

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of Delmer Towns d.b.a. Towns)
Riverview to Show Cause Whether it Should)
Not be Required to Obtain a Certificate of) Docket No. 20-DTRW-120-SHO
Convenience and Necessity to Operate as a)
Potable Water Public Utility.)

**RESPONSE TO STAFF'S MOTION FOR
EMERGENCY RELIEF PURSUANT TO K.S.A. 77-536**

Delmer Towns, d/b/a Towns Riverview ("Towns") submits the following response to the Motion for Emergency Relief Pursuant to K.S.A. 77-536 ("Motion") filed by the Kansas Corporation Commission ("Commission") Staff ("Staff") on June 18, 2020.

1. Since being contacted by the Staff about a year ago, Towns has cooperated with the Staff and its request that it comply with the provisions of the Kansas Public Utility Act (Chapter 66) ("KUPA") and the Commission's rules and regulations with respect to it providing water distribution services to approximately 249 homes in an area located outside Garden City, Kansas. Towns' intention is to continue to fully cooperate with Staff and the Commission. The purpose of this response is to provide the Commission with updated information that was not included in the Motion and to request that civil penalties not be imposed.

2. Towns has taken reasonable and timely steps to assure that the 249 homes being served are being provided sufficient and efficient service. Upon experiencing the pressure problems that led to the Kansas Department of Health and Environment's ("KDHE") recent April 20, 2020, boil order advisory, Towns immediately hired an engineering firm, GE Engineering, to determine the source of the pressure problem and to recommend what steps needed to be taken to address the pressure problem. Towns has taken some of the steps recommended by GE Engineering. Specifically, Towns

has repaired or replaced several valves in the system at the direction of GE Engineering. Towns has also retained a well contractor in an attempt to restore operation of one of the water wells that it believes can meet KDHE's water quality requirements in the event the repair or replacement of the valves does not fully solve the issue. Towns is currently working with Ms. Cathy Tucker-Vogel, who is KDHE's Public Water Supply Section Chief, to test and restore operation of the water well to serve a portion of the water distribution system. Towns is reviewing the other recommendations contained in the engineer's report. A copy of GE Engineering's report that was submitted to KDHE regarding the pressure issues is attached to this response as Exhibit A and is incorporated herein by reference.

3. In cooperation with KDHE, Towns has begun to take daily pressure readings at various locations to monitor the system's pressure and those pressure readings suggest that the steps recommended by GE Engineering with respect to the repair and replacement of several valves have allowed pressures to be maintained above the 20 psi recommended by KDHE. A copy of the daily pressure readings is attached to this response as Exhibit B and is incorporated herein by reference.

4. At the request of KDHE, Towns also distributed by hand a notice to each of its customers on May 16 and May 17, 2020. The notice apologized for the recent pressure issue and explained that Towns was working toward a permanent solution. The notice also stated that if the issue had caused the customer to be without water suitable for normal inside household purposes at the present time, or if a portable toilet and hand washing station is desired, to notify Towns and such will be provided. As of June 18, 2020, Towns received only three requests in response to the notification and Towns has met those requests. KDHE's request that Towns deliver the notice to its customers, a copy of the notice hand delivered to Towns' customers, and an affidavit from Mr. Towns verifying the delivery of the notice to the customers, are attached to this response as Exhibit C and are incorporated herein by reference. Towns continues to work with KDHE to assure the pressure issue is addressed

on a permanent basis and that its customers are provided a quality water supply.

5. Some historical information is necessary to place this pressure issue in the proper context in which it occurred in order to address Town's efforts to provide efficient and sufficient service to its customers. As indicated by Staff in its Motion, it has only been just over a year or so that KDHE ordered Towns to cease using its water wells to serve customers due to water quality concerns. In response to that order, in March of 2019, Towns spent over \$350,000.00, which is a significant investment for this small company, to have 1.8 miles of 12-inch diameter water supply line and a booster pump constructed and installed to obtain a new water supply from the City of Garden City, Kansas, to replace the water from the water wells. The change in the location where the water supply enters Towns' distribution system has resulted in the recent pressure issues. The Motion does not identify water pressure issues prior to the change-over in water supply and Towns asserts that the pressure problem did not exist prior to the change-over in water supply. Given the fact the pressure problems have occurred only recently due to the change in water supply and the fact that Towns has taken reasonable and timely steps to address the pressure issues by retaining an engineering firm to make system recommendations and then implementing those recommendations in a timely manner, does not support Staff's suggestion that Towns has somehow acted improperly or untimely in responding to the pressure problems, and therefore, its recommendation that civil penalties be assessed in this situation is not warranted.

6. Towns has also taken reasonable steps to cooperate fully with the informal recommendations and requests made by Staff so that Towns can comply with the KUPA and the Commission's rules and regulations. Towns has provided Staff with all of its accounting information, billing information and other accounting records from Towns' outside accountant. Mr. Towns has been directly involved in the many phone calls with Staff to discuss compliance issues. It is Towns'

understanding, that Staff has done an initial review of the rates and a revenue requirement analysis and while the Staff would likely recommend a different rate design, the rates currently being charged by Towns are likely not unreasonable, but should continue to be collected subject to refund. Staff provides no evidence in its Motion, and none exists, that Towns' failure to comply with the KPUA or the Commission's rules and regulations was intentional. In the nearly 40 years in which Towns has provided water to the residents of the subdivision and mobile home parks served by Towns, he has fully complied with all KDHE licensing and testing requirements. In March 2020, Staff recommended that Mr. Towns retain a public utility regulatory attorney to assist Towns in filing for a certificate of convenience and authority and approval of initial rates and tariffs. In response to that request, Towns retained Anderson & Byrd LLP ("Anderson & Byrd") to assist it in addressing the recommendations made by Staff. Upon review of the situation, Anderson & Byrd recommended that Towns should attempt to locate an established water public utility company to acquire Towns' water distribution system, or in the alternative, to retain Gary Hanson, who is with the Topeka law firm of Stumbo and Hanson LP, to initiate efforts to convert the water distribution system into a rural water district. That recommendation was based upon a concern about whether Towns could obtain a certificate of convenience and authority from the Commission absent a reasonable succession plan. Anderson & Byrd further recommended that Towns contact Staff to determine if Staff would agree to focus efforts on Towns locating an established water public utility company to acquire the water distribution system. Towns agreed with the recommendations and instructed Anderson & Byrd to contact Staff. Anderson & Byrd contacted Staff and suggested to Staff that because of the concern relating to Towns ability to obtain a certificate of convenience and authority that the public interest would best be served by locating an established water public utility company to acquire Towns' water distribution system. Towns, with the assistance of Anderson & Byrd, has initiated efforts to locate an established water

public utility company to acquire the water distribution system. One utility has expressed an interest and is in the process of conducting its due diligence. If Towns is unable to find a buyer, then the next step would be to begin the process to convert the system into a rural water district with an elected board of directors made up of some of the existing customers. Given the fact that Towns has fully cooperated with Staff in Towns' efforts to comply with the KUPA and the Commission's rules and regulations, and currently with its efforts to obtain a buyer of its water distribution system, Staff's recommendation that the Commission issue civil penalties is not warranted.

7. With respect to the 10 recommendations made by Staff in its Motion, Towns' response is as follows:

(1) Towns water system shall remain on a Boil Water Advisory until a rescind notice is issued by KDHE.

RESPONSE: Towns continues to work with KDHE so the Boil Water Advisory can be rescinded and Towns has no objection to the Advisory remaining in place until rescinded by the KDHE.

(2) Towns shall supply alternative water suitable for drinking, cooking, washing, and bathing to all customers until all requirements of the KDHE Emergency Order have been completed. Towns shall not apply additional charges to customers for the provisioning of this alternative water and shall keep records of the costs associated with the alternative water supply.

RESPONSE: As mentioned above, Towns has delivered notice to each customer regarding the Boil Water Advisory and has indicated that if the customer requires an alternative water supply to contact Towns and Towns will provide that to them. To date, Towns has had 3 customers request an alternative water supply and that has been provided.

(3) Upon receipt of the Commission's Order, Towns shall instruct all customers to curtail the watering of lawns, filling of pools, and all other extraneous usage of water that could place undue drawdown of available water pressure in the system, if a KDHE Boil Water Advisory due to inadequate system pressure is in effect. This instruction shall be delivered to each customer once per month and provide an update on the status of required repairs being made to the system.

RESPONSE: Towns has no objection to this recommendation. Towns is working with KDHE and expects the Boil Water Advisory to be rescinded in the near future.

