

PRELIMINARY ENGINEERING REPORT

FOR THE

TOWN OF EAST BLOOMFIELD WATER FEASIBILITY STUDY

APRIL 23, 2018



CHATFIELD ENGINEERS, P.C.

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**PRELIMINARY ENGINEERING REPORT
FOR THE
TOWN OF EAST BLOOMFIELD
WATER FEASIBILITY STUDY
ONTARIO COUNTY, NEW YORK
APRIL 23, 2018**

I GENERAL

A. Purpose

The purpose of this study is to review the possibility of providing public water to areas not presently served with in the **Town of East Bloomfield**.

B. Background

The Town of East Bloomfield has three existing water districts that serve portions of the Town. The Town Board has retained Chatfield Engineers, P.C. to investigate the feasibility of expanding the water system to the remaining areas of the Town of East Bloomfield. This study will determine if a Town wide water district or smaller individual districts are more feasible.

II PROJECT PLANNING AREA

A. Project Location

Refer to **Figure 1** – Project Location Map. Details of the existing an potential Service Area are included in **Drawing 1**.

B. Environmental Resources Present

The remaining areas of service are generally rural residential areas and agricultural lands.

An environmental review will need to take place prior to any implementation.

C. Growth Areas and Population Trends

The population of the Town of East Bloomfield is 3,634 per the 2010 Census.

There are approximately 624 residences and additional vacant properties without public water, that are considered as part of this Project.

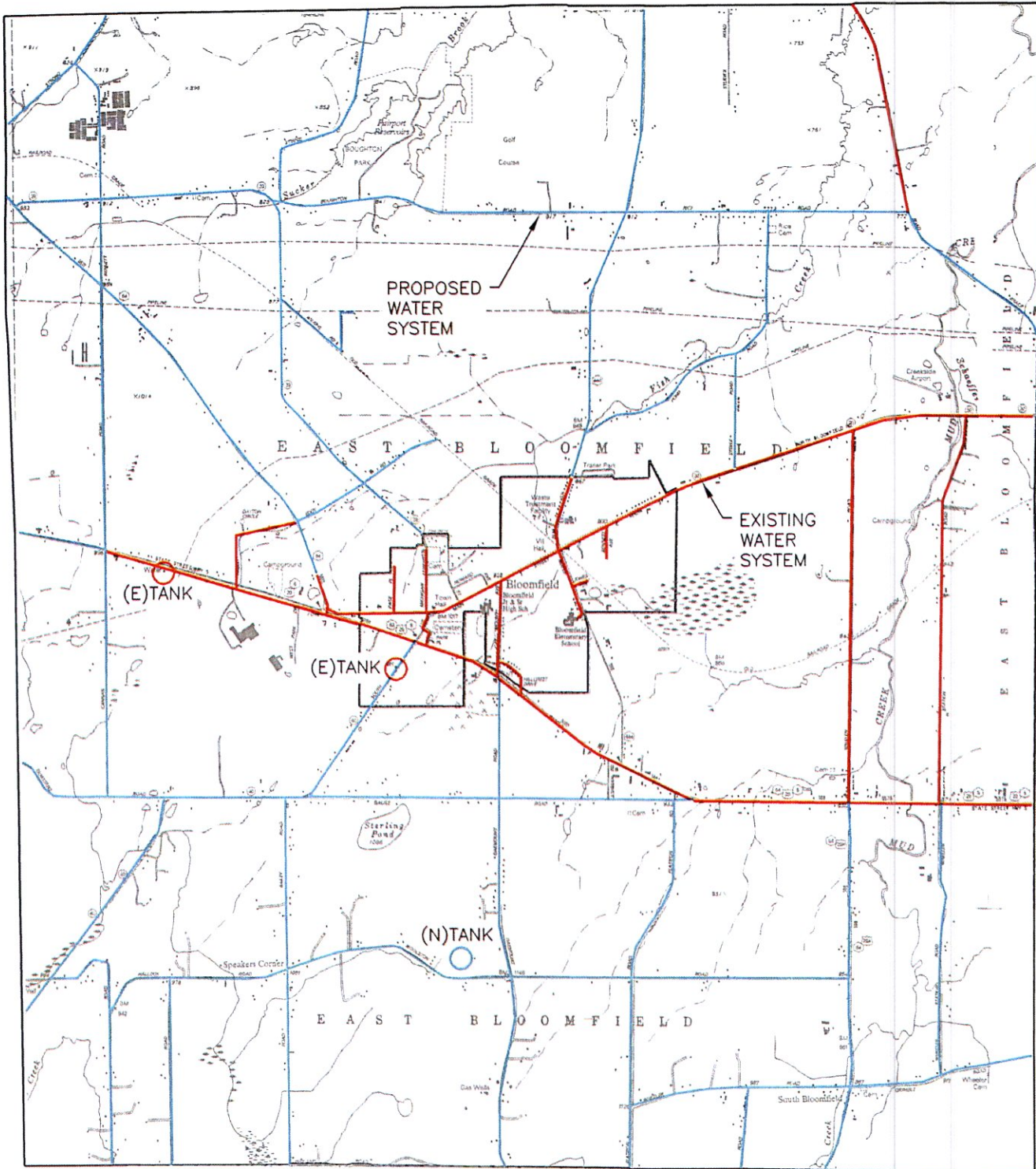
The estimated population of the Project Area is 1,560 people, assuming an average of 2.5 people per household.

With an estimated growth within the Project Area of approximately 10% over the next 20 years, the estimated future population is 1,716.

1. Existing Service Areas

<u>Area</u>	<u>Population</u>	<u>Demand</u>
WD #1	541	54,100
WD #2	100	10,000

NORTH



— EXISTING WATER MAIN

— PROPOSED WATER MAIN

SCALE:

N.T.S.

DRAFTED BY:

JBL

CHECKED BY:

JDH

DATE:

APR 2018

PROJ. NO.:

17-1258



CHATFIELD ENGINEERS, P.C.

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PROJECT:

TOWN OF EAST BLOOMFIELD

TITLE:

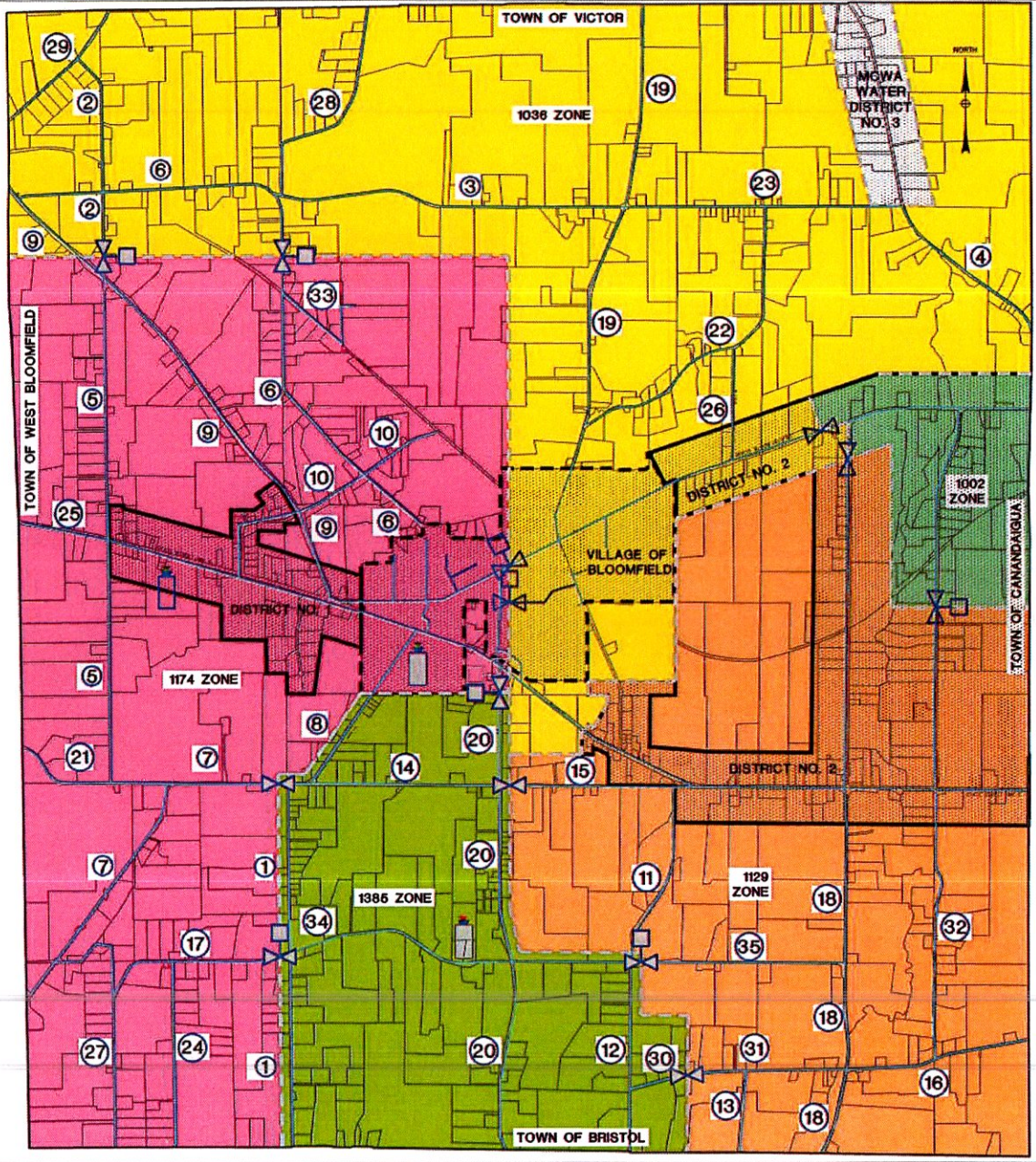
FIGURE 1
PROJECT LOCATION MAP

**SERVICE AREA MAP
TOWN OF
EAST BLOOMFIELD**


APRIL 23, 2018

- PROPOSED**
- (N) CLOSED VALVE
 - (N) PRV
 - (N) WATER TANK
- EXISTING**
- (E) CLOSED VALVE
 - (E) PRV
 - (E) WATER TANK

- LEGEND**
- EXISTING AREAS OF SERVICE
 - 1002 ZONE
 - 1038 ZONE
 - 1129 ZONE
 - 1174 ZONE
 - 1386 ZONE



Areas of Service	
1	Bailey Road
2	Bennett Road
3	Boughton Road
4	Brace Road
5	Cannan Road
6	County Road 39
7	County Road 40
8	County Road 40/South Ave
9	County Road 64
10	Eddy Road
11	Flatiron Road
12	Flatiron Road
13	Forbes Road
14	Gauss
15	Gauss
16	Grimble Road
17	Hallock Road
18	NYS 20A/CR 64/ Bristol Valley Rd
19	NYS RTE 444
20	Oakmount Road
21	Olmstead Road
22	Pond Road
23	Rice Road
24	Silvermail Road
25	State Street HWY 5
26	Steele Road
27	Stetson Road
28	Stimie Road
29	Strong Road
30	Wheeler Road
31	Wheeler Road
32	Wheeler Station Road
33	Wilkins Road
34	Woolston Road
35	Woolston Road

NO ASSURANCE IS GIVEN FOR THE INFORMATION PROVIDED HEREON EXCEPT AS PROVIDED UNDER SECTION 1707 AND SECTION 1709 OF THE NEW YORK STATE EDUCATION LAW.	
PROJECT: TOWN OF EAST BLOOMFIELD WATER DISTRICT'S MAP	DATE: APRIL 23, 2018
PROJECT NO. 17-1258	DRAWING NO. 1
	
EXISTING & PROPOSED SERVICE AREAS	
PROJECT MANAGER: _____ DATE: _____ PROJECT NO.: _____ DRAWING NO.: _____	REVISIONS: NO. _____ DATE _____ NO. _____ DATE _____ NO. _____ DATE _____

WD #3 (MCWA)	72	7,200
<u>Village of Bloomfield</u>	<u>1,361</u>	<u>136,100</u>
All Areas Served	2,074	207,400

2. Future Service Areas

<u>Area</u>	<u>Population</u>	<u>Demand</u>
Remaining Areas	1,560	156,200
<u>Future Growth</u>	<u>156</u>	<u>15,600</u>
Future Total	3,790	379,000

III. EXISTING FACILITIES

There are three water districts in the Town of East Bloomfield.

A. Water Demand

Existing Service Areas

<u>Area</u>	<u>Population</u>	<u>Demand</u>
WD #1	100	10,000 gpd
WD #2	541	54,100 gpd
WD #3 (MCWA)	72	7,200 gpd
<u>Village of Bloomfield</u>	<u>1,361</u>	<u>136,100 gpd</u>
All Areas Served	2,074	207,400 gpd

Future Service Areas

<u>Area</u>	<u>Population</u>	<u>Demand</u>
Remaining Areas	1,560	156,200 gpd
<u>Future Growth</u>	<u>156</u>	<u>15,600 gpd</u>
Future Total	3,790	379,000 gpd

B. Water Supply

<u>Source</u>	<u>Service Area</u>	<u>Pressure Zone</u>
Michigan St Wells & Oak Mount St springs	District #1, V Bloomfield & District #2 northwest	1036/1174 1002/1129
Town of Canandaigua	District #2	1002/1129
MCWA	District #3	_____

C. Capacity

<u>Source</u>	<u>Capacity</u>
Michigan St well	360,000 gpd
Oak Mount St spring	75,000 - 100,000 gpd
Town of Canandaigua	100,000 gpd (estimated)
MCWA	N/A
Total	600,000 gpd +/-

Districts 1 and 2 are operated and maintained by an intermunicipal agreement with the Village of Bloomfield. District 1 is located between the westerly limits of the Village of Bloomfield and Cannan Road. District 2 is located between the Village of Bloomfield and the Town of Canandaigua. District 3 along Brace Road is operated and maintained by the Monroe County Water Authority (MCWA) under a 40-year lease agreement.

Water supply is provided to these districts through three sources and operates on four different pressure zones. District 1 is supplied by two well systems. The Village owns and operates the two 340 gpm pumps off of the Michigan Street wells and two 160 gpm pumps on the Oak Mount Avenue springs. The well and spring systems supply water to the water storage tanks and provides pressure to the 1,174 and 1,036 zones. This system also has a connection to the Town of Canandaigua's water system for emergency purposes. The District 2 water is supplied by the Town of Canandaigua through a PRV Vault located along NYS RTE 5 & 20 and supplies water to the 1,129 and 1,002 pressure zones. District 3 is supplied by the MCWA with a connection along Brace Road at the Victor Town line.

There are no existing facilities in the proposed Project Area. Residents and property owners currently obtain water from private wells and/or purchase bottled water for consumption.

IV NEED FOR PROJECT

A. Health and Safety

The residents are not served with public water and experience the following problems:

1. **Insufficient quantity** of water is available for the residential wells.
2. **Poor water quality** is predominant in the existing well supplies.
3. **High cost** to operate and maintain existing well supplies.
4. **Fire Protection.** Currently, there is no water system to provide fire protection in the project area. Likewise, there are no significant bodies of water in the vicinity that provide an adequate supply of water for fire protection. Insurance Services Office (ISO) requires a minimum fire flow of 500 gpm at 20 psi residual pressure for the remaining areas of service, based upon spacing between structures. The system capacity in the study area will be above the 500 gpm at a minimum of 20 psi standard.

