DOLSONTOWN ROAD WATER SEWER SYSTEM EXTENSION

SANITARY SEWER
AND WATER DISTRIBUTION SYSTEM
ENGINEERING REPORT
APRIL 6, 2022 REVISION



This document serves as an Engineering Report detailing the technical components of the water and sanitary sewer system extensions as required to provide potable water and sanitary sewer service to two Dolsontown East (RDM #5) warehouses, the Simon Business Park (RDM #6) and the Marangi transfer station on Dolsontown Road.

Project Summary

The Dolsontown Road projects includes three distinct projects. Each project is located on Dolsontown Road in the Town of Wawayanda, Orange County, New York. These projects are the Dolsontown East (RDM #5) site, the Simon Business Park (RDM #6) and the Marangi transfer station project. The Dolsontown East projects involves a parcel which will be subdivided into two parcels. Each parcel will have a warehouse, with each warehouse being equipped with a privately owned sanitary sewer pump station. The Simon Business Park project includes two warehouses on a single parcel. These warehouses will be served by a sanitary sewer pump station that serves both facilities. The Marangi transfer station will also be equipped with a sanitary sewer pump station. While all the pump stations will be privately owned, they will discharge to the Town of Wawayanda collection system via a common forcemain that will be installed on Dolsontown Road. This forcemain will discharge to an existing gravity sewer on Dolsontown Road. Ownership of this forcemain will be transferred to the Town of Wawayanda upon completion.

Potable water will be provided to all parcels via the extension of the Town of Wawayanda's water main on Dolsontown Road. Ownership of this water main will be transferred to Town upon completion.

Town Sanitary Sewer and Potable Water System Capacities

The Town of Wawayanda (Town) has an agreement to purchase up to 200,000 gpd of potable water from the City of Middletown (City) and to send the same amount back to the City's sewage treatment plant as wastewater. The Town currently purchases / consumes $\sim 75,000$ gpd, resulting in excess capacity in both the potable water and the sanitary sewer system of $\sim 125,000$ gpd.

The sanitary sewer system on Dolsontown Road consists of a 12" gravity sewer which discharges to the Town's Sewer District #1 pump station. The pump station then discharges to the City of Middletown WWTP via an 8" forcemain. The 12" sanitary has a minimum slope of 1.08% between the connection point and the pump station. A 12" gravity system with a slope of 1.08% has a minimum peak hourly flow (PHF) capacity of 2,400,000 gpd. The Sewer District #1 Pump

Station has a reported design PHF of 648,000 gpd, with an associated design average daily flow (ADF) of 162,000 gpd. The pump station is reportedly designed to allow for an upgrade which will accommodate a PHF of 864,000 gpd and an associated ADF of 216,000 gpd.

The potable water system on Dolsontown Road is a 12" ductile iron pipe. Flow testing conducted by Sullivan Fire Corporation shows this pipeline having a fire flow capacity of 1,800 gpm. This fire flow capacity will be maintained to all the proposed developments on Dolsontown Road with the extension of the 12" main. This water main extension will be designed in conformance with all applicable regulatory standards and will include appropriately placed fire hydrants.

The Town's sanitary sewer system and potable water systems have sufficient capacity to accommodate this project.

Overall System Sizing and Design

The Dolsontown East and the Simon Business Park projects are warehouse facilities. Regulatory standards determine the projected potable water usage and the sanitary sewer generation rates on for warehouse facilities on the number of employees. The design employee counts were determined based the system traffic designs utilizing the ITE Parking Generation Manual 5th Edition as follows:

Peak Parking Demand / 1,000 ft ²	1.2 vehicles
Peak Parking Demand / Employee	0.86
Employees / 1,000 ft ²	1.4

Employee count calculation based on ITE Parking Generation Manual, 5th Edition

The details of the development as they pertain to water and sanitary sewer requirements and the associated water and sanitary sewer demands for the development are as follows:

Dolsontown East (RDM #5) – Warehouse #1

Description	Square	Total	Typical Per-	Total Design
	Footage of	Number of	Unit Hydraulic	Flow (gpd)
	Warehouse	Employees	Loading Rate	
	(ft ²)		(gpd)	
Warehouse	61,000	85	12	1,020
Total Hydraulic Den	1,020			

Water and Sanitary Sewer Design Flow based on New York State Design Standards for Intermediate Sized Wastewater Systems

The Dolsontown East Warehouse #1 facility will be equipped with a sanitary sewer pump station. This station will be designed to meet all applicable regulatory standards.