(4) Upon receipt of the Commission's Order, Towns shall acquire and install two continuously recording pressure charts tied directly to its water mains at two representative sites selected by KDHE on the southern and eastern extremities of the system. Data from the pressure recordings shall be submitted to Staff on a weekly basis until the construction projects required by KDHE are completed.

RESPONSE: Towns currently has an agreement with KDHE to monitor and report daily pressure readings at various locations on its system. A copy of those pressure readings are attached hereto as Exhibit B. Towns can provide those pressure readings to the Staff.

(5) Upon receipt of the Commission's Order, Towns shall install a meter that measures the quantity of water delivered to the mobile home section of the water distribution system. Volumes of water usage to the mobile home section shall be reported to Staff on a monthly basis.

RESPONSE: Towns has no objection to installing the meter and reporting the volumes of water usage to the Staff on a monthly basis.

(6) Towns shall initiate a meter installation/meter change out program to ensure each customer has an operable water meter by September 2020.

RESPONSE: Towns would request that this recommendation be held in abeyance to allow Towns to locate a buyer for its water distribution system, or in the alternative, to initiate the process to convert the water distribution system to a rural water district.

(7) By July 15, 2020, Mr. Towns shall have a checking account for his personal use, a separate checking account for the water operations of Towns & Sons Enterprises, and a separate checking account(s) for any other businesses Mr. Towns has. The revenue collected from water ratepayers shall be deposited into the water company's checking account. All purchases and operating expenses associated with water operations shall be paid from the water company's checking account.

RESPONSE: Towns would request that this recommendation be held in abeyance to allow Towns to locate a buyer for its water distribution system, or in the alternative, to initiate the process to convert the water distribution system to a rural water district.

(8) Beginning August 1, 2020, Towns & Sons Enterprises shall implement and use the NARUC Uniform System of Accounts for small water utilities. Separate general ledger accounts shall be established for the customer service charge, revenue collected for water usage above the 5,000 gallon minimum, the cost of purchased water, the Water Protection Fee, and realized gains and losses related to the water operations of Towns & Sons Enterprises. Appropriate separate expense accounts shall be established to record the water operation expenses of Towns & Sons Enterprises. Appropriate balance sheet accounts shall be established for the partnership's assets, liabilities, and partner capital.

RESPONSE: Towns would request that this recommendation be held in abeyance to allow Towns to locate a buyer for its water distribution system, or in the alternative, to initiate the process to convert the water distribution system to a rural water district.

(9) Beginning July 1, 2020, a representative (either employee, partner, or independent contractor) of Towns & Sons Enterprises shall read the water meters each month. If no meter is present or the meter is not working, the billing account shall reflect that information.

RESPONSE: Towns will comply with this recommendation.

- (10) Beginning August 1, 2020, the water customer's monthly bill shall show:**
- a. Customer charge.**
 - b. Beginning and ending water meter readings along with the date the meter was read.**
 - c. Volume of water used stated in thousand gallons and any volumetric water charges.**
 - d. Water Protection Fee.**
 - e. Other elements of a customer bill as required by the Commission's Billing Standards.**

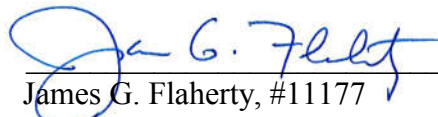
RESPONSE: Towns would request that this recommendation be held in abeyance to allow Towns to locate a buyer for its water distribution system, or in the alternative, to initiate the process to convert the water distribution system to a rural water district.

8. To the extent the Commission does not agree with Towns that the \$370,400.00 civil penalty recommended by Staff is unwarranted at this time based upon the information provided in this response, Towns would respectfully request that before the Commission would issue such a large penalty that it give Towns the opportunity to present its case to the Commission at a hearing with the

right to cross examine Staff regarding its position and the reasonableness of the penalty and to submit legal briefs relating to the reasonableness of said civil penalty.

WHEREFORE, for the reasons set forth herein, Towns requests that the Commission not impose civil penalties against Towns as recommended by Staff. Towns commits to continue to work with Staff as set forth herein as it attempts to locate a buyer for its water distribution system, or in the alternative to convert the water distribution system into a rural water district. In the alternative, Towns requests this matter be set for hearing prior to the Commission issuing any civil penalty against Towns.

Respectfully submitted:



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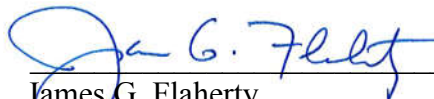
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Attorneys for Delmer Towns, d/b/a Towns Riverview

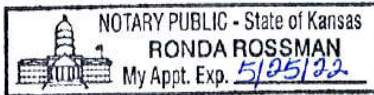
VERIFICATION

STATE OF KANSAS
COUNTY OF FRANKLIN, ss:

James G. Flaherty, of lawful age, being first duly sworn on oath, states: That he is an attorney for Delmer Towns, d/b/a Towns Riverview; that he has read the above and foregoing Response to Staff's Motion for Emergency Relief Pursuant to K.S.A. 77-536, knows the contents thereof; and that the statements contained therein are true.


James G. Flaherty

SUBSCRIBED AND SWORN to before me this 23rd day of June, 2020.





Appointment/Commission Expires:

Notary Public

CERTIFICATE OF SERVICE

I hereby certify that a copy of the above and foregoing was sent via electronic mail this 23rd day of June, 2020, addressed to:

Phoenix Z. Anshutz
p.anshutz@kcc.ks.gov

Cole Bailey
c.bailey@kcc.ks.gov

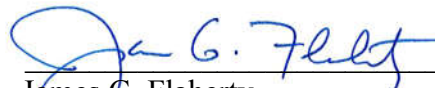

James G. Flaherty

Exhibit A

G.E. Engineering, P.A.

4725 Leonard Circle
Garden City, Kansas 67846
Phone (620) 272-4246

June 8, 2020

Ms. Cathy Tucker-Vogel
Section Chief
Public Water Supply Section
1000 SW Jackson, Suite 420
Topeka, Kansas 66612-1368

Re: Towns Riverview Subdivisions Water Pressure Proposal

To Whom It May Concern:

Towns Riverview subdivision water system is owned by Mr. Delmar Towns, 725 S. Towns Rd., Garden City, Kansas, 67846. The subdivisions are located in the SW $\frac{1}{4}$ of Section 23 and the NW $\frac{1}{4}$ of Section 25, T24S, R32W. The water system serves approximately 800 people and is currently attached to the City of Garden City's water for supply and treatment. There has not been any drawings or information located for the system. All of the pipes, sizes, valves and meter information is being obtained from Mr. Delmar Towns, Mr. Delmar Towns II, and Mr. John Ottley. The current pumping is provided by alternating pumps at the end of the city's line and going into Towns water system for distribution. Most of the main lines are 3-inch with some 4-inch and are mainly located in the alleys. All the following trial systems are based on 100 gallons per day per person.

Attached to this report in Appendix A is the existing total system without any updates. This system shows five (5) low pressures from 17.3 psi to 20.1 psi. The lowest pressure at junction (J) 29, J28, J34 and at active valve (AV) O and I. The program is set to give the 5 lowest pressures. Valves locations are shown along with the pipe size. Service connections are not shown but demands are accounted for in the junction pressures. The only source of treated water supply is from the City of Garden City and is shown at the pumps at the north end of the subdivision. There is not any elevated or ground storage.

Appendix B has the existing pumps from the city turned off using only the bypass line. This scenario shows the 5 lowest junction pressures that are the same as in appendix A but at a much lower pressure. The pressures are from 1.1 psi to 3.41 psi.

Appendix C has the existing pumps turned on and the bypass line is turned off. This shows 6 junctions that are below 20 psi. The junctions are J29, J28, J34, J35 and 2 active valves AV O and I. Pressures ranged from 16.98 psi to 19.54 psi.

This system does not have very many valves. Several have been dug up and replaced with new valves. This has increased numerous pressures at different locations. The rest of the valves are being replaced in the near future or when located.

Mr. Towns said that the service connections were all one inch but have not been verified. Appendix D is the addresses of the lots in both subdivisions. Service connections, metered and unmetered was received on June 17, 2020. There are 93 lots and meters in Towns River Subdivision (housing area). In the Towns Riverview South (trailer area) there are 112 metered locations, 67 non-metered locations and 32 locations that could not be entered for some reason for a total of 211 lots.