Providing public water would address all of these issues for the residents.

V. ALTERNATIVES CONSIDERED

We have evaluated all of the areas in the Town without public water. These areas are considered individually and as a whole. Due to the variation in topography, density and proximity to the existing facilities service costs will vary significantly.

The area labeling system does not represent the order in which projects should be completed. Some areas will need to be completed to serve other areas. We have attempted to propose initial improvements in areas of higher population density that are adjacent to existing water mains.

Areas of the highest elevation 1, 8, 12, 13, 14, 20, 30, 34 (Zone 1385) should be completed together.

Areas on the current pressure zones can be broken into smaller projects.

There are numerous alternative combinations of areas to serve. As part of this study we have evaluated the overall system that can be broken into smaller districts. For simplicity purposes, we have evaluated the following alternatives:

Option – 1 – All Areas

- All remaining areas together as one project, this option would require the installation of 5 Pressure Reduce Valves (PRVs), a pump station and a 750,000-gallon water storage tank. This option would have the potential to remove the Village 750,000-gallon water tank, eliminate the 1,002-pressure zone and improve water quality throughout the system. This option would allow the entire water system to operate off of the Village of Bloomfield supply, while having an emergency connection to the Town of Canandaigua.

Option – 2 – Low Elevation Zones

- This option would be served off of the existing water pressure zones, would require two pressure reducing valves (PRV) but would not require any additional pumps or tanks.

Option – 3 – High Elevation Zones

- The high elevation zone would require pumping water to a new water 140,000-gallon water storage tank. At the 1385 pressure zone.

The Service Area Options are summarized on **Table 2**.

The pipe material alternatives to consider include PVC pipe, ductile iron pipe (DIP) and high-density polyethylene pipe (HDPE). The Town of East Bloomfield has constructed their previous (within the past 5 years) water main district utilizing PVC and ductile iron pipe. The operation and maintenance staff is familiar with both materials and has tools for operating and maintaining them. However ductile iron pipe will be costlier to purchase and install. Using HDPE for water distribution systems is a feasible alternative for crossing creeks and along cross lot areas where no water services are likely. We recommend using a combination of PVC and HDPE pipe for the water distribution system.

The water main size will be based upon the needed fire flow and anticipated domestic water supply needs, therefore no alternative pipe size would be appropriate to consider.

VI. POTENTIAL PROJECT

A. Project Design

1. Water Supply

Water will be provided from the Village of Bloomfield well and spring system, from the Town of Canandaigua and from the MCWA.

The water system will be designed to provide 100 gallons of water per person per day for domestic and commercial uses and to provide fire protection of a minimum of 500 gallons per minute (gpm) at 20 psi residual pressure in all locations. The majority of areas will have fire flows in excess of 750 gpm at 20 psi.

2. Treatment

No treatment will be involved with the project, since water will be purchased from others.

3. Storage

The Town and Village water storage tanks have adequate capacity and pressure to supply water and fire protection to the four lower pressure zones and the overall project area.

However, the homes located in the 1385 zone cannot be serviced from the existing facilities due to elevation restriction. To provide adequate capacity, pressure and fire protection for this area, a water storage tank is required. The Recommended Standards for Water Works requires that water storage facilities are sized to meet domestic and fire demands while noting that "excessive storage capacity should be avoided to prevent potential water quality deterioration problems."

A. Fire Flow Storage

The maximum fire demand for design purposes is estimated at 750 GPM. The Recommended Standards for Water Works requires that the fire flow requirements meet the ISO recommendations. The ISO in-turn indicates that the fire flow duration should be 2 hours for needed fire flows of 750 GPM. This equates to a volume of 90,000 gallons.

B. Domestic Storage

Adding the future average day demand of high elevation area is 37,250 gallons to the 90,000 gallons required for fire protection yields a required total storage of 127,250 gallons.

A 140,000-gallon water storage tank is recommended for the Town of East Bloomfield high elevation area of service. A 750,000-gallon tank could be installed eliminating the need for the existing 750,000-gallon Village owned tank. If installed the new tank could

provide the pressure to all other pressure zones and eliminate the need to purchase water from the Town of Canandaigua.

	<u>Existing</u>	<u>Option 1</u>	<u>Option 2</u>	<u>Option 3</u>
Population	2,074	1,560	1,190	373
Demand (gpd)	207,400	156,200	119,000	37,300
Fireflow Min. (gpm)	342	524	826	352
Fireflow Max. (gpm)	3,500	3,500	2,380	3,500
Storage Available (gal)	1,250,000	1,250,000	1,250,000	140,000

4. Pumping Stations

If a new tank is installed to serve the high elevation areas a pump station would be required to fill the tank.

5. Distribution Layout

This study includes the following assumptions:

- 8"-12" DR-18 PVC water main.
- Hydrants will be installed every 600'.
- Valves will be installed every 1,200'.
- 1" minimum polyethylene tubing water services will be installed.

The property owners are responsible for the following:

- Installation of the water service between the right-of-way and their structure.
- Disconnection of their private water supply from the public water supply.
- Internal plumbing changes.
- Payment of water usage.

The Project Area may be broken down into Phases and the areas are summarized in **Table 1: Town of East Bloomfield Service Areas** and listed below:

Area 1: Bailey Road: 10,500 linear feet of 8" water main between the Town of Bristol Town Line and County Road 40.

Area 2: Bennett Road: 6,500 linear feet of 8" water main between Strong Road and County Road 64.

Area 3: Boughton Road: 10,050 linear feet of 8" water main between County Road 39 and NYS RTE 444.

Area 4: Brace Road: 5,000 linear feet of 8" water main between Boughton Road and the Canandaigua Town Line.

Area 5: Cannan Road: 14,300 linear feet of 8" water main between County Road 64 and Olmstead Road.

Area 6: County Road 39: 18,450 linear feet of 8" water main between County Road 64 and the Bloomfield Village Line.

Area 7: County Road 40: 10,500 linear feet of 8" water main between West Bloomfield Town Line and Bailey Road.

Area 8: County Road 40 & South Ave: 3,500 linear feet of 8" water main between Bailey Road and the Bloomfield Village Line.

Area 9: County Road 64: 15,050 linear feet of 8" water main between State Street (HWY 5) and the West Bloomfield Town Line.

Area 10: Eddy Road: 4,600 linear feet of 8" water main between County Road 64 and the dead-end of Eddy Road.

Area 11: Flatiron Road: 4,850 linear feet of 8" water main between the Gauss Road and 500 linear feet north of Woolston Road.

Area 12: Flatiron Road: 5,750 linear feet of 8" water main between the Richmond Town Line and 500 linear feet north of Woolston Road.

Area 13: Forbes Road: 2,250 linear feet of 8" water main between the Richmond Town Line and Wheeler Road.

Area 14: Gauss Road: 6,000 linear feet of 8" water main between South Avenue and 500 linear feet east of Oakmount Road.

Area 15: Gauss Road: 4,950 linear feet of 8" water main between State Street (HWY 5) and 500 linear feet east of Oakmount Road.

Area 16: Grimble Road: 5,250 linear feet of 8" water main between Bristol Valley Road and the Canandaigua Town Line.

Area 17: Hallock Road: 5,900 linear feet of 8" water main between Stetson Road and Bailey Road.

Area 18: NYS RTE 20A/County Route 64/Bristol Valley Road: 10,400 linear feet of 8" water main between State Street (HWY 5) and the Bristol Town Line.

Area 19: NYS RTE 444: 13,400 linear feet of 8" water main between Victor Town Line and Bloomfield Village Line.

Area 20: Oakmount Road: 13,850 linear feet of 8" water main between the Bloomfield Village Line and the Bristol Town Line.

Area 21: Olmstead Road: 4,700 linear feet of 8" water main between the West Bloomfield Town Line and County Road 40.

Area 22: Pond Road: 9,300 linear feet of 8" water main between the NYS RTE 444 and Rice Road.

Area 23: Rice Road: 7,850 linear feet of 8" water main between the NYS RTE 444 and Brace Road.

Area 24: Silvernail Road: 5,300 linear feet of 8" water main between the Richmond Town Line and Hallock Road.

Area 25: State Street: 2,600 linear feet of 8" water main between the West Bloomfield Town Line and Cannan Road.

Area 26: Steele Road: 3,200 linear feet of 8" water main between the Pond Road and North Bloomfield Road.

Area 27: Stetson Road: 8,250 linear feet of 8" water main between West Bloomfield Town Line and Richmond Town Line.

Area 28: Stirnie Road: 6,600 linear feet of 8" water main, between Boughton Road and Victor Town Line.

Area 29: Strong Road: 4,150 linear feet of 8" water main, between West Bloomfield Town Line and Victor Town Line.

Area 30: Wheeler Road: 1,650 linear feet of 8" water main between Flatiron Road and 1,650 linear feet east of Flatiron Road.

Area 31: Wheeler Road: 4,550 linear feet of 8" water main between Bristol Valley Road and 1,650 linear feet east of Flatiron Road.

Area 32: Wheeler Station Road: 7,700 linear feet of 8" water main between State Street (HWY 5) and Grimble Road.

Area 33: Wilkins Road: 3,700 linear feet of 8" water main between County Road 39 and the dead-end of Wilkins Road.

Area 34: Woolston Road: 10,050 linear feet of 8" water main between 500 linear feet east of Bailey Road and 500 linear feet east of Flatiron Road.

Area 35: Woolston Road: 5,700 linear feet of 8" water main between 500 linear feet east of Flatiron Road and Bristol Valley Road.

5. Hydraulic Calculations

The Village of Bloomfield has worked with our office to obtain the hydraulic information used for our preliminary evaluation. A computer model has assembled to estimate the hydraulic conditions throughout the Project Area.

TABLE 1

Option 1-Proposed Hydraulic Conditions (All Areas)

<u>Location</u>	<u>Junction</u>	<u>Static Pres.(psi)</u>	<u>Fire Flow (GPM)</u>	<u>Residual Pres. (psi)</u>
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RTE 5 & 20 @ Canandaigua Town Line	J-50	91	742	20
RTE 30 @ Canandaigua Town Line	J-63	98	1,667	20
Grimble Road @ Canandaigua Town Line	J-71	66	826	20
Woolston Road @ Oakmount Road	J-83	88	2,380	20
Oakmount Road @ Bristol Town Line	J-84	58	946	20
Stetson Road @ Bristol Town Line	J-96	97	1,254	20
Bennett Road @ RTE 64	J-100	82	2,022	20
Bennett Road @ Strong Road	J-102	91	1,484	20
Boughton Road @ RTE 444	J-118	53	1,671	20
Brace Road @ Canandaigua Town Line	J-126	106	1,101	20

Option 2-Proposed Hydraulic Conditions (Low Elevation Areas)

<u>Location</u>	<u>Junction</u>	<u>Static Pres.(psi)</u>	<u>Fire Flow (GPM)</u>	<u>Residual Pres. (psi)</u>
RTE 5 & 20 @ Canandaigua Town Line	J-50	92	1,748	20
RTE 30 @ Canandaigua Town Line	J-63	84	1,077	20
Grimble Road @ Canandaigua Town Line	J-71	66	854	20
Woolston Road @ Oakmount Road	J-83	N/A	N/A	N/A
Oakmount Road @ Bristol Town Line	J-84	N/A	N/A	N/A
Stetson Road @ Bristol Town Line	J-96	97	646	20
Bennett Road @ RTE 64	J-100	82	2,013	20
Bennett Road @ Strong Road	J-102	91	1,485	20
Boughton Road @ RTE 444	J-118	53	1,380	20
Brace Road @ Canandaigua Town Line	J-126	106	1,055	20

Option 3-Proposed Hydraulic Conditions (High Elevation Areas)

<u>Location</u>	<u>Junction</u>	<u>Static Pres.(psi)</u>	<u>Fire Flow (GPM)</u>	<u>Residual Pres. (psi)</u>
Woolston Road @ Oakmount Road	J-83	88	2,380	20
Oakmount Road @ Bristol Town Line	J-84	58	946	20

6. Cost Estimate

The project costs are summarized as follows:

Summary of Project Costs Option 1

Total Estimated Construction Costs	\$14,537,050
Contingency	\$1,453,705
Legal & Administrative Costs	\$1,017,594
Engineering Fees	<u>\$1,599,076</u>
Total Project Costs	\$ 18,607,424

Annual Average Cost/Debt Service \$2,137.14

Summary of Project Costs Option 2

Total Estimated Construction Costs	\$10,511,550
Contingency	\$1,051,155
Legal & Administrative Costs	\$735,809
Engineering Fees	<u>\$1,156,271</u>

Total Project Costs **\$ 13,454,784**

Annual Average Cost/Debt Service **\$2,029.88**

Summary of Project Costs Option 3

Total Estimated Construction Costs	\$3,436,750
Contingency	\$343,675
Legal & Administrative Costs	\$240,573
Engineering Fees	\$378,043
Total Project Costs	\$ 4,399,040

Annual Average Cost/Debt Service **\$2,149.84**

7. Permits, Approvals

Depending on the final selected options the project will require permits and approvals from the following agencies:

- Ontario County Health Department Approval
- Ontario County Highway Department Approval
- US Army Corp of Engineers Nationwide Permit
- USDA Rural Development Approval
- NYS Department of Transportation (NYSDOT)
- NYS Department of Environmental Conservation
 - Storm Water Pollution Prevention Plan (SWPPP)
 - Freshwater Wetlands (TBD)
 - Water Quality Certification (TBD)
 - Stream Disturbance (TBD)

VII CONCLUSIONS AND RECOMMENDATIONS

This project will provide potable water and fire protection to residents and properties within the Town of East Bloomfield who currently do not have public water available to them. Many of those homes are in dire need of the water for daily usage.