Potable water service will be provided via a water main that will connect to the Town's existing 12" main and extend down Dolsontown Road to the Dolsontown East Warehouse #1 parcel. The 1,800 gpm fire flow capability of the Town's system will be maintained.

Dolsontown East (RDM #5) -	warenouse #2
----------------------------	--------------

Description	Square Footage of Warehouse (ft2)	Total Number of Employees	Typical Per- Unit Hydraulic Loading Rate (gpd)	Total Design Flow (gpd)
Warehouse	402,000	563	12	6,756
Total Hydraulic Den	6,756			

Water and Sanitary Sewer Design Flow based on New York State Design Standards for Intermediate Sized Wastewater Systems

The Dolsontown East Warehouse #2 facility will be equipped with a sanitary sewer pump station. This station will be designed to meet all applicable regulatory standards.

Potable water service will be provided via a water main that will connect to the Town's existing 12" main and extend down Dolsontown Road past the Dolsontown East Warehouse #2 parcel. The 1,800 gpm fire flow capability of the Town's system will be maintained,

Simon Business Park (RDM #6)

Description	Square Footage of Warehouse (ft2)	Total Number of Employees	Typical Per- Unit Hydraulic Loading Rate (gpd)	Total Design Flow (gpd)
Warehouse #1	54,000	76	12	912
Warehouse #2	244,200	342	12	4,104
Total Hydraulic Den	5,016			

Water and Sanitary Sewer Design Flow based on New York State Design Standards for Intermediate Sized Wastewater Systems

The Simon Business Park facility will be equipped with a sanitary sewer pump station serving both warehouses. This station will be designed to meet all applicable regulatory standards.

Potable water service will be provided via a water main that will connect to the Town's existing 12" main and extend beyond the Simon Business Park property. The 1,800 gpm fire flow capability of the Town's system will be maintained to the termination of the water main extension.

Marangi Transfer and Recycling Facility

The potable water and wastewater generation rates from the Marangi facility are projected to be 2,476 gpd. Reference the Full Environmental Assessment Form, revised May 11, 2021, prepared by The Chazen Companies for details on the estimated Marangi water and sewer production rates.

The Marangi facility will be equipped with a sanitary sewer pump station. This station is being designed by others.

Potable water service will be provided via a water main that will connect to the Town's existing 12" main and extend beyond the Marangi property. The 1,800 gpm fire flow capability of the Town's system will be maintained.

Tel: 845-615-9232 maiello@delwareengineering.com

Memo:

To: Denise Quinn, T/O Wawayanda Supervisor

From: Michael Aiello, P.E.

Goshen, New York 10924

Copy: Mary Beth Bianconi

Date: January 14, 2022 (revised February 2, 2022)

Re: Town of Wawayanda Sewer District #1 & Water District #1

At the request of the Town of Wawayanda, Delaware Engineering has prepared the attached evaluation of anticipated water and wastewater demand from within the Town's Water District 1 and Sewer District 1, including existing outside-users to these districts. This demand was determined by combining existing metered flow that was provided by the Town with the projected demands for current applications in front of the Planning Board and from the development potential of remaining vacant lands within the districts. In determining the existing, pending and potential demands for water and sewer service in these districts, the Town is provided with a tool to assist with decisions regarding allocation of its remaining capacity with the City of Middletown to projects outside the current water and sewer district limits.

Background:

The Town of Wawayanda (Town) has an agreement to purchase up to 200,000 gpd of potable water from the City of Middletown (City) and to send the same amount back to the City's sewage treatment plant as sanitary wastewater. Our understanding is that this agreement is in effect until 2030, at which time any unused capacity is returned to the City. The properties served by this agreement are mostly within a defined water and sewer district that shares the same boundaries. There are, however, a few select properties outside of the districts that also receive these services.

Discussion

Based on billing information provided by the Town, the current demand for water (and thus sewer) is approximately 75,000 gpd from customers both within the districts and also those that are outside-users. This leaves approximately 125,000 gpd of capacity for the Town to further allocate at its discretion.