In Appendix E, one 4-inch line has been added and ties two dead end lines together in Towns Riverview (housing area). This adds approximately 4 psi at the location prior to entering the Towns Riverview South subdivision some of the pressures in Towns Riverview have also increased four psi. This should also provide a better quality of water.

Appendix F is looping all the dead-end lines, seven (7), in Towns Riverview South water lines. These seven dead ends resulted in adding 6 additional lines. By adding the lines all of the junctions are above the minimum of 20 psi, from 21.91 psi upward. This shows that we may need to add a pump to obtain higher pressure, construct a small stand pipe tank, or blend the water from well number 2, depending on the water quality tests.

With the lack of storage, we propose to use the 6,000-gal tank in the existing well house number 2 as a reservoir if we were to add a pump.

Appendix G shows adding a second pipe coming from the well house tank to a variable speed pump. This will pump into a 4-inch from the pump to junction north (J38) and then another 4-inch line north to J54. This increases the pressure along Weldon Road with the lowest pressure of 41 psi. At junction J49, which is the node before going into the old well house the pressure is 29 psi. There are not any residential meters on this line.

Appendix H shows adding a 6-inch line from Towns Riverview to Towns Riverview South on the north side along Weldon Road and S. Ridge Road. This location is on top of the hill and will increase the pressure approximately eight psi which in turns increases the pressure at numerous nodes. This would be the first option and would cost approximately \$40,000.

Most of the low-pressure areas are created by either dead end lines, corroded fittings and valves or corroded meter connections. Some valves and corroded fittings are being replaced at the present time. Others have been replaced when notified by the customers. Prior to October, 2019, the subdivisions were being supplied by 2 wells with 2 6,000-gallon pressure tanks. Since October, 2019, the wells have been turned off and the pressure tanks unhooked.

The changes since 2015 have been that Towns system is now being supplied by the City of Garden City's water system and the existing wells and pressure tanks have been unhooked. Valves and corroded fittings have been and are being replaced. The flow from some valves are over 50 percent low due to corrosion.

In the housing subdivision, Towns Riverview, there are 3 dead end lines. One is a 2-inch line which feeds only 2 houses. The other dead-end lines can be connected with a 3-inch line which will increase the pressure by 4 psi going into Towns Riverview South. This line is approximately 635 feet long and will cost about \$ 19,000 to install. This could be installed at any time and take about 2 days to complete. In prior years there has been a 6,000-gallon pressure tank located in well house 1 which has been disconnected.

In Towns Riverview South, there are seven dead-end lines. These need to be looped to improve the quality of the water and to provide better or more pressure. First line along Weldon Rd is a 280 foot 3-inch and 4-inch pvc line from J23 to J26. The second line is a 415 foot 4-inch pvc line which goes from J26 to J29. The third line is a 250 foot 3-inch pvc pipe going from J30 to J38. The fourth line is a 610 foot 3-inch pvc pipe going from J37 to J51. The fifth is a 455 foot 4-inch pvc line from J37 to J51. The sixth line is a 407 foot 4-inch pvc line from J51 to J48. The seventh line goes from pump 1 to J38 and is a 545 foot 4-inch pvc main. Installing all these pipes will cost approximately \$100,000 and may take 2 to 3 weeks to install depending on weather.

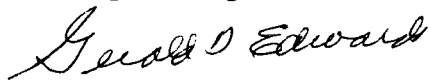
Installing all of these pipes and using the 6,000-gallon tank with the original inflow and an additional nipple attached to the bottom of the tank going to the pump for pressure back up the hill. Looping these pipes will give a better quality of water. Another possibility would be to add a variable speed drive to the existing pump. After Mr. Jon Steele (KRWA) has looked over the system he may have some more ideas as to the low-pressure locations.

Design plans, specifications and permit application for the numerous lines would probably take about three to four weeks to complete and depends on the surveying. After approval it would take approximately 30 work days to complete with disinfecting the lines included.

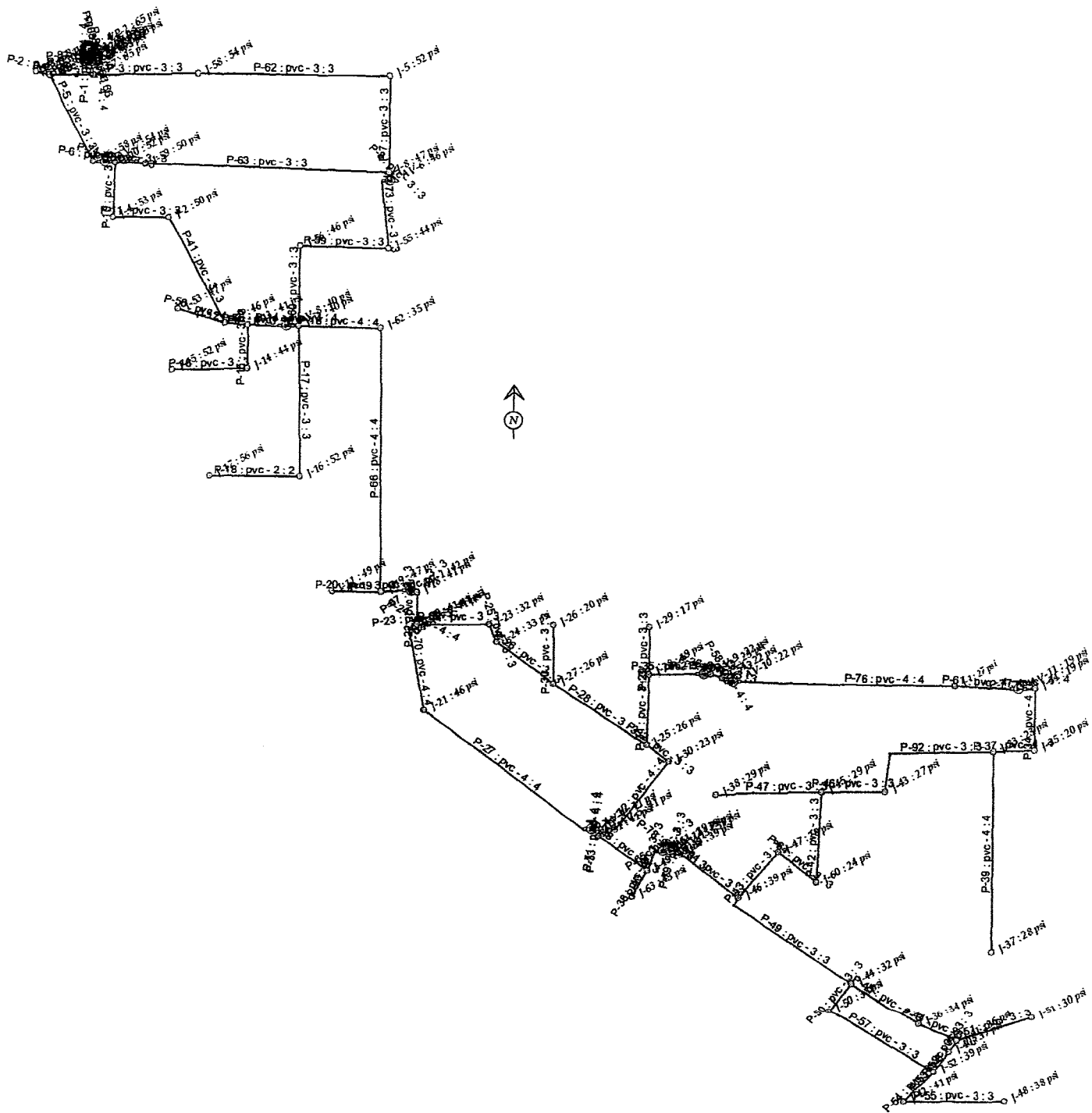
If you have questions or need more information, please contact me at the above number or address.

Respectfully submitted,

GE Engineering, PA

A handwritten signature in cursive script that reads "Gerald D. Edwards".

Gerald D. Edwards, P.E.