**Report prepared for the
Town of East Bloomfield by,**

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Telephone: 585-227-6040
Email: jpschepp@chatfieldengineers.com

TABLE 2
COST ESTIMATE

Town of East Bloomfield
Water Feasibility Study
Ontario County, New York
April 23, 2018

Option 1: All Remaining Areas

Area	Area	Between	Linear Feet	Houses	# of EDUs	Construction Costs	Tank/Pump/PRV Shared Costs	Contingency Costs	Legal/Admin Cost	Engineering Costs	Total Project Costs	Annual Costs	Annual Cost Per EDU
				N	S	E	W	V*	# of EDUs				
1	Bailey Road	Town of Bristol TL and County Road 40	10,500	25	11	16	4		60,345	\$ 66,380	\$ 732,417	\$ 53,146	\$ 1,329
2	Bennet Road	Strong Road and County Road 64	6,500	4	6	9	12		33,842	\$ 33,842	\$ 431,173	\$ 29,805	\$ 2,433
3	Boughton Road	County Road 39 and NYS RTE 444	10,050	9	11	23			57,967	\$ 63,763	\$ 741,972	\$ 51,052	\$ 2,244
4	Brace Road	Boughton Road and Town of Canandaigua TL	5,000	4	10	4	15		37,416	\$ 37,416	\$ 474,856	\$ 32,114	\$ 1,719
5	Cannan Road	County Road 64 and Olmstead Road	14,300	12	15	17	31		78,868	\$ 86,810	\$ 1,033,431	\$ 71,106	\$ 2,775
6	County Road 39	County Road 64 and Village of Bloomfield	18,450	9	27	20	22	69	172,879	\$ 113,003	\$ 1,446,437	\$ 99,573	\$ 3,453
7	County Road 40	Town of West Bloomfield TL and Bailey Road	10,500	10	5	10	18		44,166	\$ 58,267	\$ 745,813	\$ 51,316	\$ 2,932
8	County Road 40/South Ave	Bailey Road and Village of Bloomfield VL	3,500	6	6	6	14		34,071	\$ 19,843	\$ 254,171	\$ 17,488	\$ 1,295
9	County Road 64	Town of West Bloomfield TL and State Street (HWY 5)	15,050	11	17	32	3		81,392	\$ 87,374	\$ 1,118,389	\$ 76,951	\$ 2,866
10	Eddy Road	County Road 64 and dead-end	4,650	10	7	4	18		45,428	\$ 28,243	\$ 361,508	\$ 24,874	\$ 1,382
11	Flatiron Road	500 North of Woolston Road and Gause Road	4,950	1	4	4	5		23,000	\$ 19,770	\$ 250,361	\$ 25,617	\$ 1,233
12	Flatiron Road	Town of Richmond TL and 500 North of Woolston Road	5,750	3	11	6	16		39,119	\$ 29,087	\$ 371,312	\$ 26,248	\$ 1,592
13	Forbes Road	Town of Richmond TL and Wheeler Road	2,750	1	1	1	1		12,619	\$ 9,996	\$ 127,172	\$ 10,433	\$ 1,366
14	Gaule Road	Town of Richmond TL and Wheeler Road	4,000	10	9	1	10		48,143	\$ 37,408	\$ 433,658	\$ 31,453	\$ 1,826
15	Gaule Road	500' East of Oakmount Road and State Street Hwy 5	4,850	4	5	3	10		24,407	\$ 16,362	\$ 207,419	\$ 14,706	\$ 1,376
16	Gaule Road	Bristol Valley Road and Town of Canandaigua TL	5,250	7	3	6	12		28,150	\$ 21,129	\$ 267,150	\$ 17,126	\$ 1,326
17	Halleck Road	Stetson Road and Bailey Road	5,900	6	7	11	6		35,964	\$ 31,546	\$ 405,074	\$ 27,971	\$ 1,956
18	NYS 20A/CR 64/ Bristol Valley Rd	Town of Bristol TL and State Street HWY 5	10,400	11	6	4	18		45,438	\$ 45,530	\$ 532,548	\$ 37,384	\$ 3,183
19	NYS RTE 444	Town of Victor TL and Village of Bloomfield VL	13,400	14	20	19	38		68,000	\$ 78,280	\$ 1,001,979	\$ 68,942	\$ 4,779
20	Oakmount Road	Town of Bristol TL and Village of Bloomfield VL	13,850	5	6	22	19	14	112,308	\$ 18,488	\$ 941,514	\$ 64,781	\$ 4,556
21	Pond Road	Town of West Bloomfield TL and County Road 40	4,700	2	19	14	45		27,762	\$ 26,926	\$ 344,655	\$ 23,748	\$ 2,156
22	Rice Road	NYS RTE 444 and Brace Road	9,300	11	10	5	10	8	39,903	\$ 37,709	\$ 689,540	\$ 47,444	\$ 3,345
23	Rice Road	NYS RTE 444 and Rico Road	7,850	15	15	3	7	12	78,868	\$ 52,483	\$ 610,711	\$ 42,020	\$ 3,010
24	Silvernall Road	Town of Richmond TL and Halleck Road	5,300	3	7	7	12		29,654	\$ 29,497	\$ 343,238	\$ 23,617	\$ 2,010
25	State Street, HWY 5	Town of West Bloomfield TL and Cannan Road	2,600	4	3	8	3		19,559	\$ 18,102	\$ 210,636	\$ 14,491	\$ 1,870
26	Steele Road	Pontic Road and North Bloomfield Road	3,200	1	4	5	5		14,000	\$ 17,228	\$ 200,472	\$ 13,794	\$ 2,759
27	Stetson Road	Town of West Bloomfield TL and Town of Richmond TL	8,250	2	3	7	11	8	63,094	\$ 46,434	\$ 594,361	\$ 40,895	\$ 3,633
28	Stirling Road	Boughton Road and Town of Richmond TL	6,600	5	10	9	17		43,535	\$ 25,937	\$ 474,285	\$ 32,633	\$ 2,892
29	Strong Road	Town of West Bloomfield TL and Town of Victor TL	4,150	8	5	1	13		33,440	\$ 24,221	\$ 281,843	\$ 19,392	\$ 1,464
30	Wheeler Road	Flatiron Road and 1,650' East of Flatiron Road	1,650	5	1	6	1		15,774	\$ 9,002	\$ 115,230	\$ 7,928	\$ 1,269
31	Wheeler Road	1,650' East of Flatiron Road and Bristol Valley Road	4,550	6	5	12	4		30,285	\$ 20,302	\$ 271,245	\$ 25,544	\$ 2,129
32	Wheeler Stetson Road	State Street HWY 5 and Grimbale Road	7,700	3	10	12	1	22	30,286	\$ 47,592	\$ 553,797	\$ 38,104	\$ 3,173
33	Wilkins Road	County Road 39 and dead-end	3,700	2	3	10	8		18,928	\$ 20,043	\$ 256,548	\$ 17,652	\$ 2,354
34	Woolston Road	500' East of Bailey Road and 500' East of Flatiron Road	10,050	5	11	1	20		54,816	\$ 60,319	\$ 701,896	\$ 48,794	\$ 3,985
35	Woolston Road	500' East of Flatiron Road and Bristol Valley Road	5,700	2	3	5	6		15,774	\$ 20,109	\$ 267,710	\$ 25,300	\$ 4,948
Totals													
256,350 131 128 173 192 238 684													
1,725,000 1,493,705 1,017,594 1,599,076 18,607,424 1,280,291 1,873													

Improvement Area Shared Costs:
750,000 Water Storage Tank = \$1,200,000.00
Pump Station = \$200,000.00
Pressure Reducing Valve (PRV) = \$225,000.00
Total Shared Costs = \$1,725,000.00

Total Project Cost = \$18,607,424.00

Proposed Benefitted EDUs in the Townwide Water District = 684

Annual Principal & Interest Payment (5.5% for 30 Years) = \$1,280,291.06

Debt Service Cost/EDU = \$1,873.14

Plus Average Water Usage per Household (60,000 gal./yr.) = \$264.00

Total Second Year (and beyond to 30th Year) Costs for the Average Residential User = \$2,137.14

*Vacant (V) parcels are counted as a 0.25 EDU

Town of East Bloomfield
Water Feasibility Study
Ontario County, New York
April 23, 2018

Option 2: Low Elevation Zones

Area	Area	Linear Feet	N	S	E	W	# of EDU's	Construction Costs	Shared Costs	PRV Costs	Contingency Costs	Legal/Admin Cost	Engineering Costs	Total Project Costs	Annual Costs	Annual Cost Per EDU
2	Bennett Road	6,500			4	6	9	\$ 307,500	\$ 2,103	\$ 21,572	\$ 30,960	\$ 34,056	\$ 396,292	\$ 27,267	\$ 2,226	
3	Boughton Road	10,050	9	11	4	10	23	\$ 522,250	\$ 3,996	\$ 36,811	\$ 52,616	\$ 57,877	\$ 673,479	\$ 46,139	\$ 2,037	
4	Brace Road	5,000			4	10	4	\$ 255,000	\$ 2,575	\$ 18,030	\$ 25,733	\$ 28,333	\$ 329,696	\$ 22,685	\$ 1,532	
5	Canman Road	14,300	7	9	27	20	31	\$ 728,500	\$ 5,365	\$ 51,371	\$ 73,386	\$ 80,723	\$ 939,447	\$ 64,834	\$ 1,088	
6	County Road 39	18,450	7	9	27	20	69	\$ 957,150	\$ 11,760	\$ 94,891	\$ 136,580	\$ 148,350	\$ 1,690,174	\$ 121,331	\$ 1,755	
7	County Road 64	10,500	11	17	10	5	18	\$ 535,300	\$ 3,004	\$ 24,750	\$ 35,750	\$ 39,250	\$ 450,354	\$ 31,347	\$ 1,750	
9	County Road 40	13,050	11	17	10	5	18	\$ 674,250	\$ 3,938	\$ 31,502	\$ 44,089	\$ 48,416	\$ 562,315	\$ 39,572	\$ 2,149	
10	Egdy Road	4,000	4	7	4	8	4	\$ 216,250	\$ 1,858	\$ 13,502	\$ 19,538	\$ 21,703	\$ 251,250	\$ 17,445	\$ 1,175	
11	Fleaton Road	2,850	1	1	1	4	1	\$ 101,750	\$ 715	\$ 5,103	\$ 7,103	\$ 7,103	\$ 129,875	\$ 9,316	\$ 7,149	
12	Goose Road	2,325	1	1	1	1	1	\$ 101,750	\$ 715	\$ 5,103	\$ 7,103	\$ 7,103	\$ 129,875	\$ 9,316	\$ 7,149	
13	Halleck Road	4,850	4	5	3	10	3	\$ 237,750	\$ 1,674	\$ 15,760	\$ 21,942	\$ 26,137	\$ 306,462	\$ 21,086	\$ 2,163	
14	Halleck Road	5,250	7	3	3	6	12	\$ 281,250	\$ 1,974	\$ 19,826	\$ 28,322	\$ 31,155	\$ 362,527	\$ 24,944	\$ 2,169	
15	Halleck Road	5,000	6	7	11	14	14	\$ 280,500	\$ 2,446	\$ 19,806	\$ 28,295	\$ 31,124	\$ 362,171	\$ 24,919	\$ 1,749	
16	Halleck Road	5,000	6	7	11	14	14	\$ 280,500	\$ 2,446	\$ 19,806	\$ 28,295	\$ 31,124	\$ 362,171	\$ 24,919	\$ 1,749	
17	Halleck Road	5,000	6	7	11	14	14	\$ 280,500	\$ 2,446	\$ 19,806	\$ 28,295	\$ 31,124	\$ 362,171	\$ 24,919	\$ 1,749	
18	NYS 20M County Rte 64/ Bristol Valley Road	10,400	11	10	5	10	39	\$ 685,000	\$ 6,652	\$ 48,416	\$ 69,165	\$ 76,082	\$ 885,315	\$ 60,914	\$ 1,572	
19	NYS RTE 444	13,400	5	6	14	20	19	\$ 442,800	\$ 1,888	\$ 17,037	\$ 24,339	\$ 26,773	\$ 311,537	\$ 21,435	\$ 1,949	
20	Rice Road	4,700	11	10	5	10	8	\$ 442,800	\$ 6,524	\$ 44,932	\$ 49,426	\$ 54,926	\$ 627,134	\$ 39,572	\$ 1,041	
21	Rice Road	9,300	11	10	5	10	8	\$ 442,800	\$ 6,524	\$ 44,932	\$ 49,426	\$ 54,926	\$ 627,134	\$ 39,572	\$ 1,041	
22	Rice Road	7,850	15	15	3	7	12	\$ 398,250	\$ 5,365	\$ 2,017	\$ 24,052	\$ 26,457	\$ 307,862	\$ 21,183	\$ 1,137	
23	Silverhill Road	2,600	4	3	7	7	8	\$ 145,000	\$ 1,330	\$ 10,243	\$ 14,633	\$ 16,096	\$ 187,303	\$ 12,887	\$ 1,663	
24	Steele Road	3,200	2	3	7	11	8	\$ 401,250	\$ 4,292	\$ 28,388	\$ 40,554	\$ 44,610	\$ 519,094	\$ 35,716	\$ 2,552	
25	Steele Road	8,250	2	3	7	11	8	\$ 401,250	\$ 4,292	\$ 28,388	\$ 40,554	\$ 44,610	\$ 519,094	\$ 35,716	\$ 2,552	
26	Stetson Road	6,600	5	5	10	9	17	\$ 327,000	\$ 2,961	\$ 23,097	\$ 32,986	\$ 36,296	\$ 422,351	\$ 29,060	\$ 1,695	
27	Stetson Road	4,150	6	5	8	5	1	\$ 186,750	\$ 2,275	\$ 18,327	\$ 26,181	\$ 28,799	\$ 335,117	\$ 23,058	\$ 1,921	
28	Stetson Road	4,550	6	5	10	12	1	\$ 259,750	\$ 3,820	\$ 26,622	\$ 38,032	\$ 41,835	\$ 486,809	\$ 33,495	\$ 1,505	
29	Strong Road	7,700	2	3	10	12	1	\$ 376,500	\$ 3,288	\$ 18,150	\$ 27,257	\$ 29,983	\$ 348,953	\$ 24,008	\$ 2,146	
30	Wheeler Station Road	5,700	2	3	10	12	1	\$ 376,500	\$ 3,288	\$ 18,150	\$ 27,257	\$ 29,983	\$ 348,953	\$ 24,008	\$ 2,146	
31	Wheeler Station Road	5,700	2	3	10	12	1	\$ 376,500	\$ 3,288	\$ 18,150	\$ 27,257	\$ 29,983	\$ 348,953	\$ 24,008	\$ 2,146	
32	Wheeler Station Road	5,700	2	3	10	12	1	\$ 376,500	\$ 3,288	\$ 18,150	\$ 27,257	\$ 29,983	\$ 348,953	\$ 24,008	\$ 2,146	
33	Woolston Road	205,050	107	107	117	148	193	\$ 10,421,550	\$ 90,000	\$ 735,809	\$ 1,051,135	\$ 1,156,271	\$ 13,454,784	\$ 923,782	\$ 3,785	

Improvement Areas Shared Costs
Pressure Reducing Valves (2) = \$90,000.00

Total Project Cost = \$13,454,784.00

Proposed Benefitted EDUs in the Townwide Water District = 524

Annual Principal & Interest Payment (5.5% for 30 Years) = \$925,761.66

Debt Service Cost/EDU = \$1,765.88

Plus Average Water Usage per Household (60,000 gal./Yr.) = \$254.00

Total Second Year (and beyond to 30th Year) Costs for the Average Residential User = \$2,029.88

*Vacant (V) parcels are counted as a 0.25 EDU

Town of East Bloomfield
Water Feasibility Study
Ontario County, New York
April 23, 2018