Delaware Engineering, D.P.C.

Considering current site plan proposals along with the most intense land uses and the dimensional requirements provided by the zoning for the vacant land within the Town's existing districts, properties within the Town's districts that are not presently developed could demand an additional 54,500 gpd.

Combining this with existing demands, the total demand of connected users and potential users in the existing districts is approximately 129,000 gpd. This leaves a balance of approximately 70,000 gpd of flow to be allocated to other potential users that are outside of the current district limits.

Summary Conclusion:

As provided in the attached evaluation, the Town should have close to 70,000 gpd of capacity remaining with the City for it to allocate to potential development projects on properties within the Town, but outside the current district limits. Again, our understanding is that this allocation must be assigned prior to 2030 to ensure service from the City.

For perspective, using the regulatory standard of 110 gpd/bedroom, this equates to the ability to serve 159 four-bedroom homes with the remaining capacity. However, if it is the Town's vision or policy to use any remaining capacity to expand its commercial/industrial property tax base, then using the regulatory standard of 12 gpd/employee (15 gpd/employee less 20% for water saving fixtures), equates to the ability of remaining capacity to serve projects that can employ close to 5,800 in total.

It should be noted that absent specific demands provided by any particular industrial development proposal, 0.1 gpd/square foot of warehouse building is the typical standard that is used for preliminary planning purposes. However, this is an incredibly conservative figure, and if no process water demands are required as part of any particular development proposal then demands per employee most always become the design basis for allocating capacity.

Therefore, to put this into further context, the balance of 70,000 gpd could equate to about 159 four-bedroom homes or over 5,800 employees working in a commercial/industrial capacity, or some combination of these land uses. If the capacity balance is exclusively reserved for commercial/industrial uses, it can easily serve upwards of at least 1,000,000 million square feet of warehouse space, and probably much more considering the typical occupancies of the buildings for such uses.

We look forward in continuing support to the Town of Wawayanda with assistance in addressing its water and wastewater needs. As such, please do not hesitate to reach out to us with questions pertaining to this or any other matters.

Attachment A

Potential Additional Water & Sewer Demands

Potential Additional Water & Sewer Demands

Town of Wawayanda Water & Sewer Districts #1 Orange County, New York

<u>Methodology</u>: All of the vacant parcels within the Town of Wawayanda Water District 1 and Sewer District 1, as assessed by Orange County Real Property, were chosen for evaluation of development potential. All acreage occupied by DEC wetlands or flood hazard area was eliminated from development calculations for vacant parcels. The exceptions to these vacant parcels are those for which proposed development projects have been submitted to the Town's Planning Board and have either received approval or are currently in the review process. For the parcels associated with a development plan, projected flows were provided by the Planning Board from the project's application.

In order to arrive at the use potential for these districts, the most intensive use was chosen for each vacant site, the acreage was reduced depending on the dimensional regulations of the underlying zoning districts and calculated at 0.05 gallons/square foot to account for potential light industrial uses. Consistent with NYSDEC Design Standards, single and multi-family uses were calculated at 110 gallons/day/bedroom to account for average home size; mixed uses were calculated at 0.1 gallons/day/square foot; and 15 gallons/day/employee was utilized for all proposed developments (50 daily employees were estimated for each of the large facilities while the transfer station was estimated at 5 employees per day).

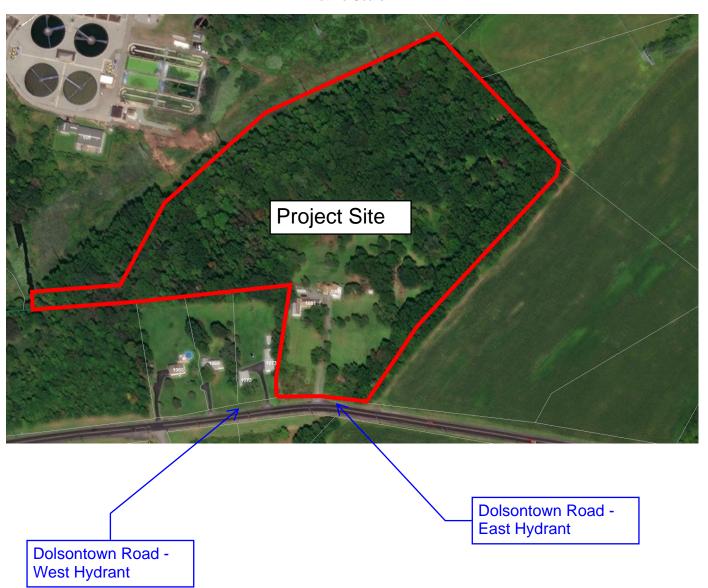
Since these parcels are expected to develop over an extended period of time and all properties are not likely to be built to their maximum potential for sewer use, the total potential flow for vacant sites were reduced in order to better reflect market and development realities.