***** KYPIPE *****
 *
 * Pipe Network Modeling Software *
 *
 * Copyrighted by KYPIPE LLC (www.kypipe.com) *
 * Version: 10.009 10/01/2019 *
 * Company: GEENGPA Serial #: 580207 *
 * Interface: KYnetic *
 * Licensed for Pipe2020 *
 *

Date & Time: Sun Jun 07 19:19:53 2020

Master File : c:\sds\proj\2027-towns water\townswtr.kyp\townswtrexist.KYP\townswtrexist.P2K

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1 #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1 J-64	14.20	4.00	107.0000	0.00
P-2	J-3 J-7	59.30	3.00	107.0000	0.00
P-3	J-57 J-58	453.90	3.00	107.0000	0.00
P-4	J-57 J-7	189.50	3.00	107.0000	0.00
P-5	J-7 J-6	417.80	3.00	107.0000	0.00
P-6	J-6 I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8 J-5	415.60	3.00	107.0000	0.00
P-8	J-8 I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10 J-59	131.20	3.00	107.0000	0.00
P-10	J-10 J-4	240.00	3.00	107.0000	0.00
P-11	J-4 J-2	240.80	3.00	107.0000	0.00
P-12	J-13 J-9	100.50	3.00	107.0000	0.00
P-13	J-12 J-62	356.00	4.00	107.0000	0.00
P-14	J-12 O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13 J-14	196.70	3.00	107.0000	0.00
P-16	J-14 J-15	327.70	3.00	107.0000	0.00
P-17	J-12 J-16	676.30	3.00	107.0000	0.00
P-18	J-16 J-17	391.00	2.00	107.0000	0.00
P-19	J-19 I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11 J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9 J-32	28.50	3.00	107.0000	0.00
P-22	J-18 J-20	141.00	3.00	107.0000	0.00
P-23	J-20 I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20 I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23 J-24	83.10	3.00	107.0000	0.00
P-26	J-24 J-27	309.80	3.00	107.0000	0.00
P-27	J-21 I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27 J-25	480.70	3.00	107.0000	0.00
P-29	J-29 J-28	210.50	3.00	107.0000	0.00
P-30	J-27 J-26	261.90	3.00	107.0000	0.00
P-31	J-25 J-28	304.50	3.00	107.0000	0.00
P-32	J-25 J-30	120.50	3.00	107.0000	0.00
P-33	J-31 I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35 J-34	267.70	4.00	107.0000	0.00
P-35	J-28 O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32 J-54	50.50	3.00	107.0000	0.00
P-37	J-35 J-33	177.30	4.00	107.0000	0.00
P-38	J-63 J-49	134.50	3.00	107.0000	0.00
P-39	J-33 J-37	870.30	4.00	107.0000	0.00
P-40	J-49 I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2 J-9	524.80	3.00	107.0000	0.00
P-42	J-45 J-60	396.90	3.00	107.0000	0.00
P-43	J-47 J-46	267.80	3.00	107.0000	0.00
P-44	J-36 J-41	181.70	3.00	107.0000	0.00

TOWNSHIP						
P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	
O-AV-8		0.00	2849.50	
I-AV-9		0.00	2857.40	

TOWNSHIP			
O-AV-10	0.00	2856.80	
O-AV-11	0.00	2863.20	
O-AV-12	0.00	2819.50	
O-AV-13	0.00	2820.00	
O-AV-14	0.00	2842.00	
J-1	6.95	2846.60	
J-2	2.86	2839.20	
J-3	0.22	2827.10	
J-4	1.73	2836.00	
J-5	4.51	2849.60	
J-6	1.92	2833.90	
J-7	2.50	2833.40	
J-8	5.61	2854.50	
J-9	3.16	2839.00	
J-10	1.76	2843.90	
J-11	0.77	2815.00	
J-12	5.40	2849.80	
J-13	1.96	2848.00	
J-14	1.90	2842.80	
J-15	1.19	2822.90	
J-16	4.59	2822.30	
J-17	2.13	2813.20	
J-18	0.75	2826.10	
J-19	5.88	2819.70	
J-20	0.72	2822.30	
J-21	6.65	2808.40	
J-22	0.00	2842.00	
J-23	2.45	2840.00	
J-24	1.42	2839.20	
J-25	3.29	2852.00	
J-26	0.85	2866.30	
J-27	3.71	2852.70	
J-28	3.62	2867.30	
J-29	0.65	2870.80	
J-30	2.36	2857.70	
J-31	1.53	2816.80	
J-32	0.36	2857.10	
J-33	3.81	2853.90	
J-34	1.38	2863.70	
J-35	1.70	2862.40	
J-36	1.91	2826.40	
J-37	3.17	2842.20	
J-38	2.45	2839.70	
J-39	1.54	2818.00	
J-40	0.63	2819.50	
J-41	2.12	2823.40	
J-42	2.27	2810.90	
J-43	1.48	2846.00	
J-44	4.17	2831.40	
J-45	5.46	2841.40	
J-46	4.40	2818.20	
J-47	1.79	2843.20	
J-48	1.58	2818.80	
J-49	2.04	2820.00	
J-50	2.50	2818.80	
J-51	1.23	2836.50	
J-52	3.04	2815.90	
J-53	0.82	2836.00	
J-54	0.29	2857.00	
J-55	3.58	2853.80	
J-56	2.64	2842.60	
J-57	2.55	2841.90	
J-58	4.65	2857.90	
J-59	4.30	2848.80	
J-60	2.36	2852.50	
J-61	0.31	2820.00	
J-62	5.51	2857.60	
J-63	0.71	2810.00	
J-64	0.22	2842.20	
J-65	0.00	2842.00	
J-66	0.00	2842.00	
VP-1	----	2842.20	2842.20
VP-2	----	2842.00	2842.00
I-AV-1	0.00	2826.10	
I-AV-2	0.00	2822.30	
O-AV-3	0.00	2822.30	
I-AV-4	0.00	2816.70	
I-AV-5	0.00	2816.90	
O-AV-6	0.00	2854.00	
I-AV-7	0.00	2841.90	
I-AV-8	0.00	2849.50	
O-AV-9	0.00	2857.40	
I-AV-10	0.00	2856.80	
I-AV-11	0.00	2863.20	

I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	5
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES	(P) =	87
NUMBER OF END NODES	(J) =	80
NUMBER OF PRIMARY LOOPS	(L) =	6
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 45 TRIALS: ACCURACY = 0.64945E-05

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E #1	N U M B E R S #2	F L O W R A T E gpm	H E A D L O S S ft	M I N O R L O S S ft	L I N E V E L O . ft/s	H L + M L / 1000 ft/f	H L / 1000 ft/f
P-1	VP-1	J-64	132.72	0.26	0.00	3.39	18.20	18.20
P-2	J-3	J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57	J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57	J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7	J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6	I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8	J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8	I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10	J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10	J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4	J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13	J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12	J-62	99.82	3.82	0.00	2.55	10.74	10.74
P-14	J-12	O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13	J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14	J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12	J-16	6.71	0.20	0.00	0.30	0.29	0.29
P-18	J-16	J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19	I-AV-1	87.66	4.40	0.00	3.98	34.26	34.26
P-20	J-11	J-19	-0.77	0.00	0.00	0.03	0.01	0.01
P-21	I-AV-9	J-32	25.67	0.10	0.00	1.17	3.52	3.52
P-22	J-18	J-20	86.91	4.75	0.00	3.94	33.72	33.72
P-23	J-20	I-AV-2	31.77	0.08	0.00	1.44	5.23	5.23
P-24	J-20	I-AV-3	54.41	0.07	0.00	1.39	3.49	3.49
P-25	J-23	J-24	29.32	0.37	0.00	1.33	4.51	4.51
P-26	J-24	J-27	27.90	1.27	0.00	1.27	4.11	4.11
P-27	J-21	I-AV-4	47.77	2.44	0.00	1.22	2.74	2.74
P-28	J-27	J-25	23.34	1.42	0.00	1.06	2.95	2.95
P-29	J-29	J-28	-0.65	0.00	0.00	0.03	0.00	0.00
P-30	J-27	J-26	0.85	0.00	0.00	0.04	0.01	0.01
P-31	J-25	J-28	29.94	1.43	0.00	1.36	4.69	4.69
P-32	J-25	J-30	-9.90	0.07	0.00	0.45	0.60	0.60
P-33	J-31	I-AV-5	12.26	0.01	0.00	0.31	0.22	0.22
P-34	J-35	J-34	-16.69	0.10	0.00	0.43	0.39	0.39
P-35	J-28	O-AV-9	25.67	0.84	0.00	1.17	3.52	3.52
P-36	J-32	J-54	25.32	0.17	0.00	1.15	3.43	3.43
P-37	J-35	J-33	14.99	0.06	0.00	0.38	0.32	0.32
P-38	J-63	J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33	J-37	3.17	0.02	0.00	0.08	0.02	0.02