Option 3: High Elevation Zone

Area	Area	Between	Linear Feet	N	S	E	W	Y2	# of EDUs	Construction Costs	Tank/Shared Costs	Contingency Costs	Legal/Admin Costs	Engineering Costs	Total Project Costs	Annual Costs Per EDU
1	Bailey Road	Town of Richmond Tl and County Road 40	10,500		25	11	16		40	\$ 524,500	\$ 253,214	\$ 73,801	\$ 17,651	\$ 52,182	\$ 717,308	\$ 1,792
8	County Road 40/South Ave	Bailey Road and Village of Enonfield Vt	3,500		5	6	14		14	\$ 184,500	\$ 97,253	\$ 28,001	\$ 7,071	\$ 26,836	\$ 217,301	\$ 1,562
12	Patron Road	Town of Richmond Tl and 500' North of Webston Road	2,750		3	11	6		16	\$ 130,750	\$ 67,250	\$ 20,861	\$ 7,801	\$ 23,931	\$ 148,011	\$ 1,089
13	Forbes Road	Town of Richmond Tl and Wheeler Road	2,750	1					19	\$ 270,000	\$ 113,341	\$ 38,334	\$ 26,934	\$ 11,947	\$ 139,011	\$ 7,652
14	Gouss	South Ave and 500' East of Webster Road	2,650	10	9				15	\$ 270,000	\$ 113,341	\$ 38,334	\$ 26,934	\$ 11,947	\$ 139,011	\$ 7,652
20	Oakmount Road	Town of Richmond Tl and Wheeler Road	13,650		22	19	14		45	\$ 623,250	\$ 262,008	\$ 88,526	\$ 61,968	\$ 97,379	\$ 1,133,132	\$ 1,754
30	Whitener Road	500' East of 1,650' East of Patron Road	1,650	5	1				6	\$ 24,250	\$ 36,798	\$ 11,105	\$ 7,773	\$ 12,215	\$ 142,143	\$ 1,565
34	Webston Road	500' East of Bailey Road and 500' East of Patron Road	10,050	5	11				20	\$ 497,250	\$ 119,229	\$ 61,648	\$ 43,154	\$ 67,813	\$ 789,093	\$ 2,681
		Totals	53,550	25	21	47	45		161	\$ 2,491,750	\$ 945,000	\$ 343,675	\$ 240,573	\$ 378,043	\$ 4,399,040	\$ 1,886

Improvement Areas Shared Costs.
140,000 Water Storage Tank = \$600,000.00
Pump Station = \$300,000.00
Pressure Reducing Valves (1) = \$45,000.00
Total Shared Cost = \$945,000.00

Total Project Cost = \$4,399,040.00

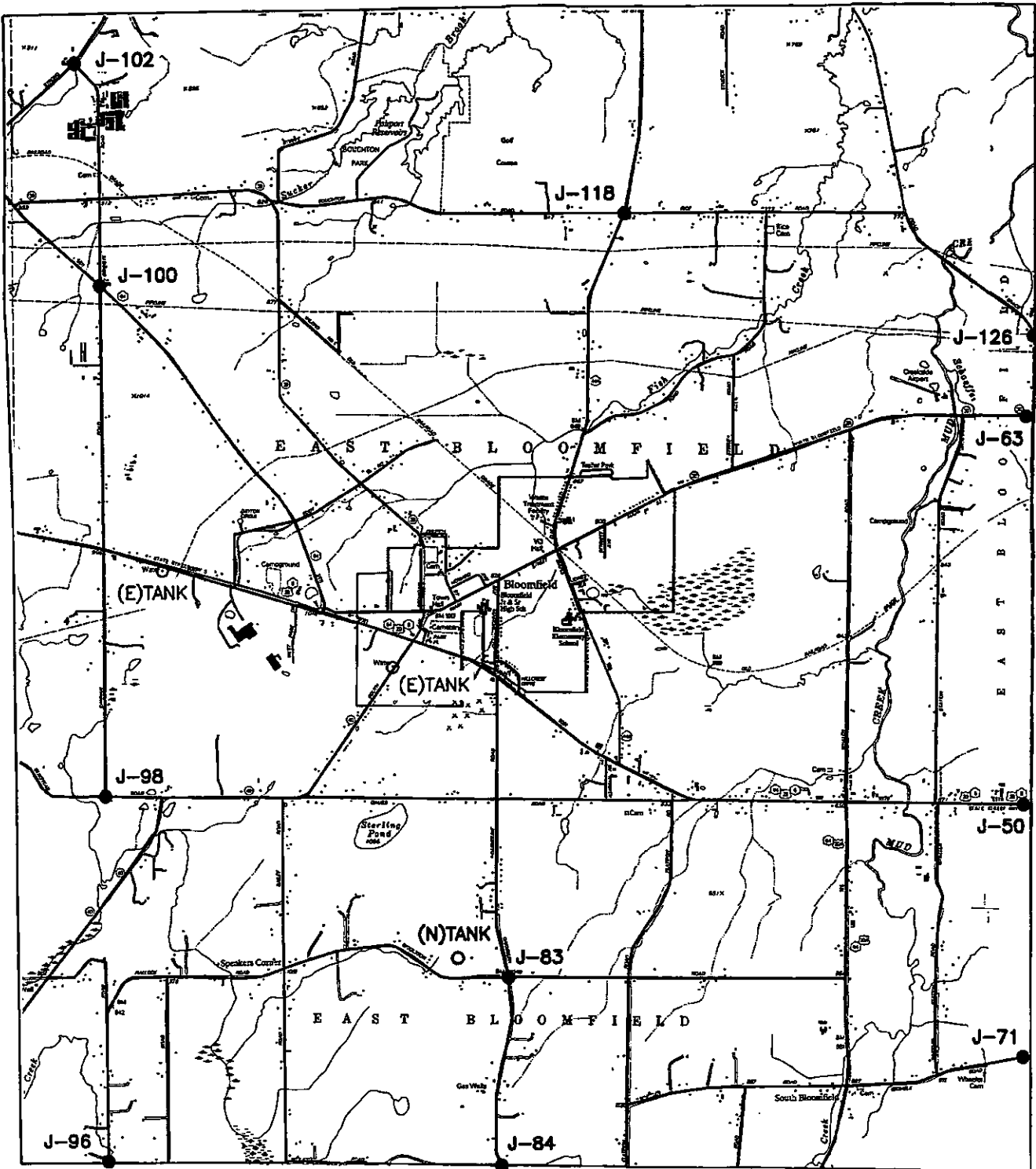
Proposed Benefited EDUs in the Townwide Water District = 161
Annual Principal & Interest Payment (5.5% for 30 Years) = \$302,677.66

Plus Average Water Usage per Household (60,000 gal./yr.) = \$264.00
Debt Service Cost/EDU = \$1,885.84
Total Second Year (and beyond to 30th Year) Costs for the Average Residential User = \$2,149.84

*vacant (V) parcels are counted as a 0.25 EDU

TABLE 3
HYDRAULIC CALCULATIONS

NORTH



SCALE:
N.T.S.

DRAFTED BY:
JBL

CHECKED BY:
JDH

DATE:
APR 2018

PROJ. NO.:
17-1258



CHATFIELD ENGINEERS, P.C.

2800 Dewey Avenue
Rochester, New York 14616
(585) 227-6040 • Fax 227-4233

PROJECT:

TOWN OF EAST BLOOMFIELD

TITLE:

HYDRAULIC MAP

EXISTING - WATER SYSTEM

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-4	84.3	500	2,379	20.0	J-17	20.0	1,174.87	Zone - 1
J-5	64.8	500	2,585	28.0	J-17	20.0	1,174.87	Zone - 1
J-6	64.8	500	2,572	29.6	J-17	20.0	1,174.87	Zone - 1
J-7	64.8	500	2,565	30.3	J-17	20.0	1,174.87	Zone - 1
J-8	72.2	500	2,565	35.5	J-17	20.0	1,174.87	Zone - 1
J-9	85.6	500	2,039	20.0	J-10	20.0	1,174.83	Zone - 1
J-10	87.8	500	1,430	20.0	J-11	20.0	1,174.82	Zone - 1
J-11	92.1	500	1,001	20.0	J-17	20.0	1,174.82	Zone - 1
J-13	95.1	500	1,080	20.0	J-17	20.0	1,174.82	Zone - 1
J-14	70.5	500	2,662	28.4	J-17	20.0	1,174.87	Zone - 1
J-15	96.9	500	1,098	20.0	J-17	20.0	1,174.87	Zone - 1
J-16	55.3	500	2,514	25.2	J-17	20.0	1,174.87	Zone - 1
J-17	44.5	500	2,462	20.0	J-18	20.0	1,174.87	Zone - 1
J-18	47.5	500	2,466	21.8	J-17	20.0	1,174.87	Zone - 1
J-19	22.9	500	1,503	20.0	J-20	20.0	1,174.98	Zone - 2
J-20	28.0	500	21	20.4	J-19	20.0	1,174.66	Zone - 2
J-21	58.4	500	793	20.0	J-35	20.0	1,174.87	Zone - 1
J-22	103.3	500	2,220	20.0	J-17	20.0	1,174.82	Zone - 1
J-23	106.8	500	2,482	25.8	J-17	20.0	1,174.82	Zone - 1
J-24	107.2	500	2,478	39.2	J-17	20.0	1,174.82	Zone - 1
J-25	91.2	500	2,475	41.7	J-17	20.0	1,174.84	Zone - 1
J-26	70.5	500	2,472	35.2	J-17	20.0	1,174.86	Zone - 1
J-27	64.8	500	1,092	20.0	J-17	20.0	1,174.86	Zone - 1
J-28	69.7	500	2,172	48.6	J-35	20.0	1,036.03	Zone - 1
J-29	61.4	500	2,397	31.2	J-35	20.0	1,036.03	Zone - 1
J-30	63.2	500	2,383	20.0	J-35	20.0	1,036.03	Zone - 1
J-31	58.9	500	1,966	23.5	J-32	20.0	1,036.03	Zone - 1
J-32	55.4	500	1,416	20.0	J-17	20.0	1,036.03	Zone - 1
J-33	57.5	500	520	36.4	J-35	20.0	1,036.01	Zone - 1
J-34	65.3	500	520	29.6	J-35	20.0	1,036.01	Zone - 1
J-35	41.1	500	340	20.0	J-17	20.0	1,036.00	Zone - 1
J-36	75.3	500	1,293	22.2	J-37	20.0	1,036.02	Zone - 1
J-37	73.1	500	727	20.0	J-35	20.0	1,036.02	Zone - 1
J-38	110.3	500	2,228	20.0	J-17	20.0	1,174.87	Zone - 1
J-39	64.8	500	2,889	26.8	J-17	20.0	1,174.89	Zone - 1
J-40	54.0	500	2,213	20.0	J-17	20.0	1,174.88	Zone - 1
J-41	56.2	500	2,471	22.3	J-17	20.0	1,174.86	Zone - 1
J-42	61.8	500	3,143	20.0	J-17	20.0	1,174.92	Zone - 1
J-43	61.4	500	2,422	30.3	J-35	20.0	1,036.03	Zone - 1
J-44	57.5	500	3,357	20.0	J-45	20.0	1,174.95	<None>
J-45	59.7	500	3,500	34.1	J-44	20.0	1,174.97	<None>
J-46	83.9	500	3,500	65.6	J-44	20.0	1,174.98	<None>
J-47	50.2	500	3,500	47.7	J-44	20.0	1,175.00	<None>
J-48	77.4	500	2,325	20.0	J-47	20.0	1,175.00	<None>
J-49	90.8	500	892	20.0	J-47	20.0	1,174.98	<None>
J-50	92.5	500	1,359	27.4	J-55	20.0	1,129.88	<None>

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual) Lower Limit (psi)	Hydraulic Grade (ft)	Zone
J-51	112.0	500	1,164	46.8	J-55	20.0	1,129.84	<None>
J-52	121.1	500	999	55.9	J-55	20.0	1,129.83	<None>
J-53	96.4	500	829	31.2	J-55	20.0	1,129.82	<None>
J-54	85.6	500	811	20.5	J-55	20.0	1,129.82	<None>
J-55	85.2	500	768	20.0	J-56	20.0	1,129.82	<None>
J-56	86.5	500	765	20.0	J-55	20.0	1,129.82	<None>
J-57	89.9	500	761	20.0	J-55	20.0	1,129.82	<None>
J-58	124.1	500	999	30.3	J-55	20.0	1,129.83	<None>
J-59	134.0	500	961	20.0	J-55	20.0	1,129.83	<None>
J-60	115.9	500	1,067	20.0	J-61	20.0	1,129.82	<None>
J-61	69.0	500	1,066	20.0	J-60	20.0	1,021.48	<None>
J-62	111.0	500	1,002	42.2	J-65	20.0	1,021.47	<None>
J-63	92.4	500	968	20.1	J-65	20.0	1,021.47	<None>
J-64	89.8	500	920	20.9	J-65	20.0	1,021.47	<None>
J-65	88.9	500	895	20.2	J-64	20.0	1,021.47	<None>
J-66	72.3	500	462	20.0	J-67	20.0	1,036.00	<None>
J-67	96.5	500	462	28.8	J-66	20.0	1,036.00	<None>

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-4	980.00	3	1,174.87	84.3	2,379	20.0	Zone - 1
J-5	1,025.00	3	1,174.87	64.8	2,585	28.0	Zone - 1
J-6	1,025.00	3	1,174.87	64.8	2,572	29.6	Zone - 1
J-7	1,025.00	3	1,174.87	64.8	2,565	30.3	Zone - 1
J-8	1,008.00	3	1,174.87	72.2	2,565	35.5	Zone - 1
J-9	977.00	3	1,174.83	85.6	2,039	20.0	Zone - 1
J-10	972.00	3	1,174.82	87.8	1,430	20.0	Zone - 1
J-11	962.00	3	1,174.82	92.1	1,001	20.0	Zone - 1
J-13	955.00	3	1,174.82	95.1	1,080	20.0	Zone - 1
J-14	1,012.00	3	1,174.87	70.5	2,662	28.4	Zone - 1
J-15	951.00	3	1,174.87	96.9	1,098	20.0	Zone - 1
J-16	1,047.00	3	1,174.87	55.3	2,514	25.2	Zone - 1
J-17	1,072.00	3	1,174.87	44.5	2,462	20.0	Zone - 1
J-18	1,065.00	3	1,174.87	47.5	2,466	21.8	Zone - 1
J-19	1,122.00	3	1,174.98	22.9	1,503	20.0	Zone - 2
J-20	1,110.00	3	1,174.66	28.0	21	20.4	Zone - 2
J-21	1,040.00	3	1,174.87	58.4	793	20.0	Zone - 1
J-22	936.00	3	1,174.82	103.3	2,220	20.0	Zone - 1
J-23	928.00	3	1,174.82	106.8	2,482	25.8	Zone - 1
J-24	927.00	3	1,174.82	107.2	2,478	39.2	Zone - 1
J-25	964.00	3	1,174.84	91.2	2,475	41.7	Zone - 1
J-26	1,012.00	3	1,174.86	70.5	2,472	35.2	Zone - 1
J-27	1,025.00	3	1,174.86	64.8	1,092	20.0	Zone - 1
J-28	875.00	3	1,036.03	69.7	2,172	48.6	Zone - 1
J-29	894.00	3	1,036.03	61.4	2,397	31.2	Zone - 1
J-30	890.00	3	1,036.03	63.2	2,383	20.0	Zone - 1
J-31	900.00	3	1,036.03	58.9	1,966	23.5	Zone - 1
J-32	908.00	3	1,036.03	55.4	1,416	20.0	Zone - 1
J-33	903.00	3	1,036.01	57.5	520	36.4	Zone - 1
J-34	885.00	3	1,036.01	65.3	520	29.6	Zone - 1
J-35	941.00	3	1,036.00	41.1	340	20.0	Zone - 1
J-36	862.00	3	1,036.02	75.3	1,293	22.2	Zone - 1
J-37	867.00	3	1,036.02	73.1	727	20.0	Zone - 1
J-38	920.00	3	1,174.87	110.3	2,228	20.0	Zone - 1
J-39	1,025.00	3	1,174.89	64.8	2,889	26.8	Zone - 1
J-40	1,050.00	3	1,174.88	54.0	2,213	20.0	Zone - 1
J-41	1,045.00	3	1,174.86	56.2	2,471	22.3	Zone - 1
J-42	1,032.00	1	1,174.92	61.8	3,143	20.0	Zone - 1
J-43	894.00	3	1,036.03	61.4	2,422	30.3	Zone - 1
J-44	1,042.00	1	1,174.95	57.5	3,357	20.0	<None>
J-45	1,037.00	3	1,174.97	59.7	3,500	34.1	<None>
J-46	981.00	3	1,174.98	83.9	3,500	65.6	<None>
J-47	1,059.00	3	1,175.00	50.2	3,500	47.7	<None>
J-48	996.00	3	1,175.00	77.4	2,325	20.0	<None>
J-49	965.00	1	1,174.98	90.8	892	20.0	<None>
J-50	916.00	1	1,129.88	92.5	1,359	27.4	<None>
J-51	871.00	3	1,129.84	112.0	1,164	46.8	<None>