Summary Table					
Current Usage	74,674 gpd				
Potential Usage	54,463 gpd				
Total Potential Usage	129,137 gpd				
Agreement Allocation	200,000 gpd				
Remaining Capacity	70,863 gpd				

<u>SBL</u>	<u>NAME</u>	1ST QTR 2021	2ND QTR 2021	3RD QTR 2021	4TH QTR 2021	2021 Total	2021 ADF (gpd)	<u>Use</u>	GPD	<u>Unit</u>
4-1-35.2	Splash Car Washes	3,327,700	3,825,515	4,103,647	3,361,711	14,618,573	40,051		40,051	metered
4-1-38.31-2	Horizons at Wawayanda	2,039,550	1,474,224	1,554,725	1,492,898	6,561,397	17,976		17,976	metered
5-5-16.1	Sleep Inn	271,120	317,117	500,773	614,572	1,703,582	4,667		4,667	metered
4-1-36.222	PJH Realty LLC	250,138	160,922	448,128	423,389	1,282,577	3,514		3,514	metered
4-1-83.7	Wawayanda Acquisition, LLC	269,875	294,016	283,054	207,764	1,054,709	2,890		2,890	metered
4-1-83.6	Matrix Wawayanda, LLC	215,736	147,539	94,353	229,521	687,149	1,883		1,883	metered
4-1-40.221	CPV Valley, LLC	8,912	51,211	240,271	11,215	311,609	854		854	metered
5-6-3.2	Lithia Northeast Real Estate, LLC	45,700	54,600	93,000	88,000	281,300	771		771	metered
4-1-38.2	SJAR Realty, LLC	0	69,542	107,371	69,543	246,456	675		675	metered
4-1-30.12	Sunoco LP	830	203	119,913	83,926	204,872	561		561	metered
5-5-15.22	Route 6 Facilites Management, LLC	19,010	17,356	20,143	37,211	93,720	257		257	metered
4-1-79	Galena Assoc. LLC	15,022	15,415	26,838	12,175	69,450	190		190	metered
4-1-34.1	Gasland Petroleum Inc.	9,403	7,942	11,295	13,412	42,052	115		115	metered
5-2-3.1	Grey, Monet	10,984	9,140	12,260	5,055	37,439	103		103	metered
6-1-72.2	Sunrise Park Realty Inc	6,917	5,788	1,713	1,477	15,895	44		44	metered
64-1-1.1	Seneco Enterprises	7,934	2,720	1,386	1,833	13,873	38		38	metered
4-1-32.12	243 Dolson Avenue LLC	0	2,357	5,198	6,127	13,682	37		37	metered
5-5-13.2	United Rentals	7,598	1,710	2,131	1,876	13,315	36		36	metered
64-1-1.1-CPV	CPV Valley, LLC	1,364	145	345	182	2,036	6		6	metered
4-2-50.12	Storage Sense - Middletown	332	331	564	414	1,641	4		4	metered
5-5-18.1	Security Plumbing & Heating Supply	218	20	333	280	851	2		2	metered
1-1-4.2	Dolsontown Road, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Dolsontown East	Х	х
1-1-52.1	Dolsontown Road, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Dolsontown East	3540	Proposed
4-1-2.12	Fidanza Subaru	N/A	N/A	N/A	N/A	N/A	N/A	Repair Garage	114	Proposed
4-1-28.2	SB Dolson Realty LLC	N/A	N/A	N/A	N/A	N/A	N/A	Warehouse		50 employees
4-1-31	M&T Bank	N/A	N/A	N/A	N/A	N/A		Bank		0.1/sf
4-1-33.2	SB Dolson Realty LLC	N/A	N/A	N/A	N/A	N/A	N/A	Unknown		Unknown
4-1-36.21	Sustainable Properties LLC	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	13939.2	0.05 x sf
4-1-38.32	CPV Valley, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	7296.3	0.05 x sf
4-1-38.33	CPV Valley, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	15529.14	0.05 x sf
4-1-50.2	Dewpoint, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	480	Proposed
4-1-50.32	Dewpoint, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	1875	Proposed
5-2-5	Bacarella, Giuseppe	N/A	N/A	N/A	N/A	N/A	N/A	Vacant	650	Proposed
5-6-1.12	Krisujen Realty LLP	N/A	N/A	N/A	N/A	N/A	N/A	Auto Dealer	185	Proposed
6-1-1		N/A	N/A	N/A	N/A	N/A	N/A	Dolsontown West	Х	х
6-1-3.2	Dolsontown Road LLC	N/A	N/A	N/A	N/A	N/A	N/A	Dolsontown West	3600	Proposed
6-1-107	Simon, Samuel & Heather	N/A	N/A	N/A	N/A	N/A	N/A	Simon	Х	х
6-1-90.1	Dolsonton Park, LLC	N/A	N/A	N/A	N/A	N/A		Simon		50 employees
6-1-2.2	Bennett, Christopher	N/A	N/A	N/A	N/A	N/A	N/A	Residential 3	330	3 br
6-1-3.1	Gardianos, Pericles	N/A	N/A	N/A	N/A	N/A	N/A	Residential 4		4br
6-1-3.31	Hum Chana, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Transfer Station		х
6-1-3.32	366 Highland DMI, LLC	N/A	N/A	N/A	N/A	N/A	N/A	Transfer Station		Proposed
6-1-90.22	Greitzer, DeevyJane	N/A	N/A	N/A	N/A	N/A	N/A	Residential 5		5 br
6-1-90.24	Devito, Salvatore	N/A	N/A	N/A	N/A	N/A	N/A	Residential 3		3 br
6-1-91.2	Klingman, Richard	N/A	N/A	N/A	N/A	N/A	N/A	Residential 3		3 br
		.,								
		N/A	N/A	N/A	N/A	N/A	N/A	rkesidentiai 3	330	וט 13
6-1-92	Weymer, Wayne	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	Residential 3 Scannell		3 br
		N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	Scannell Scannell	х	x 50 employees

