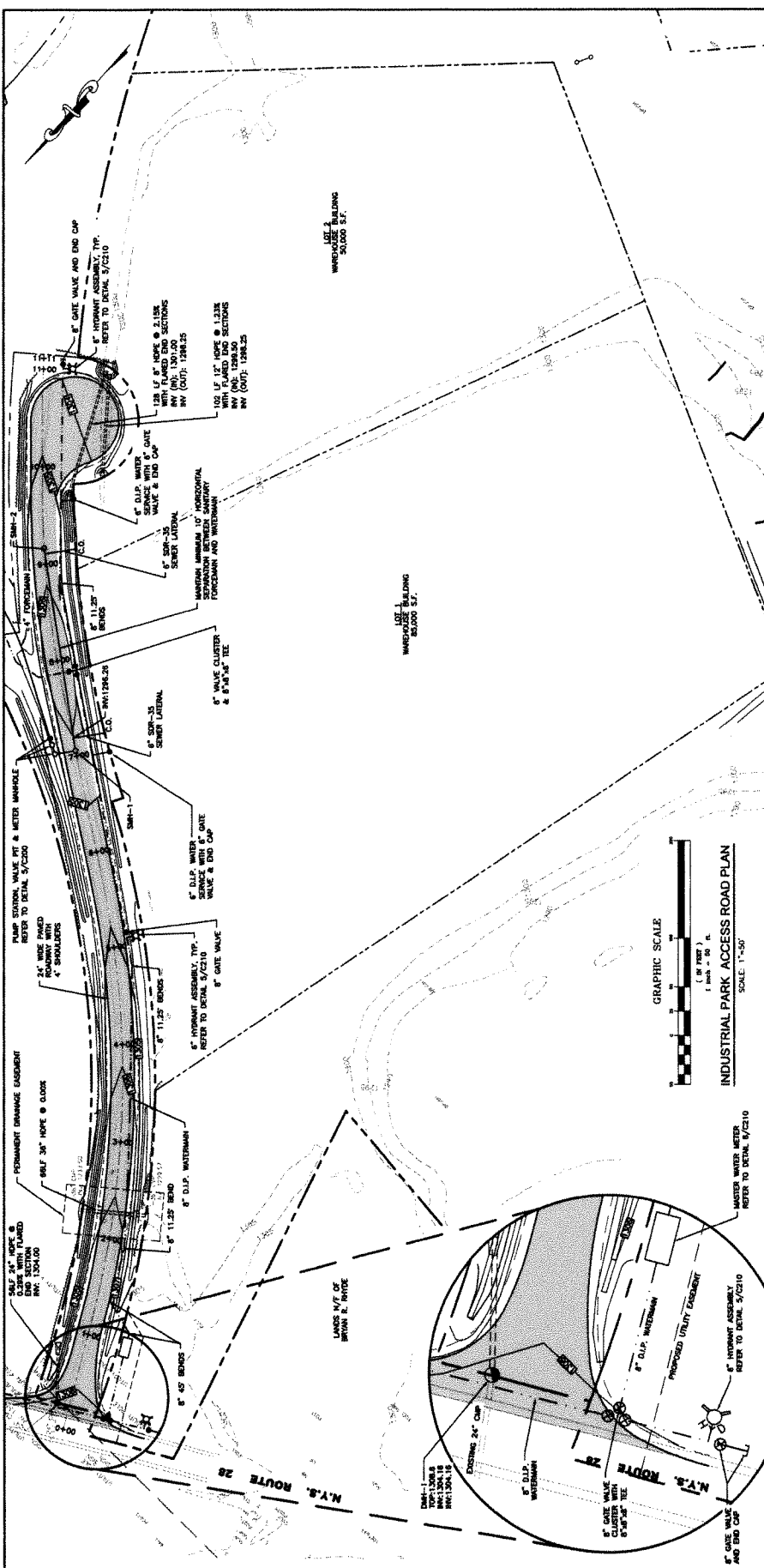


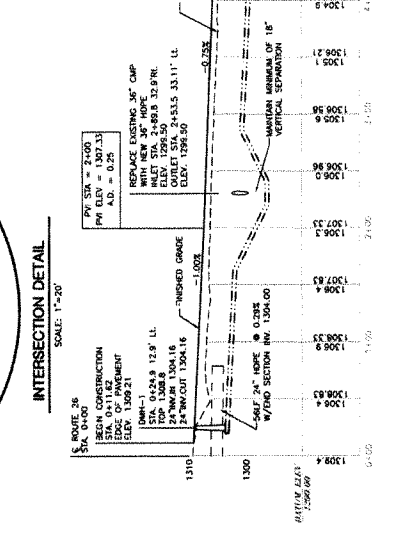
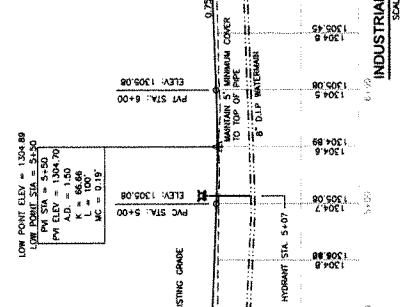
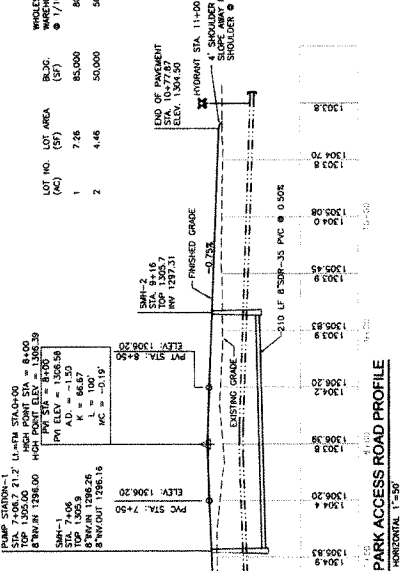
FIGURE NO. 4
PARK PLAN AND ACCESS ROAD PROFILE



OFF-STREET PARKING

OFFICE (SQ FT)	REQUIRE	ACTUAL
5,000 (17)	97	134
5,000 (17)	67	15
TOTAL	164	149

WHOLESALE TRACE:
 @ 17,000 SF
 @ 17,000 SF



**FIGURE NO. 5
WATER DISTRICT MAP**

FIGURE NO. 6
DESCRIPTION OF TOWN OF RICHFIELD WATER DISTRICT

SURVEYOR'S DESCRIPTION
WATER DISTRICT LOT #1
PORTION OF TM# 24.00-1-18.31
ELM STREET EXTENSION
TOWN OF RICHFIELD
OTSEGO COUNTY, NEW YORK STATE

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Richfield, County of Otsego, State of New York, being a portion of the property now or formerly of County of Otsego IDA (TM# 24.00-1-18.31), bounded and described as follows:

COMMENCING at a point on the centerline of NYS Route 28 at its intersection with the division line between another property now or formerly of the County of Otsego IDA (TM# 24.00-1-37) on the northeast and said County of Otsego IDA (TM# 24.00-1-18.31) on the southwest; thence generally southeasterly along said division line on a curve to the left having a radius of 974.93 feet, an arc length of 361.37 feet to the Point of Beginning, said curve being subtended by a chord having a bearing of S29°54'17"E and a length of 359.31 feet;

CONTINUING THENCE along the division lines between said County of Otsego IDA (TM# 24.00-1-37) and said County of Otsego IDA (TM# 24.00-1-18.31) the following three (3) courses and distances:

- 1) Continuing on a curve to the left having a radius of 974.93 feet, an arc length of 301.27 feet to a point, the last mentioned curve being subtended by a chord having a bearing of S49°22'34"E and a length of 300.07 feet;
- 2) S31°28'31"W, a distance of 11.86 feet to a point;
- 3) On a curve to the right having a radius of 1090.23 feet, an arc length of 240.17 feet to a point, the last mentioned curve being subtended by a chord having a bearing of S52°12'49"E and a length of 239.69 feet; thence through said County of Otsego IDA (TM# 24.00-1-18.31) the following three (3) courses and distances:
 - 1) S23°42'12"W, a distance of 641.85 feet to a point;
 - 2) N61°55'30"W, a distance of 403.54 feet to a point;
 - 3) N15°08'56"E, a distance of 777.14 feet to the POINT OF BEGINNING.