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-52	850.00	3	1,129.83	121.1	999	55.9	<None>
J-53	907.00	1	1,129.82	96.4	829	31.2	<None>
J-54	932.00	1	1,129.82	85.6	811	20.5	<None>
J-55	933.00	1	1,129.82	85.2	768	20.0	<None>
J-56	930.00	3	1,129.82	86.5	765	20.0	<None>
J-57	922.00	1	1,129.82	89.9	761	20.0	<None>
J-58	843.00	3	1,129.83	124.1	999	30.3	<None>
J-59	820.00	3	1,129.83	134.0	961	20.0	<None>
J-60	862.00	3	1,129.82	115.9	1,067	20.0	<None>
J-61	862.00	3	1,021.48	69.0	1,066	20.0	<None>
J-62	765.00	3	1,021.47	111.0	1,002	42.2	<None>
J-63	808.00	1	1,021.47	92.4	968	20.1	<None>
J-64	814.00	3	1,021.47	89.8	920	20.9	<None>
J-65	816.00	1	1,021.47	88.9	895	20.2	<None>
J-66	869.00	0	1,036.00	72.3	462	20.0	<None>
J-67	813.00	0	1,036.00	96.5	462	28.8	<None>

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-4	980.00	3	1,174.87	84.3	2,379	20.0	Zone - 1
J-5	1,025.00	3	1,174.87	64.8	2,585	28.0	Zone - 1
J-6	1,025.00	3	1,174.87	64.8	2,572	29.6	Zone - 1
J-7	1,025.00	3	1,174.87	64.8	2,565	30.3	Zone - 1
J-8	1,008.00	3	1,174.87	72.2	2,565	35.5	Zone - 1
J-9	977.00	3	1,174.83	85.6	2,039	20.0	Zone - 1
J-10	972.00	3	1,174.82	87.8	1,430	20.0	Zone - 1
J-11	962.00	3	1,174.82	92.1	1,001	20.0	Zone - 1
J-13	955.00	3	1,174.82	95.1	1,080	20.0	Zone - 1
J-14	1,012.00	3	1,174.87	70.5	2,662	28.4	Zone - 1
J-15	951.00	3	1,174.87	96.9	1,098	20.0	Zone - 1
J-16	1,047.00	3	1,174.87	55.3	2,514	25.2	Zone - 1
J-17	1,072.00	3	1,174.87	44.5	2,462	20.0	Zone - 1
J-18	1,065.00	3	1,174.87	47.5	2,466	21.8	Zone - 1
J-19	1,122.00	3	1,174.98	22.9	1,503	20.0	Zone - 2
J-20	1,110.00	3	1,174.66	28.0	21	20.4	Zone - 2
J-21	1,040.00	3	1,174.87	58.4	793	20.0	Zone - 1
J-22	936.00	3	1,174.82	103.3	2,220	20.0	Zone - 1
J-23	928.00	3	1,174.82	106.8	2,482	25.8	Zone - 1
J-24	927.00	3	1,174.82	107.2	2,478	39.2	Zone - 1
J-25	964.00	3	1,174.84	91.2	2,475	41.7	Zone - 1
J-26	1,012.00	3	1,174.86	70.5	2,472	35.2	Zone - 1
J-27	1,025.00	3	1,174.86	64.8	1,092	20.0	Zone - 1
J-28	875.00	3	1,036.03	69.7	2,172	48.6	Zone - 1
J-29	894.00	3	1,036.03	61.4	2,397	31.2	Zone - 1
J-30	890.00	3	1,036.03	63.2	2,383	20.0	Zone - 1
J-31	900.00	3	1,036.03	58.9	1,966	23.5	Zone - 1
J-32	908.00	3	1,036.03	55.4	1,416	20.0	Zone - 1
J-33	903.00	3	1,036.01	57.5	520	36.4	Zone - 1
J-34	885.00	3	1,036.01	65.3	520	29.6	Zone - 1
J-35	941.00	3	1,036.00	41.1	340	20.0	Zone - 1
J-36	862.00	3	1,036.02	75.3	1,293	22.2	Zone - 1
J-37	867.00	3	1,036.02	73.1	727	20.0	Zone - 1
J-38	920.00	3	1,174.87	110.3	2,228	20.0	Zone - 1
J-39	1,025.00	3	1,174.89	64.8	2,889	26.8	Zone - 1
J-40	1,050.00	3	1,174.88	54.0	2,213	20.0	Zone - 1
J-41	1,045.00	3	1,174.86	56.2	2,471	22.3	Zone - 1
J-42	1,032.00	1	1,174.92	61.8	3,143	20.0	Zone - 1
J-43	894.00	3	1,036.03	61.4	2,422	30.3	Zone - 1
J-44	1,042.00	1	1,174.95	57.5	3,357	20.0	<None>
J-45	1,037.00	3	1,174.97	59.7	3,500	34.1	<None>
J-46	981.00	3	1,174.98	83.9	3,500	65.6	<None>
J-47	1,059.00	3	1,175.00	50.2	3,500	47.7	<None>
J-48	996.00	3	1,175.00	77.4	2,325	20.0	<None>
J-49	965.00	1	1,174.98	90.8	892	20.0	<None>
J-50	916.00	1	1,129.88	92.5	1,359	27.4	<None>
J-51	871.00	3	1,129.84	112.0	1,164	46.8	<None>

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-52	850.00	3	1,129.83	121.1	999	55.9	<None>
J-53	907.00	1	1,129.82	96.4	829	31.2	<None>
J-54	932.00	1	1,129.82	85.6	811	20.5	<None>
J-55	933.00	1	1,129.82	85.2	768	20.0	<None>
J-56	930.00	3	1,129.82	86.5	765	20.0	<None>
J-57	922.00	1	1,129.82	89.9	761	20.0	<None>
J-58	843.00	3	1,129.83	124.1	999	30.3	<None>
J-59	820.00	3	1,129.83	134.0	961	20.0	<None>
J-60	862.00	3	1,129.82	115.9	1,067	20.0	<None>
J-61	862.00	3	1,021.48	69.0	1,066	20.0	<None>
J-62	765.00	3	1,021.47	111.0	1,002	42.2	<None>
J-63	808.00	1	1,021.47	92.4	968	20.1	<None>
J-64	814.00	3	1,021.47	89.8	920	20.9	<None>
J-65	816.00	1	1,021.47	88.9	895	20.2	<None>
J-66	869.00	0	1,036.00	72.3	462	20.0	<None>
J-67	813.00	0	1,036.00	96.5	462	28.8	<None>

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-4	84.3	500	2,379	20.0	J-17	20.0	1,174.87	Zone - 1
J-5	64.8	500	2,585	28.0	J-17	20.0	1,174.87	Zone - 1
J-6	64.8	500	2,572	29.6	J-17	20.0	1,174.87	Zone - 1
J-7	64.8	500	2,565	30.3	J-17	20.0	1,174.87	Zone - 1
J-8	72.2	500	2,565	35.5	J-17	20.0	1,174.87	Zone - 1
J-9	85.6	500	2,039	20.0	J-10	20.0	1,174.83	Zone - 1
J-10	87.8	500	1,430	20.0	J-11	20.0	1,174.82	Zone - 1
J-11	92.1	500	1,001	20.0	J-17	20.0	1,174.82	Zone - 1
J-13	95.1	500	1,080	20.0	J-17	20.0	1,174.82	Zone - 1
J-14	70.5	500	2,662	28.4	J-17	20.0	1,174.87	Zone - 1
J-15	96.9	500	1,098	20.0	J-17	20.0	1,174.87	Zone - 1
J-16	55.3	500	2,514	25.2	J-17	20.0	1,174.87	Zone - 1
J-17	44.5	500	2,462	20.0	J-18	20.0	1,174.87	Zone - 1
J-18	47.5	500	2,466	21.8	J-17	20.0	1,174.87	Zone - 1
J-19	22.9	500	1,503	20.0	J-20	20.0	1,174.98	Zone - 2
J-20	28.0	500	21	20.4	J-19	20.0	1,174.66	Zone - 2
J-21	58.4	500	793	20.0	J-35	20.0	1,174.87	Zone - 1
J-22	103.3	500	2,220	20.0	J-17	20.0	1,174.82	Zone - 1
J-23	106.8	500	2,482	25.8	J-17	20.0	1,174.82	Zone - 1
J-24	107.2	500	2,478	39.2	J-17	20.0	1,174.82	Zone - 1
J-25	91.2	500	2,475	41.7	J-17	20.0	1,174.84	Zone - 1
J-26	70.5	500	2,472	35.2	J-17	20.0	1,174.86	Zone - 1
J-27	64.8	500	1,092	20.0	J-17	20.0	1,174.86	Zone - 1
J-28	69.7	500	2,172	48.6	J-35	20.0	1,036.03	Zone - 1
J-29	61.4	500	2,397	31.2	J-35	20.0	1,036.03	Zone - 1
J-30	63.2	500	2,383	20.0	J-35	20.0	1,036.03	Zone - 1
J-31	58.9	500	1,966	23.5	J-32	20.0	1,036.03	Zone - 1
J-32	55.4	500	1,416	20.0	J-17	20.0	1,036.03	Zone - 1
J-33	57.5	500	520	36.4	J-35	20.0	1,036.01	Zone - 1
J-34	65.3	500	520	29.6	J-35	20.0	1,036.01	Zone - 1
J-35	41.1	500	340	20.0	J-17	20.0	1,036.00	Zone - 1
J-36	75.3	500	1,293	22.2	J-37	20.0	1,036.02	Zone - 1
J-37	73.1	500	727	20.0	J-35	20.0	1,036.02	Zone - 1
J-38	110.3	500	2,228	20.0	J-17	20.0	1,174.87	Zone - 1
J-39	64.8	500	2,889	26.8	J-17	20.0	1,174.89	Zone - 1
J-40	54.0	500	2,213	20.0	J-17	20.0	1,174.88	Zone - 1
J-41	56.2	500	2,471	22.3	J-17	20.0	1,174.86	Zone - 1
J-42	61.8	500	3,143	20.0	J-17	20.0	1,174.92	Zone - 1
J-43	61.4	500	2,422	30.3	J-35	20.0	1,036.03	Zone - 1
J-44	57.5	500	3,357	20.0	J-45	20.0	1,174.95	<None>
J-45	59.7	500	3,500	34.1	J-44	20.0	1,174.97	<None>
J-46	83.9	500	3,500	65.6	J-44	20.0	1,174.98	<None>
J-47	50.2	500	3,500	47.7	J-44	20.0	1,175.00	<None>
J-48	77.4	500	2,325	20.0	J-47	20.0	1,175.00	<None>
J-49	90.8	500	892	20.0	J-47	20.0	1,174.98	<None>
J-50	92.5	500	1,359	27.4	J-55	20.0	1,129.88	<None>

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-51	112.0	500	1,164	46.8	J-55	20.0	1,129.84	<None>
J-52	121.1	500	999	55.9	J-55	20.0	1,129.83	<None>
J-53	96.4	500	829	31.2	J-55	20.0	1,129.82	<None>
J-54	85.6	500	811	20.5	J-55	20.0	1,129.82	<None>
J-55	85.2	500	768	20.0	J-56	20.0	1,129.82	<None>
J-56	86.5	500	765	20.0	J-55	20.0	1,129.82	<None>
J-57	89.9	500	761	20.0	J-55	20.0	1,129.82	<None>
J-58	124.1	500	999	30.3	J-55	20.0	1,129.83	<None>
J-59	134.0	500	961	20.0	J-55	20.0	1,129.83	<None>
J-60	115.9	500	1,067	20.0	J-61	20.0	1,129.82	<None>
J-61	69.0	500	1,066	20.0	J-60	20.0	1,021.48	<None>
J-62	111.0	500	1,002	42.2	J-65	20.0	1,021.47	<None>
J-63	92.4	500	968	20.1	J-65	20.0	1,021.47	<None>
J-64	89.8	500	920	20.9	J-65	20.0	1,021.47	<None>
J-65	88.9	500	895	20.2	J-64	20.0	1,021.47	<None>
J-66	72.3	500	462	20.0	J-67	20.0	1,036.00	<None>
J-67	96.5	500	462	28.8	J-66	20.0	1,036.00	<None>