Hydrant Location Map

1081 Dolsonown Road Warehouse- Town of Wawayanda Not To Scale



SULLIVAN FIRE PROTECTION CORP.

P.O. BOX 2021, 16 RAILROAD PLAZA, SOUTH FALLSBURG, NEW YORK 12779 845-434-4030

November 11, 2020

Maser Consulting P.A. 555 Hudson Valley Rd. New Windsor, NY 12553 Attn: Connor McCormack

Re: 1081 Dolsontown Rd. Town of Wawayanda

On 11/9/2020 at 8:45 am, Matt Waldman of our firm performed a flow test of the hydrant at 1073 Dolsontown Rd. (front yard) control hydrant at 100'east of 1081 Dolsontown Rd. Witness to the flow testing procedure and operating the hydrants was Cory Robinson of Maser and Dakota of JCO.

The pressure readings on the control hydrants were obtained using a 2 ½" hydrant cap with a ½" water pressure gauge. The pitot pressure and gpm readings were obtained using a 2 ½" pitot gauge mounted on the threads of the hydrant with an oil dampened precalibrated gauge showing both Pitot psi and gpm. The residual pressure was read at the same time that the gpm flow was being taken.

The results of the **test** are:

Static Pressure: 69 psi Residual Pressure: 60psi

Flow: 760 gpm

Very truly yours,

SULLIVAN FIRE PROTECTION CORP

Debbie Haupt, Manager

SULLIVAN FIRE PROTECTION CORP.

P.O. BOX 2021, 16 RAILROAD PLAZA, SOUTH FALLSBURG, NEW YORK 12779 845-434-4030

November 11, 2020

Maser Consulting P.A. 555 Hudson Valley Rd. New Windsor, NY 12553 Attn: Connor McCormack

Re: 1081 Dolsontown Rd. Town of Wawayanda

On 11/9/2020 at 8:25 am, Matt Waldman of our firm performed a flow test of the hydrant at 100'east of 1081 Dolsontown Rd. control hydrant at 1073 Dolsontown Rd. (front yard) Witness to the flow testing procedure and operating the hydrants was Cory Robinson of Maser and Dakota of JCO.