TOWNSHIP									
P-40	J-49	I-AV-12	31.23	0.55	0.00	1.42	5.07	5.07	
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98	
P-42	J-45	J-60	-1.37	0.01	0.00	0.06	0.02	0.02	
P-43	J-47	J-46	-5.52	0.05	0.00	0.25	0.20	0.20	
P-44	J-36	J-41	5.52	0.04	0.00	0.25	0.20	0.20	
P-45	J-44	J-36	7.43	0.12	0.00	0.34	0.35	0.35	
P-46	J-43	J-45	6.54	0.08	0.00	0.30	0.28	0.28	
P-47	J-38	J-45	-2.45	0.02	0.00	0.11	0.05	0.05	
P-48	J-31	J-49	33.98	1.54	0.00	1.54	5.92	5.92	
P-49	J-46	J-44	19.46	1.37	0.00	0.88	2.11	2.11	
P-50	J-44	J-50	7.86	0.06	0.00	0.36	0.39	0.39	
P-51	J-41	J-51	1.23	0.00	0.00	0.06	0.01	0.01	
P-52	J-41	J-40	2.17	0.00	0.00	0.10	0.04	0.04	
P-53	J-40	J-52	1.54	0.00	0.00	0.07	0.02	0.02	
P-54	J-52	J-42	3.85	0.02	0.00	0.17	0.11	0.11	
P-55	J-42	J-48	1.58	0.01	0.00	0.07	0.02	0.02	
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00	
P-57	J-50	J-52	5.36	0.10	0.00	0.24	0.19	0.19	
P-58	J-54	I-AV-10	25.03	0.04	0.00	0.64	0.83	0.83	
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89	
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50	
P-61	J-1	I-AV-11	18.07	0.12	0.00	0.46	0.45	0.45	
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77	
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44	
P-64	J-60	J-47	-3.72	0.02	0.00	0.17	0.10	0.10	
P-65	J-61	I-AV-13	30.91	0.11	0.00	1.40	4.97	4.97	
P-66	J-62	J-19	94.31	11.26	0.00	2.41	9.66	9.66	
P-67	O-AV-1	J-18	87.66	0.96	0.00	3.98	34.26	34.26	
P-68	VP-1	J-22	27.28	0.00	0.00	0.31	0.13	0.13	
P-69	O-AV-2	J-23	31.77	1.55	0.00	1.44	5.23	5.23	
P-70	O-AV-3	J-21	54.41	1.25	0.00	1.39	3.49	3.49	
P-71	O-AV-4	J-31	47.77	0.12	0.00	1.22	2.74	2.74	
P-72	O-AV-5	J-30	12.26	0.09	0.00	0.31	0.22	0.22	
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86	
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76	
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31	
P-76	O-AV-10	J-1	25.03	0.79	0.00	0.64	0.83	0.83	
P-77	O-AV-11	J-34	18.07	0.03	0.00	0.46	0.45	0.45	
P-78	O-AV-12	J-61	31.23	0.11	0.00	1.42	5.07	5.07	
P-79	O-AV-13	J-39	30.91	0.18	0.00	1.40	4.97	4.97	
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00	
P-81	J-22	J-66	27.28	0.03	0.00	0.70	0.97	0.97	
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66	
P-83	J-64	J-65	-27.28	0.09	0.00	1.24	3.94	3.94	
P-84	J-66	I-AV-14	27.28	0.02	0.00	0.70	0.97	0.97	
P-85	O-AV-14	J-65	27.28	0.02	0.00	0.70	0.97	0.97	
P-92	J-43	J-33	-8.01	0.13	0.00	0.36	0.22	0.22	
P-94	J-39	J-46	29.37	1.48	0.00	1.33	4.52	4.52	
~@AV-1	I-AV-1	O-AV-1	87.66	0.00	1.05	0.00*****	0.00		
~@AV-2	I-AV-2	O-AV-2	31.77	0.00	0.14	0.00*****	0.00		
~@AV-3	I-AV-3	O-AV-3	54.41	0.00	0.40	0.00*****	0.00		
~@AV-4	I-AV-4	O-AV-4	47.77	0.00	0.37	0.00*****	0.00		
~@AV-5	I-AV-5	O-AV-5	12.26	0.00	0.02	0.00*****	0.00		
~@AV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00		
~@AV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00		
~@AV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00		
~@AV-9	I-AV-9	O-AV-9	-25.67	0.00	0.11	0.00*****	0.00		
~@AV-10	I-AV-10	O-AV-10	25.03	0.00	0.10	0.00*****	0.00		
~@AV-11	I-AV-11	O-AV-11	18.07	0.00	0.05	0.00*****	0.00		
~@AV-12	I-AV-12	O-AV-12	31.23	0.00	0.16	0.00*****	0.00		
~@AV-13	I-AV-13	O-AV-13	30.91	0.00	0.15	0.00*****	0.00		
~@AV-14-CV	I-AV-14	O-AV-14	27.28	0.00	0.10	0.00*****	0.00		

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC- ENCY %	USEFUL POWER Hp	INCREMTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	160.00	0.00	150.34	150.3	75.00	6.	0.3	0.3	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	150.54	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
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Pipe2010 Analysis Report



<5>

townswtr					
O-AV-1	0.00	2922.06	2826.10	95.96	41.58
O-AV-2	0.00	2916.13	2822.30	93.83	40.66
I-AV-3	0.00	2916.28	2822.30	93.98	40.72
O-AV-4	0.00	2911.82	2816.70	95.12	41.22
O-AV-5	0.00	2911.67	2816.90	94.77	41.07
I-AV-6	0.00	2961.76	2854.00	107.76	46.69
O-AV-7	0.00	2965.93	2841.90	124.03	53.75
O-AV-8	0.00	2942.76	2849.50	93.26	40.41
I-AV-9	0.00	2909.13	2857.40	51.73	22.42
O-AV-10	0.00	2908.72	2856.80	51.92	22.50
O-AV-11	0.00	2907.75	2863.20	44.55	19.30
O-AV-12	0.00	2909.46	2819.50	89.96	38.98
O-AV-13	0.00	2909.08	2820.00	89.08	38.60
O-AV-14	0.00	2992.39	2842.00	150.39	65.17
J-1	6.95	2907.92	2846.60	61.32	26.57
J-2	2.86	2954.72	2839.20	115.52	50.06
J-3	0.22	2983.98	2827.10	156.88	67.98
J-4	1.73	2959.42	2836.00	123.42	53.48
J-5	4.51	2968.57	2849.60	118.97	51.55
J-6	1.92	2968.87	2833.90	134.97	58.49
J-7	2.50	2983.98	2833.40	150.58	65.25
J-8	5.61	2962.54	2854.50	108.04	46.82
J-9	3.16	2945.28	2839.00	106.28	46.06
J-10	1.76	2964.35	2843.90	120.45	52.19
J-11	0.77	2927.50	2815.00	112.50	48.75
J-12	5.40	2942.58	2849.80	92.78	40.21
J-13	1.96	2943.69	2848.00	95.69	41.46
J-14	1.90	2943.67	2842.80	100.87	43.71
J-15	1.19	2943.67	2822.90	120.77	52.33
J-16	4.59	2942.38	2822.30	120.08	52.04
J-17	2.13	2942.29	2813.20	129.09	55.94
J-18	0.75	2921.10	2826.10	95.00	41.17
J-19	5.88	2927.50	2819.70	107.80	46.71
J-20	0.72	2916.35	2822.30	94.05	40.75
J-21	6.65	2914.63	2808.40	106.23	46.03
J-22	0.00	2992.54	2842.00	150.54	65.23
J-23	2.45	2914.58	2840.00	74.58	32.32
J-24	1.42	2914.20	2839.20	75.00	32.50
J-25	3.29	2911.51	2852.00	59.51	25.79
J-26	0.85	2912.93	2866.30	46.63	20.21
J-27	3.71	2912.93	2852.70	60.23	26.10
J-28	3.62	2910.08	2867.30	42.78	18.54
J-29	0.65	2910.08	2870.80	39.28	17.02
J-30	2.36	2911.58	2857.70	53.88	23.35
J-31	1.53	2911.70	2816.80	94.90	41.12
J-32	0.36	2909.03	2857.10	51.93	22.50
J-33	3.81	2907.55	2853.90	53.65	23.25
J-34	1.38	2907.71	2863.70	44.01	19.07
J-35	1.70	2907.61	2862.40	45.21	19.59
J-36	1.91	2905.93	2826.40	79.53	34.46
J-37	3.17	2907.54	2842.20	65.34	28.31
J-38	2.45	2907.32	2839.70	67.62	29.30
J-39	1.54	2908.91	2818.00	90.91	39.39
J-40	0.63	2905.89	2819.50	86.39	37.44
J-41	2.12	2905.90	2823.40	82.50	35.75
J-42	2.27	2905.87	2810.90	94.97	41.15
J-43	1.48	2907.42	2846.00	61.42	26.62
J-44	4.17	2906.06	2831.40	74.66	32.35
J-45	5.46	2907.34	2841.40	65.94	28.58
J-46	4.40	2907.43	2818.20	89.23	38.66
J-47	1.79	2907.37	2843.20	64.17	27.81
J-48	1.58	2905.86	2818.80	87.06	37.73
J-49	2.04	2910.16	2820.00	90.16	39.07
J-50	2.50	2905.99	2818.80	87.19	37.78
J-51	1.23	2905.89	2836.50	69.39	30.07
J-52	3.04	2905.89	2815.90	89.99	39.00
J-53	0.82	2945.28	2836.00	109.28	47.36
J-54	0.29	2908.86	2857.00	51.86	22.47
J-55	3.58	2955.12	2853.80	101.32	43.91
J-56	2.64	2946.33	2842.60	105.73	45.82
J-57	2.55	2991.22	2841.90	149.32	64.71
J-58	4.65	2982.47	2857.90	124.57	53.98
J-59	4.30	2964.05	2848.80	115.25	49.94
J-60	2.36	2907.35	2852.50	54.85	23.77
J-61	0.31	2909.35	2820.00	89.35	38.72
J-62	5.51	2938.76	2857.60	81.16	35.17
J-63	0.71	2910.16	2810.00	100.16	43.40
J-64	0.22	2992.28	2842.20	150.08	65.04
J-65	0.00	2992.37	2842.00	150.37	65.16
J-66	0.00	2992.51	2842.00	150.51	65.22
VP-1	----	2992.54	2842.20	150.34	65.15
VP-2	----	2992.54	2842.00	150.54	65.23
I-AV-1	0.00	2923.10	2826.10	97.00	42.04