**PROPOSED - ALL AREAS OF SERVICE/
HIGH PRESSURE ZONE**

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-61	75.1	750	1,790	20.0	J-63	20.0	1,035.65	Zone - 2
J-63	98.5	750	1,667	20.0	J-61	20.0	1,035.65	Zone - 2
J-62	117.1	750	2,047	38.6	J-63	20.0	1,035.65	Zone - 2
J-64	95.9	750	2,099	20.0	J-65	20.0	1,035.65	Zone - 2
J-126	105.9	750	1,101	20.0	J-20	20.0	1,035.65	Zone - 2
J-65	95.0	750	2,147	20.0	J-64	20.0	1,035.65	Zone - 2
J-67	96.3	750	1,592	62.8	J-35	20.0	1,035.66	Zone - 2
J-119	114.1	750	1,490	28.2	J-126	20.0	1,035.66	Zone - 2
J-66	72.1	750	1,424	49.2	J-35	20.0	1,035.67	Zone - 2
J-124	97.6	750	1,808	61.4	J-35	20.0	1,035.67	Zone - 2
J-125	114.1	750	1,899	58.1	J-118	20.0	1,035.67	Zone - 2
J-123	91.6	750	2,042	37.2	J-35	20.0	1,035.68	Zone - 2
J-122	86.0	750	2,067	31.6	J-118	20.0	1,035.69	Zone - 2
J-35	41.0	750	1,079	20.0	J-20	20.0	1,035.69	Zone - 2
J-120	94.2	750	1,266	20.0	J-20	20.0	1,035.70	Zone - 2
J-121	81.2	750	2,090	29.4	J-118	20.0	1,035.70	Zone - 2
J-118	53.5	750	1,671	20.0	J-20	20.0	1,035.71	Zone - 2
J-37	73.0	750	1,957	20.0	J-20	20.0	1,035.72	Zone - 2
J-34	65.3	750	763	20.0	J-20	20.0	1,035.81	Zone - 2
J-33	57.5	750	1,235	20.0	J-20	20.0	1,035.82	Zone - 2
J-36	75.2	750	2,029	20.0	J-20	20.0	1,035.88	Zone - 2
J-117	84.3	750	2,650	20.0	J-20	20.0	1,035.92	Zone - 2
J-28	69.6	750	2,089	56.7	J-20	20.0	1,035.97	Zone - 2
J-140	80.0	750	1,192	20.0	J-19	20.0	1,035.97	Zone - 2
J-102	90.8	750	1,484	30.8	J-140	20.0	1,035.98	Zone - 2
J-139	96.9	750	1,450	20.0	J-19	20.0	1,035.98	Zone - 2
J-101	80.5	750	1,670	20.5	J-140	20.0	1,035.98	Zone - 2
J-30	63.2	750	2,017	37.3	J-20	20.0	1,035.98	Zone - 2
J-29	61.4	750	2,017	45.8	J-20	20.0	1,035.98	Zone - 2
J-32	55.4	750	1,444	20.0	J-20	20.0	1,035.98	Zone - 2
J-31	58.8	750	2,006	24.6	J-20	20.0	1,035.99	Zone - 2
J-43	61.4	750	2,006	46.1	J-20	20.0	1,035.99	Zone - 2
J-116	113.8	750	1,493	20.0	J-19	20.0	1,036.00	Zone - 2
J-115	80.0	750	1,717	34.9	J-19	20.0	1,036.00	Zone - 2
J-105	53.7	750	2,031	40.4	J-19	20.0	1,036.01	Zone - 2
J-106	35.9	750	1,663	20.0	J-19	20.0	1,036.01	Zone - 2
J-110	90.0	750	1,717	72.1	J-19	20.0	1,036.01	Zone - 2
J-142	24.0	750	1,403	20.0	J-143	20.0	1,036.02	Zone - 2
J-143	22.5	750	1,769	20.0	J-142	20.0	1,036.02	Zone - 2
J-131	43.8	750	443	20.0	J-90	20.0	1,128.22	Zone - 3
J-89	77.1	750	530	48.6	J-131	20.0	1,128.22	Zone - 3
J-56	85.8	750	531	59.6	J-131	20.0	1,128.22	Zone - 3
J-57	89.2	750	531	60.5	J-131	20.0	1,128.22	Zone - 3
J-55	84.5	750	531	58.7	J-131	20.0	1,128.22	Zone - 3
J-88	84.5	750	524	60.7	J-131	20.0	1,128.22	Zone - 3
J-54	84.9	750	532	61.0	J-131	20.0	1,128.22	Zone - 3

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-53	95.7	750	539	71.9	J-131	20.0	1,128.23	Zone - 3
J-59	133.4	750	714	78.8	J-131	20.0	1,128.28	Zone - 3
J-58	123.4	750	714	84.2	J-131	20.0	1,128.28	Zone - 3
J-60	115.2	750	742	68.1	J-131	20.0	1,128.29	Zone - 3
J-50	91.8	750	742	58.3	J-131	20.0	1,128.29	Zone - 3
J-51	111.3	750	742	84.3	J-131	20.0	1,128.29	Zone - 3
J-52	120.4	750	713	96.6	J-131	20.0	1,128.29	Zone - 3
J-69	116.9	750	754	88.9	J-131	20.0	1,128.29	Zone - 3
J-71	66.3	750	826	24.2	J-131	20.0	1,128.31	Zone - 3
J-70	94.0	750	826	63.4	J-131	20.0	1,128.31	Zone - 3
J-68	117.0	750	739	92.8	J-131	20.0	1,128.31	Zone - 3
J-91	106.1	750	843	55.1	J-90	20.0	1,128.33	Zone - 3
J-90	61.1	750	843	20.0	J-131	20.0	1,128.33	Zone - 3
J-75	105.7	750	859	66.0	J-131	20.0	1,128.34	Zone - 3
J-73	113.1	750	859	83.9	J-131	20.0	1,128.34	Zone - 3
J-72	75.5	750	928	51.7	J-131	20.0	1,128.45	Zone - 3
J-138	55.8	750	1,596	32.1	J-131	20.0	1,128.91	Zone - 3
J-20	27.3	750	583	20.0	J-35	20.0	1,173.09	Zone - 4
J-114	128.1	750	1,374	20.0	J-19	20.0	1,173.10	Zone - 4
J-111	128.1	750	1,480	31.8	J-19	20.0	1,173.10	Zone - 4
J-112	102.3	750	1,480	41.0	J-19	20.0	1,173.41	Zone - 4
J-19	22.3	750	352	20.0	J-106	20.0	1,173.48	Zone - 4
J-97	101.1	750	1,274	20.0	J-19	20.0	1,173.64	Zone - 4
J-132	57.5	750	1,967	33.5	J-19	20.0	1,173.65	Zone - 4
J-92	82.5	750	2,120	26.5	J-19	20.0	1,173.65	Zone - 4
J-96	96.8	750	1,254	20.0	J-19	20.0	1,173.66	Zone - 4
J-93	98.9	750	1,736	43.4	J-133	20.0	1,173.67	Zone - 4
J-94	115.4	750	1,366	68.9	J-133	20.0	1,173.73	Zone - 4
J-141	113.2	750	1,349	20.0	J-133	20.0	1,173.73	Zone - 4
J-23	106.3	750	1,172	90.7	J-19	20.0	1,173.76	Zone - 4
J-22	102.9	750	1,151	82.4	J-19	20.0	1,173.77	Zone - 4
J-24	106.8	750	1,181	94.6	J-19	20.0	1,173.78	Zone - 4
J-11	91.6	750	1,025	20.0	J-19	20.0	1,173.80	Zone - 4
J-13	94.7	750	1,104	20.7	J-19	20.0	1,173.80	Zone - 4
J-10	87.3	750	1,104	49.2	J-19	20.0	1,173.80	Zone - 4
J-9	85.1	750	1,104	67.7	J-19	20.0	1,173.80	Zone - 4
J-113	135.8	750	1,455	95.6	J-19	20.0	1,173.84	Zone - 4
J-109	120.2	750	1,455	100.5	J-19	20.0	1,173.84	Zone - 4
J-38	109.8	750	1,252	96.9	J-19	20.0	1,173.85	Zone - 4
J-4	83.9	750	1,150	75.5	J-19	20.0	1,173.86	Zone - 4
J-8	71.8	750	1,027	67.9	J-19	20.0	1,173.87	Zone - 4
J-21	57.9	750	808	20.0	J-19	20.0	1,173.87	Zone - 4
J-7	64.4	750	1,021	61.0	J-19	20.0	1,173.87	Zone - 4
J-6	64.4	750	1,026	60.9	J-19	20.0	1,173.87	Zone - 4
J-16	54.9	750	967	52.0	J-19	20.0	1,173.87	Zone - 4
J-17	44.1	750	896	42.0	J-19	20.0	1,173.87	Zone - 4
J-5	64.4	750	1,037	60.7	J-19	20.0	1,173.88	Zone - 4

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-25	90.8	750	1,195	84.0	J-19	20.0	1,173.88	Zone - 4
J-18	47.1	750	924	45.1	J-19	20.0	1,173.88	Zone - 4
J-133	49.3	750	690	20.0	J-19	20.0	1,173.91	Zone - 4
J-95	93.4	750	964	64.1	J-133	20.0	1,173.91	Zone - 4
J-15	96.5	750	1,068	26.2	J-19	20.0	1,173.93	Zone - 4
J-14	70.1	750	1,068	64.7	J-19	20.0	1,173.94	Zone - 4
J-27	64.4	750	1,182	20.0	J-19	20.0	1,173.94	Zone - 4
J-26	70.1	750	1,206	67.9	J-19	20.0	1,173.94	Zone - 4
J-40	53.6	750	996	47.7	J-19	20.0	1,173.94	Zone - 4
J-41	55.8	750	1,205	54.1	J-19	20.0	1,173.94	Zone - 4
J-99	113.3	750	997	20.0	J-133	20.0	1,173.98	Zone - 4
J-98	109.9	750	1,048	79.6	J-133	20.0	1,173.99	Zone - 4
J-39	64.5	750	1,127	59.6	J-19	20.0	1,174.02	Zone - 4
J-107	87.4	750	1,672	68.7	J-19	20.0	1,174.09	Zone - 4
J-128	53.7	750	1,693	20.0	J-19	20.0	1,174.10	Zone - 4
J-100	82.3	750	2,022	20.0	J-19	20.0	1,174.14	Zone - 4
J-49	90.5	750	1,744	59.5	J-19	20.0	1,174.16	Zone - 4
J-42	61.5	750	1,353	54.3	J-19	20.0	1,174.24	Zone - 4
J-44	57.3	750	1,615	49.8	J-19	20.0	1,174.41	Zone - 4
J-104	92.8	750	1,952	20.0	J-19	20.0	1,174.50	Zone - 4
J-48	77.2	750	2,652	42.9	J-133	20.0	1,174.50	Zone - 4
J-45	59.5	750	2,023	51.6	J-19	20.0	1,174.63	Zone - 4
J-46	83.8	750	2,380	76.2	J-19	20.0	1,174.71	Zone - 4
J-47	50.2	750	3,500	47.6	J-19	20.0	1,174.93	Zone - 4
J-81	120.1	750	1,842	20.0	J-136	20.0	1,351.48	Zone - P
J-130	109.3	750	1,537	20.0	J-129	20.0	1,352.61	Zone - P
J-129	94.2	750	1,057	20.0	J-86	20.0	1,352.82	Zone - P
J-87	127.6	750	1,172	39.5	J-129	20.0	1,352.82	Zone - P
J-86	100.7	750	1,172	26.5	J-129	20.0	1,352.82	Zone - P
J-85	122.4	750	1,594	48.1	J-129	20.0	1,352.85	Zone - P
J-82	116.1	750	2,885	20.0	J-81	20.0	1,353.29	Zone - P
J-84	57.9	750	946	20.0	J-135	20.0	1,353.76	Zone - P
J-135	66.5	750	1,111	28.7	J-84	20.0	1,353.76	Zone - P
J-137	62.2	750	1,448	24.3	J-84	20.0	1,353.77	Zone - P
J-83	88.6	750	2,380	50.7	J-84	20.0	1,353.78	Zone - P
J-77	114.5	750	2,954	20.0	J-76	20.0	1,354.73	Zone - P
J-78	121.5	750	2,983	20.0	J-77	20.0	1,354.73	Zone - P
J-80	137.0	750	1,646	20.0	J-136	20.0	1,354.76	Zone - P
J-134	114.6	750	1,902	20.0	J-136	20.0	1,354.76	Zone - P
J-79	127.1	750	2,880	32.6	J-134	20.0	1,354.77	Zone - P
J-136	41.9	750	3,500	37.6	J-84	20.0	1,354.93	Zone - P
J-76	106.2	750	2,312	20.0	J-136	20.0	1,355.37	Zone - P

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-28	875.00	3	1,035.97	69.6	2,089	56.7	Zone - 2
J-29	894.00	3	1,035.98	61.4	2,017	45.8	Zone - 2
J-30	890.00	3	1,035.98	63.2	2,017	37.3	Zone - 2
J-31	900.00	3	1,035.99	58.8	2,006	24.6	Zone - 2
J-32	908.00	3	1,035.98	55.4	1,444	20.0	Zone - 2
J-33	903.00	3	1,035.82	57.5	1,235	20.0	Zone - 2
J-34	885.00	3	1,035.81	65.3	763	20.0	Zone - 2
J-35	941.00	3	1,035.69	41.0	1,079	20.0	Zone - 2
J-36	862.00	3	1,035.88	75.2	2,029	20.0	Zone - 2
J-37	867.00	3	1,035.72	73.0	1,957	20.0	Zone - 2
J-43	894.00	3	1,035.99	61.4	2,006	46.1	Zone - 2
J-61	862.00	3	1,035.65	75.1	1,790	20.0	Zone - 2
J-62	765.00	3	1,035.65	117.1	2,047	38.6	Zone - 2
J-63	808.00	1	1,035.65	98.5	1,667	20.0	Zone - 2
J-64	814.00	3	1,035.65	95.9	2,099	20.0	Zone - 2
J-65	816.00	1	1,035.65	95.0	2,147	20.0	Zone - 2
J-66	869.00	6	1,035.67	72.1	1,424	49.2	Zone - 2
J-67	813.00	6	1,035.66	96.3	1,592	62.8	Zone - 2
J-101	850.00	6	1,035.98	80.5	1,670	20.5	Zone - 2
J-102	826.00	6	1,035.98	90.8	1,484	30.8	Zone - 2
J-105	912.00	6	1,036.01	53.7	2,031	40.4	Zone - 2
J-106	953.00	6	1,036.01	35.9	1,663	20.0	Zone - 2
J-110	828.00	6	1,036.01	90.0	1,717	72.1	Zone - 2
J-115	851.00	6	1,036.00	80.0	1,717	34.9	Zone - 2
J-116	773.00	6	1,036.00	113.8	1,493	20.0	Zone - 2
J-117	841.00	6	1,035.92	84.3	2,650	20.0	Zone - 2
J-118	912.00	6	1,035.71	53.5	1,671	20.0	Zone - 2
J-119	772.00	6	1,035.66	114.1	1,490	28.2	Zone - 2
J-120	818.00	6	1,035.70	94.2	1,266	20.0	Zone - 2
J-121	848.00	6	1,035.70	81.2	2,090	29.4	Zone - 2
J-122	837.00	6	1,035.69	86.0	2,067	31.6	Zone - 2
J-123	824.00	6	1,035.68	91.6	2,042	37.2	Zone - 2
J-124	810.00	6	1,035.67	97.6	1,808	61.4	Zone - 2
J-125	772.00	6	1,035.67	114.1	1,899	58.1	Zone - 2
J-126	791.00	6	1,035.65	105.9	1,101	20.0	Zone - 2
J-139	812.00	0	1,035.98	96.9	1,450	20.0	Zone - 2
J-140	851.00	6	1,035.97	80.0	1,192	20.0	Zone - 2
J-142	980.62	0	1,036.02	24.0	1,403	20.0	Zone - 2
J-143	984.00	0	1,036.02	22.5	1,769	20.0	Zone - 2
J-50	916.00	1	1,128.29	91.8	742	58.3	Zone - 3
J-51	871.00	3	1,128.29	111.3	742	84.3	Zone - 3
J-52	850.00	3	1,128.29	120.4	713	96.6	Zone - 3
J-53	907.00	1	1,128.23	95.7	539	71.9	Zone - 3
J-54	932.00	1	1,128.22	84.9	532	61.0	Zone - 3
J-55	933.00	1	1,128.22	84.5	531	58.7	Zone - 3
J-56	930.00	3	1,128.22	85.8	531	59.6	Zone - 3
J-57	922.00	1	1,128.22	89.2	531	60.5	Zone - 3