The above described parcel contains 316,350 square feet or 7.262 acres, more or less.

Bearings are referred to True North at the 74°30' Meridian of West Longitude.

SURVEYOR'S DESCRIPTION
WATER DISTRICT LOT #2
PORTION OF TM# 24.00-1-18.31
ELM STREET EXTENSION
TOWN OF RICHFIELD
OTSEGO COUNTY, NEW YORK STATE

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Richfield, County of Otsego, State of New York, being a portion of the property now or formerly of County of Otsego IDA (TM# 24.00-1-18.31), bounded and described as follows:

COMMENCING at a point on the centerline of NYS Route 28 at its intersection with the division line between another property now or formerly of the County of Otsego IDA (TM# 24.00-1-37) on the northeast and said County of Otsego IDA (TM# 24.00-1-18.31) on the southwest; thence generally southeasterly along said division line the following three (3) courses and distances: 1) On a curve to the left having a radius of 974.93 feet, an arc length of 662.64 feet to a point, said curve being subtended by a chord having a bearing of S38°45'27"E and a length of 649.96 feet; 2) S31°28'31"W, a distance of 11.86 feet to a point; 3) On a curve to the right having a radius of 1090.23 feet, an arc length of 240.17 feet to the Point of Beginning, the last mentioned curve being subtended by a chord having a bearing of S52°12'49"E and a length of 239.69 feet;

CONTINUING THENCE along the division lines between said County of Otsego IDA (TM# 24.00-1-37) and said County of Otsego IDA (TM# 24.00-1-18.31) the following four (4) courses and distances:

- 1) Continuing on a curve to the right having a radius of 1090.23 feet, an arc length of 76.33 feet to a point, the last mentioned curve being subtended by a chord having a bearing of S43°53'49"E and a length of 76.31 feet;
- 2) S41°40'14"E, a distance of 10.99 feet to a point;
- 3) On a curve to the left having a radius of 65.00 feet, an arc length of 202.37 feet to a point, the last mentioned curve being subtended by a chord having a bearing of S38°50'16"E and a length of 129.99 feet;
- 4) On a curve to the right having a radius of 1426.14 feet, an arc length of 296.02 feet to a point, the last mentioned curve being subtended by a chord having a bearing of S30°16'46"E and a length of 295.49 feet; thence through said County of Otsego IDA (TM# 24.00-1-18.31) the following three (3) courses and distances:
 - 1) S47°34'52"W, a distance of 431.31 feet to a point;
 - 2) N61°55'30"W, a distance of 261.06 feet to a point;
 - 3) N23°42'12"E, a distance of 641.85 feet to the POINT OF BEGINNING.

The above described parcel contains 193,984 square feet or 4.453 acres, more or less.

**FIGURE NO. 7
WATER SYSTEM MAP**

15 Exchange Street
 Burlington, New York 13021
 518.732.7276
 Fax 518.732.7275
 www.keystone-associates.com

KEYSTONE
 ASSOCIATES

OTSOGO COUNTY IDA
 RICHFIELD SPRINGS ECO-INDUSTRIAL
 BUSINESS PARK ROAD & UTILITY EXTENSION
 OTSOGO COUNTY, NY

WATER SYSTEM SCHEMATIC

7
 0554-D4316.1
 02/15/21



WATER SYSTEM SCHEMATIC
 VILLAGE OF RICHFIELD SPRINGS
 OTSOGO COUNTY, NEW YORK

LEGEND

- 1" watermain, pre-1997
- 2" watermain, pre-1997
- 4" watermain, pre-1997 or later
- 6" watermain, pre-1997
- 8" watermain, 1997 or later
- 10" watermain, pre-1997
- 12" watermain, 1997 or later
- 16" watermain, pre-1997
- 20" watermain, pre-1997
- 24" watermain, pre-1997

SCALE: T = 1200

Map: All water mains are pipe material classed as the 2005 Standard for the Village of Richfield Springs and 21254' north of the line shown on this map.

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