Pipe2012 Analysis Report

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townswtr					
I-AV-2	0.00	2916.27	2822.30	93.97	40.72
O-AV-3	0.00	2915.87	2822.30	93.57	40.55
I-AV-4	0.00	2912.19	2816.70	95.49	41.38
I-AV-5	0.00	2911.69	2816.90	94.79	41.08
O-AV-6	0.00	2961.17	2854.00	107.17	46.44
I-AV-7	0.00	2966.99	2841.90	125.09	54.21
I-AV-8	0.00	2943.14	2849.50	93.64	40.58
O-AV-9	0.00	2909.24	2857.40	51.84	22.46
I-AV-10	0.00	2908.82	2856.80	52.02	22.54
I-AV-11	0.00	2907.80	2863.20	44.60	19.33
I-AV-12	0.00	2909.61	2819.50	90.11	39.05
I-AV-13	0.00	2909.24	2820.00	89.24	38.67
I-AV-14	0.00	2992.49	2842.00	150.49	65.21

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	67.98	J-29	17.02
J-7	65.25	J-28	18.54
J-22	65.23	J-34	19.07
VP-2	65.23	O-AV-11	19.30
J-66	65.22	I-AV-11	19.33

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-82	4.08	P-29	0.03
P-6	4.01	P-38	0.03
P-74	4.01	P-20	0.03

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-6	34.76	P-29	0.00
P-74	34.76	P-38	0.00
P-67	34.26	P-20	0.01

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-6	34.76	P-29	0.00
P-74	34.76	P-38	0.00
P-67	34.26	P-20	0.01

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
VP-1	160.00	
NET SYSTEM INFLOW =	160.00	
NET SYSTEM OUTFLOW =	0.00	
NET SYSTEM DEMAND =	160.00	

Total Power Cost

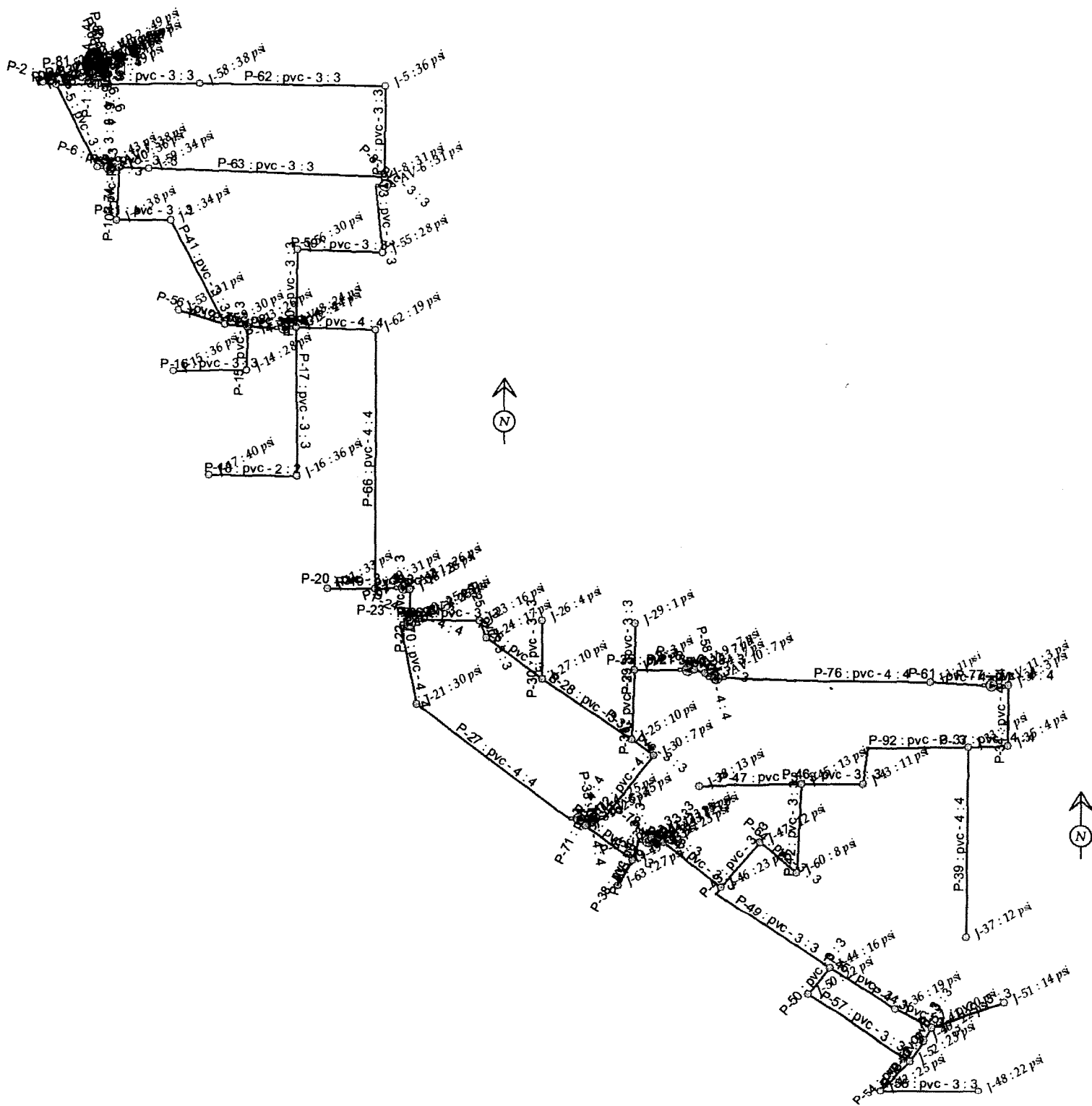
Pipe2010 Analysis Report



<7>

TOTAL POWER COST (\$) FOR THIS SIMULATION = 0.30

***** HYDRAULIC ANALYSIS COMPLETED *****



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***** KYPIPE *****
*
* Pipe Network Modeling Software
*
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* Version: 10.009 10/01/2019
* Company: GEENGPA Serial #: 580207
* Interface: KYnetic
* Licensed for Pipe2020
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Date & Time: Sun Jun 07 19:59:22 2020

Master File : c:\sdsd\proj\2027-towns water\townswtr.kyp\townswtrbooster.KYP\townswtrbooster.P2K

SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
HEAD (HGL) = feet
PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1 #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1 J-64	14.20	4.00	107.0000	0.00
P-2	J-3 J-7	59.30	3.00	107.0000	0.00
P-3	J-57 J-58	453.90	3.00	107.0000	0.00
P-4	J-57 J-7	189.50	3.00	107.0000	0.00
P-5	J-7 J-6	417.80	3.00	107.0000	0.00
P-6	J-6 I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8 J-5	415.60	3.00	107.0000	0.00
P-8	J-8 I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10 J-59	131.20	3.00	107.0000	0.00
P-10	J-10 J-4	240.00	3.00	107.0000	0.00
P-11	J-4 J-2	240.80	3.00	107.0000	0.00
P-12	J-13 J-9	100.50	3.00	107.0000	0.00
P-13	J-12 J-62	356.00	4.00	107.0000	0.00
P-14	J-12 O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13 J-14	196.70	3.00	107.0000	0.00
P-16	J-14 J-15	327.70	3.00	107.0000	0.00
P-17	J-12 J-16	676.30	3.00	107.0000	0.00
P-18	J-16 J-17	391.00	2.00	107.0000	0.00
P-19	J-19 I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11 J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9 J-32	28.50	3.00	107.0000	0.00
P-22	J-18 J-20	141.00	3.00	107.0000	0.00
P-23	J-20 I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20 I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23 J-24	83.10	3.00	107.0000	0.00
P-26	J-24 J-27	309.80	3.00	107.0000	0.00
P-27	J-21 I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27 J-25	480.70	3.00	107.0000	0.00
P-29	J-29 J-28	210.50	3.00	107.0000	0.00
P-30	J-27 J-26	261.90	3.00	107.0000	0.00
P-31	J-25 J-28	304.50	3.00	107.0000	0.00
P-32	J-25 J-30	120.50	3.00	107.0000	0.00
P-33	J-31 I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35 J-34	267.70	4.00	107.0000	0.00
P-35	J-28 O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32 J-54	50.50	3.00	107.0000	0.00
P-37	J-35 J-33	177.30	4.00	107.0000	0.00
P-38	J-63 J-49	134.50	3.00	107.0000	0.00
P-39	J-33 J-37	870.30	4.00	107.0000	0.00
P-40	J-49 I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2 J-9	524.80	3.00	107.0000	0.00
P-42	J-45 J-60	396.90	3.00	107.0000	0.00
P-43	J-47 J-46	267.80	3.00	107.0000	0.00
P-44	J-36 J-41	181.70	3.00	107.0000	0.00

TOWNSHIP						
P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	
O-AV-8		0.00	2849.50	
I-AV-9		0.00	2857.40	

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O-AV-10	0.00	2856.80
O-AV-11	0.00	2863.20
O-AV-12	0.00	2819.50
O-AV-13	0.00	2820.00
O-AV-14	0.00	2842.00
J-1	6.95	2846.60
J-2	2.86	2839.20
J-3	0.22	2827.10
J-4	1.73	2836.00
J-5	4.51	2849.60
J-6	1.92	2833.90
J-7	2.50	2833.40
J-8	5.61	2854.50
J-9	3.16	2839.00
J-10	1.76	2843.90
J-11	0.77	2815.00
J-12	5.40	2849.80
J-13	1.96	2848.00
J-14	1.90	2842.80
J-15	1.19	2822.90
J-16	4.59	2822.30
J-17	2.13	2813.20
J-18	0.75	2826.10
J-19	5.88	2819.70
J-20	0.72	2822.30
J-21	6.65	2808.40
J-22	0.00	2842.00
J-23	2.45	2840.00
J-24	1.42	2839.20
J-25	3.29	2852.00
J-26	0.85	2866.30
J-27	3.71	2852.70
J-28	3.62	2867.30
J-29	0.65	2870.80
J-30	2.36	2857.70
J-31	1.53	2816.80
J-32	0.36	2857.10
J-33	3.81	2853.90
J-34	1.38	2863.70
J-35	1.70	2862.40
J-36	1.91	2826.40
J-37	3.17	2842.20
J-38	2.45	2839.70
J-39	1.54	2818.00
J-40	0.63	2819.50
J-41	2.12	2823.40
J-42	2.27	2810.90
J-43	1.48	2846.00
J-44	4.17	2831.40
J-45	5.46	2841.40
J-46	4.40	2818.20
J-47	1.79	2843.20
J-48	1.58	2818.80
J-49	2.04	2820.00
J-50	2.50	2818.80
J-51	1.23	2836.50
J-52	3.04	2815.90
J-53	0.82	2836.00
J-54	0.29	2857.00
J-55	3.58	2853.80
J-56	2.64	2842.60
J-57	2.55	2841.90
J-58	4.65	2857.90
J-59	4.30	2848.80
J-60	2.36	2852.50
J-61	0.31	2820.00
J-62	5.51	2857.60
J-63	0.71	2810.00
J-64	0.22	2842.20
J-65	0.00	2842.00
J-66	0.00	2842.00
VP-1	----	2842.20
VP-2	----	2842.00
I-AV-1	0.00	2826.10
I-AV-2	0.00	2822.30
O-AV-3	0.00	2822.30
I-AV-4	0.00	2816.70
I-AV-5	0.00	2816.90
O-AV-6	0.00	2854.00
I-AV-7	0.00	2841.90
I-AV-8	0.00	2849.50
O-AV-9	0.00	2857.40
I-AV-10	0.00	2856.80
I-AV-11	0.00	2863.20

I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	5
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES	(P) =	87
NUMBER OF END NODES	(J) =	80
NUMBER OF PRIMARY LOOPS	(L) =	6
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 14 TRIALS: ACCURACY = 0.24762E-04

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N U M B E R S #1 #2	F L O W R A T E gpm	H E A D L O S S ft	M I N O R L O S S ft	L I N E V E L O . ft/s	H L + M L / 1000 ft/f	H L / 1000 ft/f
P-1	VP-1 J-64	130.68	0.25	0.00	3.34	17.68	17.68
P-2	J-3 J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57 J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57 J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7 J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6 I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8 J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8 I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10 J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10 J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4 J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13 J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12 J-62	99.82	3.82	0.00	2.55	10.74	10.74
P-14	J-12 O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13 J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14 J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12 J-16	6.71	0.20	0.00	0.30	0.29	0.29
P-18	J-16 J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19 I-AV-1	87.66	4.40	0.00	3.98	34.26	34.26
P-20	J-11 J-19	-0.77	0.00	0.00	0.03	0.01	0.01
P-21	I-AV-9 J-32	25.67	0.10	0.00	1.17	3.52	3.52
P-22	J-18 J-20	86.91	4.75	0.00	3.94	33.72	33.72
P-23	J-20 I-AV-2	31.77	0.08	0.00	1.44	5.23	5.23
P-24	J-20 I-AV-3	54.41	0.07	0.00	1.39	3.49	3.49
P-25	J-23 J-24	29.32	0.37	0.00	1.33	4.51	4.51
P-26	J-24 J-27	27.90	1.27	0.00	1.27	4.11	4.11
P-27	J-21 I-AV-4	47.77	2.44	0.00	1.22	2.74	2.74
P-28	J-27 J-25	23.34	1.42	0.00	1.06	2.95	2.95
P-29	J-29 J-28	-0.65	0.00	0.00	0.03	0.00	0.00
P-30	J-27 J-26	0.85	0.00	0.00	0.04	0.01	0.01
P-31	J-25 J-28	29.94	1.43	0.00	1.36	4.69	4.69
P-32	J-25 J-30	-9.90	0.07	0.00	0.45	0.60	0.60
P-33	J-31 I-AV-5	12.26	0.01	0.00	0.31	0.22	0.22
P-34	J-35 J-34	-16.69	0.10	0.00	0.43	0.39	0.39
P-35	J-28 O-AV-9	25.67	0.84	0.00	1.17	3.52	3.52
P-36	J-32 J-54	25.32	0.17	0.00	1.15	3.43	3.43
P-37	J-35 J-33	14.99	0.06	0.00	0.38	0.32	0.32
P-38	J-63 J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33 J-37	3.17	0.02	0.00	0.08	0.02	0.02