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-58	843.00	3	1,128.28	123.4	714	84.2	Zone - 3
J-59	820.00	3	1,128.28	133.4	714	78.8	Zone - 3
J-60	862.00	3	1,128.29	115.2	742	68.1	Zone - 3
J-68	858.00	6	1,128.31	117.0	739	92.8	Zone - 3
J-69	858.00	6	1,128.29	116.9	754	88.9	Zone - 3
J-70	911.00	6	1,128.31	94.0	826	63.4	Zone - 3
J-71	975.00	6	1,128.31	66.3	826	24.2	Zone - 3
J-72	954.00	6	1,128.45	75.5	928	51.7	Zone - 3
J-73	867.00	0	1,128.34	113.1	859	83.9	Zone - 3
J-75	884.00	6	1,128.34	105.7	859	66.0	Zone - 3
J-88	933.00	6	1,128.22	84.5	524	60.7	Zone - 3
J-89	950.00	6	1,128.22	77.1	530	48.6	Zone - 3
J-90	987.00	6	1,128.33	61.1	843	20.0	Zone - 3
J-91	883.00	6	1,128.33	106.1	843	55.1	Zone - 3
J-131	1,027.00	6	1,128.22	43.8	443	20.0	Zone - 3
J-138	1,000.00	6	1,128.91	55.8	1,596	32.1	Zone - 3
J-4	980.00	3	1,173.86	83.9	1,150	75.5	Zone - 4
J-5	1,025.00	3	1,173.88	64.4	1,037	60.7	Zone - 4
J-6	1,025.00	3	1,173.87	64.4	1,026	60.9	Zone - 4
J-7	1,025.00	3	1,173.87	64.4	1,021	61.0	Zone - 4
J-8	1,008.00	3	1,173.87	71.8	1,027	67.9	Zone - 4
J-9	977.00	3	1,173.80	85.1	1,104	67.7	Zone - 4
J-10	972.00	3	1,173.80	87.3	1,104	49.2	Zone - 4
J-11	962.00	3	1,173.80	91.6	1,025	20.0	Zone - 4
J-13	955.00	3	1,173.80	94.7	1,104	20.7	Zone - 4
J-14	1,012.00	3	1,173.94	70.1	1,068	64.7	Zone - 4
J-15	951.00	3	1,173.93	96.5	1,068	26.2	Zone - 4
J-16	1,047.00	3	1,173.87	54.9	967	52.0	Zone - 4
J-17	1,072.00	3	1,173.87	44.1	896	42.0	Zone - 4
J-18	1,065.00	3	1,173.88	47.1	924	45.1	Zone - 4
J-19	1,122.00	3	1,173.48	22.3	352	20.0	Zone - 4
J-20	1,110.00	3	1,173.09	27.3	583	20.0	Zone - 4
J-21	1,040.00	3	1,173.87	57.9	808	20.0	Zone - 4
J-22	936.00	3	1,173.77	102.9	1,151	82.4	Zone - 4
J-23	928.00	3	1,173.76	106.3	1,172	90.7	Zone - 4
J-24	927.00	3	1,173.78	106.8	1,181	94.6	Zone - 4
J-25	964.00	3	1,173.88	90.8	1,195	84.0	Zone - 4
J-26	1,012.00	3	1,173.94	70.1	1,206	67.9	Zone - 4
J-27	1,025.00	3	1,173.94	64.4	1,182	20.0	Zone - 4
J-38	920.00	3	1,173.85	109.8	1,252	96.9	Zone - 4
J-39	1,025.00	3	1,174.02	64.5	1,127	59.6	Zone - 4
J-40	1,050.00	3	1,173.94	53.6	996	47.7	Zone - 4
J-41	1,045.00	3	1,173.94	55.8	1,205	54.1	Zone - 4
J-42	1,032.00	1	1,174.24	61.5	1,353	54.3	Zone - 4
J-44	1,042.00	1	1,174.41	57.3	1,615	49.8	Zone - 4
J-45	1,037.00	3	1,174.63	59.5	2,023	51.6	Zone - 4
J-46	981.00	3	1,174.71	83.8	2,380	76.2	Zone - 4

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-47	1,059.00	3	1,174.93	50.2	3,500	47.6	Zone - 4
J-48	996.00	3	1,174.50	77.2	2,652	42.9	Zone - 4
J-49	965.00	1	1,174.16	90.5	1,744	59.5	Zone - 4
J-92	983.00	6	1,173.65	82.5	2,120	26.5	Zone - 4
J-93	945.00	6	1,173.67	98.9	1,736	43.4	Zone - 4
J-94	907.00	6	1,173.73	115.4	1,366	68.9	Zone - 4
J-95	958.00	6	1,173.91	93.4	964	64.1	Zone - 4
J-96	950.00	6	1,173.66	96.8	1,254	20.0	Zone - 4
J-97	940.00	6	1,173.64	101.1	1,274	20.0	Zone - 4
J-98	920.00	6	1,173.99	109.9	1,048	79.6	Zone - 4
J-99	912.00	6	1,173.98	113.3	997	20.0	Zone - 4
J-100	984.00	6	1,174.14	82.3	2,022	20.0	Zone - 4
J-104	960.00	6	1,174.50	92.8	1,952	20.0	Zone - 4
J-107	972.00	6	1,174.09	87.4	1,672	68.7	Zone - 4
J-109	896.00	6	1,173.84	120.2	1,455	100.5	Zone - 4
J-111	877.00	6	1,173.10	128.1	1,480	31.8	Zone - 4
J-112	937.00	6	1,173.41	102.3	1,480	41.0	Zone - 4
J-113	860.00	6	1,173.84	135.8	1,455	95.6	Zone - 4
J-114	877.00	6	1,173.10	128.1	1,374	20.0	Zone - 4
J-128	1,050.00	6	1,174.10	53.7	1,693	20.0	Zone - 4
J-132	1,040.81	6	1,173.65	57.5	1,967	33.5	Zone - 4
J-133	1,060.00	6	1,173.91	49.3	690	20.0	Zone - 4
J-141	912.00	0	1,173.73	113.2	1,349	20.0	Zone - 4
J-76	1,110.00	6	1,355.37	106.2	2,312	20.0	Zone - P
J-77	1,090.00	6	1,354.73	114.5	2,954	20.0	Zone - P
J-78	1,074.00	6	1,354.73	121.5	2,983	20.0	Zone - P
J-79	1,061.00	6	1,354.77	127.1	2,880	32.6	Zone - P
J-80	1,038.00	6	1,354.76	137.0	1,646	20.0	Zone - P
J-81	1,074.00	6	1,351.48	120.1	1,842	20.0	Zone - P
J-82	1,085.00	6	1,353.29	116.1	2,885	20.0	Zone - P
J-83	1,149.00	6	1,353.78	88.6	2,380	50.7	Zone - P
J-84	1,220.00	6	1,353.76	57.9	946	20.0	Zone - P
J-85	1,070.00	6	1,352.85	122.4	1,594	48.1	Zone - P
J-86	1,120.00	6	1,352.82	100.7	1,172	26.5	Zone - P
J-87	1,058.00	6	1,352.82	127.6	1,172	39.5	Zone - P
J-129	1,135.00	6	1,352.82	94.2	1,057	20.0	Zone - P
J-130	1,100.00	6	1,352.61	109.3	1,537	20.0	Zone - P
J-134	1,090.00	6	1,354.76	114.6	1,902	20.0	Zone - P
J-135	1,200.00	6	1,353.76	66.5	1,111	28.7	Zone - P
J-136	1,258.00	6	1,354.93	41.9	3,500	37.6	Zone - P
J-137	1,210.00	6	1,353.77	62.2	1,448	24.3	Zone - P

PROPOSED - LOW PRESSURE ZONES EXISTING WATER SYSTEM

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-44	57.4	750	3,500	23.7	J-19	20.0	1,174.70	Zone - 4
J-45	59.6	750	3,500	36.4	J-19	20.0	1,174.80	Zone - 4
J-46	83.9	750	3,500	67.4	J-19	20.0	1,174.84	Zone - 4
J-47	50.2	750	3,500	47.5	J-19	20.0	1,174.96	Zone - 4
J-48	77.3	750	1,851	53.9	J-78	20.0	1,174.56	Zone - 4
J-49	90.6	750	2,701	20.5	J-128	20.0	1,174.46	Zone - 4
J-78	43.4	750	659	20.0	J-19	20.0	1,174.27	Zone - 4
J-79	48.9	750	503	20.0	J-19	20.0	1,174.07	Zone - 4
J-81	43.5	750	1,805	20.0	J-19	20.0	1,174.50	Zone - 4
J-92	82.7	750	574	53.8	J-79	20.0	1,174.08	Zone - 4
J-93	99.1	750	646	70.2	J-79	20.0	1,174.11	Zone - 4
J-94	115.6	750	818	86.7	J-79	20.0	1,174.20	Zone - 4
J-95	93.6	750	907	70.2	J-78	20.0	1,174.28	Zone - 4
J-96	97.0	750	646	56.3	J-79	20.0	1,174.11	Zone - 4
J-97	101.3	750	574	60.9	J-79	20.0	1,174.07	Zone - 4
J-98	110.0	750	985	86.7	J-78	20.0	1,174.32	Zone - 4
J-99	113.5	750	985	26.8	J-78	20.0	1,174.31	Zone - 4
J-100	82.4	750	2,013	20.0	J-19	20.0	1,174.41	Zone - 4
J-104	92.8	750	1,851	23.4	J-78	20.0	1,174.56	Zone - 4
J-107	87.6	750	2,440	49.2	J-128	20.0	1,174.42	Zone - 4
J-109	120.4	750	2,938	50.8	J-128	20.0	1,174.31	Zone - 4
J-111	128.3	750	1,567	20.0	J-114	20.0	1,173.64	Zone - 4
J-112	102.5	750	1,723	20.0	J-19	20.0	1,173.92	Zone - 4
J-113	136.0	750	2,583	20.0	J-19	20.0	1,174.30	Zone - 4
J-114	128.3	750	1,367	20.0	J-19	20.0	1,173.64	Zone - 4
J-128	53.8	750	1,675	20.0	J-19	20.0	1,174.41	Zone - 4
J-132	57.7	750	519	28.7	J-79	20.0	1,174.07	Zone - 4
J-133	49.4	750	706	26.1	J-78	20.0	1,174.27	Zone - 4
J-141	113.4	750	817	65.8	J-79	20.0	1,174.20	Zone - 4
J-76	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-77	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-80	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-82	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-83	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-84	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-86	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-87	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-129	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-134	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-135	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-136	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P
J-137	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - P

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-61	862.00	3	1,002.05	60.6	1,264	20.0	Zone - 1
J-62	765.00	3	1,002.04	102.6	1,130	42.2	Zone - 1
J-63	808.00	1	1,002.04	84.0	1,077	20.1	Zone - 1
J-64	814.00	3	1,002.04	81.4	1,016	20.9	Zone - 1
J-65	816.00	1	1,002.04	80.5	983	20.2	Zone - 1
J-28	875.00	3	1,035.98	69.6	2,779	43.1	Zone - 2
J-29	894.00	3	1,035.99	61.4	2,888	23.1	Zone - 2
J-30	890.00	3	1,035.99	63.2	2,623	20.0	Zone - 2
J-31	900.00	3	1,035.99	58.8	2,019	23.5	Zone - 2
J-32	908.00	3	1,035.99	55.4	1,435	20.0	Zone - 2
J-33	903.00	3	1,035.86	57.5	1,144	20.0	Zone - 2
J-34	885.00	3	1,035.85	65.3	741	20.1	Zone - 2
J-35	941.00	3	1,035.76	41.0	820	20.0	Zone - 2
J-36	862.00	3	1,035.91	75.2	1,940	20.0	Zone - 2
J-37	867.00	3	1,035.78	73.0	1,398	36.6	Zone - 2
J-43	894.00	3	1,035.99	61.4	2,829	26.1	Zone - 2
J-66	869.00	6	1,035.75	72.1	918	49.2	Zone - 2
J-67	813.00	6	1,035.75	96.4	918	62.8	Zone - 2
J-101	850.00	6	1,035.98	80.5	1,672	20.5	Zone - 2
J-102	826.00	6	1,035.98	90.8	1,485	30.8	Zone - 2
J-105	912.00	6	1,036.01	53.7	2,331	37.0	Zone - 2
J-106	953.00	6	1,036.01	35.9	1,648	20.0	Zone - 2
J-110	828.00	6	1,036.01	90.0	3,222	30.0	Zone - 2
J-115	851.00	6	1,036.00	80.0	2,110	20.0	Zone - 2
J-116	773.00	6	1,036.00	113.8	1,529	20.0	Zone - 2
J-117	841.00	6	1,035.93	84.3	2,344	29.2	Zone - 2
J-118	912.00	6	1,035.77	53.5	1,380	21.9	Zone - 2
J-119	772.00	6	1,035.73	114.1	1,245	43.6	Zone - 2
J-120	818.00	6	1,035.76	94.2	1,207	20.0	Zone - 2
J-121	848.00	6	1,035.76	81.2	1,335	50.0	Zone - 2
J-122	837.00	6	1,035.75	86.0	1,285	54.5	Zone - 2
J-123	824.00	6	1,035.75	91.6	1,250	60.6	Zone - 2
J-124	810.00	6	1,035.75	97.7	1,120	72.5	Zone - 2
J-125	772.00	6	1,035.75	114.1	1,244	79.3	Zone - 2
J-126	791.00	6	1,035.73	105.9	1,055	20.0	Zone - 2
J-139	812.00	0	1,035.98	96.9	1,451	20.0	Zone - 2
J-140	851.00	6	1,035.98	80.0	1,192	20.0	Zone - 2
J-142	964.69	0	1,036.02	30.9	2,095	25.8	Zone - 2
J-143	978.28	0	1,036.02	25.0	1,304	20.0	Zone - 2
J-50	916.00	1	1,129.66	92.4	1,748	56.6	Zone - 3
J-51	871.00	3	1,129.33	111.8	1,179	75.9	Zone - 3
J-52	850.00	3	1,129.21	120.8	1,022	82.5	Zone - 3
J-53	907.00	1	1,129.17	96.1	944	38.6	Zone - 3
J-54	932.00	1	1,129.17	85.3	928	27.6	Zone - 3
J-55	933.00	1	1,129.17	84.9	898	25.3	Zone - 3
J-56	930.00	3	1,129.17	86.2	892	26.4	Zone - 3
J-57	922.00	1	1,129.17	89.6	898	22.2	Zone - 3