The pressure readings on the control hydrants were obtained using a 2 ½" hydrant cap with a ½" water pressure gauge. The pitot pressure and gpm readings were obtained using a 2 ½" pitot gauge mounted on the threads of the hydrant with an oil dampened precalibrated gauge showing both Pitot psi and gpm. The residual pressure was read at the same time that the gpm flow was being taken.

The results of the **test** are:

Static Pressure: 68 psi Residual Pressure: 54psi

Flow: 920 gpm

Very truly yours, SULLIVAN FIRE PROTECTION CORP

Debbie Haupt, Manager

Test 1

$$Q_r = 29.83c_d D^2 \sqrt{P_p}$$
 (Eq. 1)

$$Q_f = Q_r \left(\frac{P_s - 20}{P_s - P_r}\right)^{0.54}$$
 (Eq. 2)

where

- Q_r is the residual flow at the pitot pressure measured in gpm
- c_d is the friction loss coefficient (usually 0.9 for a smooth $2\frac{1}{2}$ " opening)
- D is the diameter of the opening in inches
- P_p is the pitot pressure in psi
- Q_f is the FIRE FLOW in gpm at 20 psi
- \tilde{P}_s is the static pressure in psi
- P_r is the residual pressure in psi

Static & residual pressures taken from hydrant at the eastern property corner.

Рр	-	psi
Ps	69	psi
Pr	60	psi
D	12	inches
Cd	0.9	Tynical

Qr	760	gpm	Reading from gauge at Flow Hydrant

Description	Qty	Unit
Pressure at Existing Hydrant Dolsontown East Hydrant =	69	psi
Pressure at Existing Hydrant (in FT H2O)=	159.4	Feet H20
Elevation of Existing Hydrant=	519.5	feet
Elevation Head at Existing Hydrant (in ft H2O)=	678.9	Feet H20
Elevation of Proposed Hydrant =	525.0	feet
Pressure at Proposed Hydrant (in FT H2O) =	153.9	Feet H20
Pressure at Proposed Hydrant in psi =	67	psi

Water Pressue Calculation for Proposed Hydrant @ South Building Corner

Description	Qty	Unit
Pressure at Existing Hydrant Dolsontown East Hydrant =	69	psi
Pressure at Existing Hydrant (in FT H2O)=	159.4	Feet H20
Elevation of Existing Hydrant=	519.5	feet
Elevation Head at Existing Hydrant (in ft H2O)=	678.9	Feet H20
Elevation of Proposed Hydrant =	525.5	feet
Pressure at Proposed Hydrant (in FT H2O) =	153.4	Feet H20
Pressure at Proposed Hydrant in psi =	66	psi

Water Pressue Calculation for Proposed Hydrant @ West Building Corner

Description	Qty	Unit
Pressure at Existing Hydrant Dolsontown East Hydrant =	69	psi
Pressure at Existing Hydrant (in FT H2O)=	159.4	Feet H20
Elevation of Existing Hydrant=	519.5	feet
Elevation Head at Existing Hydrant (in ft H2O)=	678.9	Feet H20
Elevation of Proposed Hydrant =	520.5	feet
Pressure at Proposed Hydrant (in FT H2O) =	158.4	Feet H20
Pressure at Proposed Hydrant in psi =	69	psi

Water Pressue Calculation for Proposed Hydrant @ North Building Corner

Description	Qty	Unit
Pressure at Existing Hydrant Dolsontown East Hydrant =	69	psi
Pressure at Existing Hydrant (in FT H2O)=	159.4	Feet H20
Elevation of Existing Hydrant=	519.5	feet
Elevation Head at Existing Hydrant (in ft H2O)=	678.9	Feet H20
Elevation of Proposed Hydrant =	526.5	feet
Pressure at Proposed Hydrant (in FT H2O) =	152.4	Feet H20
Pressure at Proposed Hydrant in psi =	66	psi

Water Pressue Calculation for Proposed Building