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-58	843.00	3	1,129.21	123.8	1,022	55.7	Zone - 3
J-59	820.00	3	1,129.21	133.8	- 1,022	35.8	Zone - 3
J-60	862.00	3	1,129.31	115.7	1,179	31.6	Zone - 3
J-68	858.00	6	1,129.20	117.3	985	79.0	Zone - 3
J-69	858.00	6	1,129.30	117.4	1,122	78.1	Zone - 3
J-70	911.00	6	1,129.19	94.4	965	51.9	Zone - 3
J-71	975.00	6	1,129.19	66.7	854	20.0	Zone - 3
J-72	954.00	6	1,129.18	75.8	876	39.9	Zone - 3
J-73	867.00	0	1,129.17	113.4	924	73.1	Zone - 3
J-75	884.00	6	1,129.17	106.1	924	53.7	Zone - 3
J-85	1,070.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - 3
J-88	933.00	6	1,129.17	84.9	924	26.5	Zone - 3
J-89	950.00	6	1,129.17	77.5	825	20.0	Zone - 3
J-90	987.00	6	1,129.16	61.5	782	20.0	Zone - 3
J-91	883.00	6	1,129.16	106.5	782	56.4	Zone - 3
J-130	1,100.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - 3
J-131	1,027.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - 3
J-138	1,000.00	6	1,129.17	55.9	716	20.0	Zone - 3
J-4	980.00	3	1,174.44	84.1	2,729	39.0	Zone - 4
J-5	1,025.00	3	1,174.49	64.7	2,488	40.4	Zone - 4
J-6	1,025.00	3	1,174.49	64.7	2,456	41.1	Zone - 4
J-7	1,025.00	3	1,174.50	64.7	2,438	41.4	Zone - 4
J-8	1,008.00	3	1,174.49	72.0	2,441	46.9	Zone - 4
J-9	977.00	3	1,174.42	85.4	2,113	20.0	Zone - 4
J-10	972.00	3	1,174.41	87.6	1,452	20.0	Zone - 4
J-11	962.00	3	1,174.41	91.9	1,006	20.0	Zone - 4
J-13	955.00	3	1,174.41	94.9	1,087	20.0	Zone - 4
J-14	1,012.00	3	1,174.52	70.3	2,540	38.5	Zone - 4
J-15	951.00	3	1,174.52	96.7	1,106	20.0	Zone - 4
J-16	1,047.00	3	1,174.52	55.2	2,334	34.5	Zone - 4
J-17	1,072.00	3	1,174.54	44.4	2,250	27.6	Zone - 4
J-18	1,065.00	3	1,174.53	47.4	2,258	29.6	Zone - 4
J-19	1,122.00	3	1,174.92	22.9	1,519	20.0	Zone - 4
J-20	1,110.00	3	1,174.92	28.1	888	20.0	Zone - 4
J-21	1,040.00	3	1,174.54	58.2	796	20.0	Zone - 4
J-22	936.00	3	1,174.37	103.1	2,278	20.0	Zone - 4
J-23	928.00	3	1,174.36	106.6	2,302	40.1	Zone - 4
J-24	927.00	3	1,174.37	107.0	2,295	51.6	Zone - 4
J-25	964.00	3	1,174.45	91.1	2,267	52.7	Zone - 4
J-26	1,012.00	3	1,174.50	70.3	2,201	45.6	Zone - 4
J-27	1,025.00	3	1,174.49	64.7	1,101	20.0	Zone - 4
J-38	920.00	3	1,174.40	110.1	2,958	44.5	Zone - 4
J-39	1,025.00	3	1,174.56	64.7	2,708	35.4	Zone - 4
J-40	1,050.00	3	1,174.55	53.9	2,350	20.0	Zone - 4
J-41	1,045.00	3	1,174.50	56.0	2,193	32.6	Zone - 4
J-42	1,032.00	1	1,174.64	61.7	3,294	20.8	Zone - 4
J-44	1,042.00	1	1,174.70	57.4	3,500	23.7	Zone - 4

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-45	1,037.00	3	1,174.80	59.6	3,500	36.4	Zone - 4
J-46	981.00	3	1,174.84	83.9	3,500	67.4	Zone - 4
J-47	1,059.00	3	1,174.96	50.2	3,500	47.5	Zone - 4
J-48	996.00	3	1,174.56	77.3	1,851	53.9	Zone - 4
J-49	965.00	1	1,174.46	90.6	2,701	20.5	Zone - 4
J-78	1,074.00	6	1,174.27	43.4	659	20.0	Zone - 4
J-79	1,061.00	6	1,174.07	48.9	503	20.0	Zone - 4
J-81	1,074.00	6	1,174.50	43.5	1,805	20.0	Zone - 4
J-92	983.00	6	1,174.08	82.7	574	53.8	Zone - 4
J-93	945.00	6	1,174.11	99.1	646	70.2	Zone - 4
J-94	907.00	6	1,174.20	115.6	818	86.7	Zone - 4
J-95	958.00	6	1,174.28	93.6	907	70.2	Zone - 4
J-96	950.00	6	1,174.11	97.0	646	56.3	Zone - 4
J-97	940.00	6	1,174.07	101.3	574	60.9	Zone - 4
J-98	920.00	6	1,174.32	110.0	985	86.7	Zone - 4
J-99	912.00	6	1,174.31	113.5	985	26.8	Zone - 4
J-100	984.00	6	1,174.41	82.4	2,013	20.0	Zone - 4
J-104	960.00	6	1,174.56	92.8	1,851	23.4	Zone - 4
J-107	972.00	6	1,174.42	87.6	2,440	49.2	Zone - 4
J-109	896.00	6	1,174.31	120.4	2,938	50.8	Zone - 4
J-111	877.00	6	1,173.64	128.3	1,567	20.0	Zone - 4
J-112	937.00	6	1,173.92	102.5	1,723	20.0	Zone - 4
J-113	860.00	6	1,174.30	136.0	2,583	20.0	Zone - 4
J-114	877.00	6	1,173.64	128.3	1,367	20.0	Zone - 4
J-128	1,050.00	6	1,174.41	53.8	1,675	20.0	Zone - 4
J-132	1,040.81	6	1,174.07	57.7	519	28.7	Zone - 4
J-133	1,060.00	6	1,174.27	49.4	706	26.1	Zone - 4
J-141	912.00	0	1,174.20	113.4	817	65.8	Zone - 4
J-76	1,110.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-77	1,090.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-80	1,038.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-82	1,085.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-83	1,149.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-84	1,220.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-86	1,120.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-87	1,058.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-129	1,135.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-134	1,090.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-135	1,200.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-136	1,258.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P
J-137	1,210.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone - P

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-57	89.6	750	898	22.2	J-89	20.0	1,129.17	Zone - 3
J-58	123.8	750	1,022	55.7	J-138	20.0	1,129.21	Zone - 3
J-59	133.8	750	1,022	35.8	J-138	20.0	1,129.21	Zone - 3
J-60	115.7	750	1,179	31.6	J-138	20.0	1,129.31	Zone - 3
J-68	117.3	750	985	79.0	J-138	20.0	1,129.20	Zone - 3
J-69	117.4	750	1,122	78.1	J-138	20.0	1,129.30	Zone - 3
J-70	94.4	750	965	51.9	J-138	20.0	1,129.19	Zone - 3
J-71	66.7	750	854	20.0	J-138	20.0	1,129.19	Zone - 3
J-72	75.8	750	876	39.9	J-138	20.0	1,129.18	Zone - 3
J-73	113.4	750	924	73.1	J-138	20.0	1,129.17	Zone - 3
J-75	106.1	750	924	53.7	J-138	20.0	1,129.17	Zone - 3
J-85	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - 3
J-88	84.9	750	924	26.5	J-89	20.0	1,129.17	Zone - 3
J-89	77.5	750	825	20.0	J-138	20.0	1,129.17	Zone - 3
J-90	61.5	750	782	20.0	J-138	20.0	1,129.16	Zone - 3
J-91	106.5	750	782	56.4	J-90	20.0	1,129.16	Zone - 3
J-130	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - 3
J-131	(N/A)	750	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone - 3
J-138	55.9	750	716	20.0	J-90	20.0	1,129.17	Zone - 3
J-4	84.1	750	2,729	39.0	J-19	20.0	1,174.44	Zone - 4
J-5	64.7	750	2,488	40.4	J-19	20.0	1,174.49	Zone - 4
J-6	64.7	750	2,456	41.1	J-19	20.0	1,174.49	Zone - 4
J-7	64.7	750	2,438	41.4	J-19	20.0	1,174.50	Zone - 4
J-8	72.0	750	2,441	46.9	J-19	20.0	1,174.49	Zone - 4
J-9	85.4	750	2,113	20.0	J-19	20.0	1,174.42	Zone - 4
J-10	87.6	750	1,452	20.0	J-19	20.0	1,174.41	Zone - 4
J-11	91.9	750	1,006	20.0	J-19	20.0	1,174.41	Zone - 4
J-13	94.9	750	1,087	20.0	J-19	20.0	1,174.41	Zone - 4
J-14	70.3	750	2,540	38.5	J-19	20.0	1,174.52	Zone - 4
J-15	96.7	750	1,106	20.0	J-19	20.0	1,174.52	Zone - 4
J-16	55.2	750	2,334	34.5	J-19	20.0	1,174.52	Zone - 4
J-17	44.4	750	2,250	27.6	J-19	20.0	1,174.54	Zone - 4
J-18	47.4	750	2,258	29.6	J-19	20.0	1,174.53	Zone - 4
J-19	22.9	750	1,519	20.0	J-20	20.0	1,174.92	Zone - 4
J-20	28.1	750	888	20.0	J-19	20.0	1,174.92	Zone - 4
J-21	58.2	750	796	20.0	J-19	20.0	1,174.54	Zone - 4
J-22	103.1	750	2,278	20.0	J-19	20.0	1,174.37	Zone - 4
J-23	106.6	750	2,302	40.1	J-19	20.0	1,174.36	Zone - 4
J-24	107.0	750	2,295	51.6	J-19	20.0	1,174.37	Zone - 4
J-25	91.1	750	2,267	52.7	J-81	20.0	1,174.45	Zone - 4
J-26	70.3	750	2,201	45.6	J-81	20.0	1,174.50	Zone - 4
J-27	64.7	750	1,101	20.0	J-19	20.0	1,174.49	Zone - 4
J-38	110.1	750	2,958	44.5	J-19	20.0	1,174.40	Zone - 4
J-39	64.7	750	2,708	35.4	J-19	20.0	1,174.56	Zone - 4
J-40	53.9	750	2,350	20.0	J-19	20.0	1,174.55	Zone - 4
J-41	56.0	750	2,193	32.6	J-81	20.0	1,174.50	Zone - 4
J-42	61.7	750	3,294	20.8	J-19	20.0	1,174.64	Zone - 4

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-61	60.6	750	1,264	20.0	J-65	20.0	1,002.05	Zone - 1
J-62	102.6	750	1,130	42.2	J-65	20.0	1,002.04	Zone - 1
J-63	84.0	750	1,077	20.1	J-65	20.0	1,002.04	Zone - 1
J-64	81.4	750	1,016	20.9	J-65	20.0	1,002.04	Zone - 1
J-65	80.5	750	983	20.2	J-64	20.0	1,002.04	Zone - 1
J-28	69.6	750	2,779	43.1	J-35	20.0	1,035.98	Zone - 2
J-29	61.4	750	2,888	23.1	J-32	20.0	1,035.99	Zone - 2
J-30	63.2	750	2,623	20.0	J-143	20.0	1,035.99	Zone - 2
J-31	58.8	750	2,019	23.5	J-32	20.0	1,035.99	Zone - 2
J-32	55.4	750	1,435	20.0	J-143	20.0	1,035.99	Zone - 2
J-33	57.5	750	1,144	20.0	J-35	20.0	1,035.86	Zone - 2
J-34	65.3	750	741	20.1	J-143	20.0	1,035.85	Zone - 2
J-35	41.0	750	820	20.0	J-143	20.0	1,035.76	Zone - 2
J-36	75.2	750	1,940	20.0	J-35	20.0	1,035.91	Zone - 2
J-37	73.0	750	1,398	36.6	J-35	20.0	1,035.78	Zone - 2
J-43	61.4	750	2,829	26.1	J-32	20.0	1,035.99	Zone - 2
J-66	72.1	750	918	49.2	J-35	20.0	1,035.75	Zone - 2
J-67	96.4	750	918	62.8	J-35	20.0	1,035.75	Zone - 2
J-101	80.5	750	1,672	20.5	J-140	20.0	1,035.98	Zone - 2
J-102	90.8	750	1,485	30.8	J-140	20.0	1,035.98	Zone - 2
J-105	53.7	750	2,331	37.0	J-143	20.0	1,036.01	Zone - 2
J-106	35.9	750	1,648	20.0	J-143	20.0	1,036.01	Zone - 2
J-110	90.0	750	3,222	30.0	J-115	20.0	1,036.01	Zone - 2
J-115	80.0	750	2,110	20.0	J-143	20.0	1,036.00	Zone - 2
J-116	113.8	750	1,529	20.0	J-143	20.0	1,036.00	Zone - 2
J-117	84.3	750	2,344	29.2	J-35	20.0	1,035.93	Zone - 2
J-118	53.5	750	1,380	21.9	J-35	20.0	1,035.77	Zone - 2
J-119	114.1	750	1,245	43.6	J-35	20.0	1,035.73	Zone - 2
J-120	94.2	750	1,207	20.0	J-35	20.0	1,035.76	Zone - 2
J-121	81.2	750	1,335	50.0	J-35	20.0	1,035.76	Zone - 2
J-122	86.0	750	1,285	54.5	J-35	20.0	1,035.75	Zone - 2
J-123	91.6	750	1,250	60.6	J-35	20.0	1,035.75	Zone - 2
J-124	97.7	750	1,120	72.5	J-35	20.0	1,035.75	Zone - 2
J-125	114.1	750	1,244	79.3	J-35	20.0	1,035.75	Zone - 2
J-126	105.9	750	1,055	20.0	J-143	20.0	1,035.73	Zone - 2
J-139	96.9	750	1,451	20.0	J-140	20.0	1,035.98	Zone - 2
J-140	80.0	750	1,192	20.0	J-143	20.0	1,035.98	Zone - 2
J-142	30.9	750	2,095	25.8	J-143	20.0	1,036.02	Zone - 2
J-143	25.0	750	1,304	20.0	J-142	20.0	1,036.02	Zone - 2
J-50	92.4	750	1,748	56.6	J-138	20.0	1,129.66	Zone - 3
J-51	111.8	750	1,179	75.9	J-138	20.0	1,129.33	Zone - 3
J-52	120.8	750	1,022	82.5	J-138	20.0	1,129.21	Zone - 3
J-53	96.1	750	944	38.6	J-89	20.0	1,129.17	Zone - 3
J-54	85.3	750	928	27.6	J-89	20.0	1,129.17	Zone - 3
J-55	84.9	750	898	25.3	J-89	20.0	1,129.17	Zone - 3
J-56	86.2	750	892	26.4	J-89	20.0	1,129.17	Zone - 3