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P-40	J-49	I-AV-12	31.23	0.55	0.00	1.42	5.07	5.07
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98
P-42	J-45	J-60	-1.37	0.01	0.00	0.06	0.02	0.02
P-43	J-47	J-46	-5.52	0.05	0.00	0.25	0.20	0.20
P-44	J-36	J-41	5.52	0.04	0.00	0.25	0.20	0.20
P-45	J-44	J-36	7.43	0.12	0.00	0.34	0.35	0.35
P-46	J-43	J-45	6.54	0.08	0.00	0.30	0.28	0.28
P-47	J-38	J-45	-2.45	0.02	0.00	0.11	0.05	0.05
P-48	J-31	J-49	33.98	1.54	0.00	1.54	5.92	5.92
P-49	J-46	J-44	19.46	1.37	0.00	0.88	2.11	2.11
P-50	J-44	J-50	7.86	0.06	0.00	0.36	0.39	0.39
P-51	J-41	J-51	1.23	0.00	0.00	0.06	0.01	0.01
P-52	J-41	J-40	2.17	0.00	0.00	0.10	0.04	0.04
P-53	J-40	J-52	1.54	0.00	0.00	0.07	0.02	0.02
P-54	J-52	J-42	3.85	0.02	0.00	0.17	0.11	0.11
P-55	J-42	J-48	1.58	0.01	0.00	0.07	0.02	0.02
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	5.36	0.10	0.00	0.24	0.19	0.19
P-58	J-54	I-AV-10	25.03	0.04	0.00	0.64	0.83	0.83
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50
P-61	J-1	I-AV-11	18.07	0.12	0.00	0.46	0.45	0.45
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44
P-64	J-60	J-47	-3.72	0.02	0.00	0.17	0.10	0.10
P-65	J-61	I-AV-13	30.91	0.11	0.00	1.40	4.97	4.97
P-66	J-62	J-19	94.31	11.26	0.00	2.41	9.66	9.66
P-67	O-AV-1	J-18	87.66	0.96	0.00	3.98	34.26	34.26
P-68	VP-1	J-22	-130.68	0.04	0.00	1.48	2.45	2.45
P-69	O-AV-2	J-23	31.77	1.55	0.00	1.44	5.23	5.23
P-70	O-AV-3	J-21	54.41	1.25	0.00	1.39	3.49	3.49
P-71	O-AV-4	J-31	47.77	0.12	0.00	1.22	2.74	2.74
P-72	O-AV-5	J-30	12.26	0.09	0.00	0.31	0.22	0.22
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31
P-76	O-AV-10	J-1	25.03	0.79	0.00	0.64	0.83	0.83
P-77	O-AV-11	J-34	18.07	0.03	0.00	0.46	0.45	0.45
P-78	O-AV-12	J-61	31.23	0.11	0.00	1.42	5.07	5.07
P-79	O-AV-13	J-39	30.91	0.18	0.00	1.40	4.97	4.97
P-80	VP-2	J-22	160.00	0.07	0.00	1.82	1.91	1.91
P-81	J-22	J-66	29.31	0.04	0.00	0.75	1.11	1.11
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66
P-83	J-64	J-65	-29.31	0.10	0.00	1.33	4.51	4.51
P-84	J-66	I-AV-14	29.31	0.02	0.00	0.75	1.11	1.11
P-85	O-AV-14	J-65	29.31	0.02	0.00	0.75	1.11	1.11
P-92	J-43	J-33	-8.01	0.13	0.00	0.36	0.22	0.22
P-94	J-39	J-46	29.37	1.48	0.00	1.33	4.52	4.52
-@AV-1	I-AV-1	O-AV-1	87.66	0.00	1.05	0.00*****	0.00	0.00
-@AV-2	I-AV-2	O-AV-2	31.77	0.00	0.14	0.00*****	0.00	0.00
-@AV-3	I-AV-3	O-AV-3	54.41	0.00	0.40	0.00*****	0.00	0.00
-@AV-4	I-AV-4	O-AV-4	47.77	0.00	0.37	0.00*****	0.00	0.00
-@AV-5	I-AV-5	O-AV-5	12.26	0.00	0.02	0.00*****	0.00	0.00
-@AV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00	0.00
-@AV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00	0.00
-@AV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00	0.00
-@AV-9	I-AV-9	O-AV-9	-25.67	0.00	0.11	0.00*****	0.00	0.00
-@AV-10	I-AV-10	O-AV-10	25.03	0.00	0.10	0.00*****	0.00	0.00
-@AV-11	I-AV-11	O-AV-11	18.07	0.00	0.05	0.00*****	0.00	0.00
-@AV-12	I-AV-12	O-AV-12	31.23	0.00	0.16	0.00*****	0.00	0.00
-@AV-13	I-AV-13	O-AV-13	30.91	0.00	0.15	0.00*****	0.00	0.00
-@AV-14-CV	I-AV-14	O-AV-14	29.31	0.00	0.12	0.00*****	0.00	0.00

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC- ENCY %	USEFUL POWER Hp	INCREMENTAL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
Device "VP-1" is closed												
VP-1	0.00	0.00	113.60	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000
VP-2	160.00	0.00	113.91	113.9	75.00	5.	0.2	0.2	**	**	33.2	0.0000

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
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Pipe2010 Analysis Report



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O-AV-1	0.00	2885.32	2826.10	59.22	25.66
O-AV-2	0.00	2879.39	2822.30	57.09	24.74
I-AV-3	0.00	2879.54	2822.30	57.24	24.81
O-AV-4	0.00	2875.08	2816.70	58.38	25.30
O-AV-5	0.00	2874.93	2816.90	58.03	25.15
I-AV-6	0.00	2925.02	2854.00	71.02	30.78
O-AV-7	0.00	2929.19	2841.90	87.29	37.83
O-AV-8	0.00	2906.02	2849.50	56.52	24.49
I-AV-9	0.00	2872.40	2857.40	15.00	6.50
O-AV-10	0.00	2871.98	2856.80	15.18	6.58
O-AV-11	0.00	2871.01	2863.20	7.81	3.39
O-AV-12	0.00	2872.72	2819.50	53.22	23.06
O-AV-13	0.00	2872.35	2820.00	52.35	22.68
O-AV-14	0.00	2955.67	2842.00	113.67	49.26
J-1	6.95	2871.19	2846.60	24.59	10.66
J-2	2.86	2917.98	2839.20	78.78	34.14
J-3	0.22	2947.24	2827.10	120.14	52.06
J-4	1.73	2922.69	2836.00	86.69	37.56
J-5	4.51	2931.83	2849.60	82.23	35.63
J-6	1.92	2932.13	2833.90	98.23	42.57
J-7	2.50	2947.24	2833.40	113.84	49.33
J-8	5.61	2925.81	2854.50	71.31	30.90
J-9	3.16	2908.55	2839.00	69.55	30.14
J-10	1.76	2927.61	2843.90	83.71	36.28
J-11	0.77	2890.76	2815.00	75.76	32.83
J-12	5.40	2905.85	2849.80	56.05	24.29
J-13	1.96	2906.95	2848.00	58.95	25.54
J-14	1.90	2906.94	2842.80	64.14	27.79
J-15	1.19	2906.93	2822.90	84.03	36.41
J-16	4.59	2905.65	2822.30	83.35	36.12
J-17	2.13	2905.55	2813.20	92.35	40.02
J-18	0.75	2884.36	2826.10	58.26	25.25
J-19	5.88	2890.76	2819.70	71.06	30.79
J-20	0.72	2879.61	2822.30	57.31	24.83
J-21	6.65	2877.89	2808.40	69.49	30.11
J-22	0.00	2955.84	2842.00	113.84	49.33
J-23	2.45	2877.84	2840.00	37.84	16.40
J-24	1.42	2877.47	2839.20	38.27	16.58
J-25	3.29	2874.77	2852.00	22.77	9.87
J-26	0.85	2876.19	2866.30	9.89	4.29
J-27	3.71	2876.19	2852.70	23.49	10.18
J-28	3.62	2873.35	2867.30	6.05	2.62
J-29	0.65	2873.35	2870.80	2.55	1.10
J-30	2.36	2874.85	2857.70	17.15	7.43
J-31	1.53	2874.97	2816.80	58.17	25.21
J-32	0.36	2872.30	2857.10	15.20	6.59
J-33	3.81	2870.82	2853.90	16.92	7.33
J-34	1.38	2870.98	2863.70	7.28	3.15
J-35	1.70	2870.87	2862.40	8.47	3.67
J-36	1.91	2869.20	2826.40	42.80	18.55
J-37	3.17	2870.80	2842.20	28.60	12.39
J-38	2.45	2870.59	2839.70	30.89	13.38
J-39	1.54	2872.17	2818.00	54.17	23.47
J-40	0.63	2869.16	2819.50	49.66	21.52
J-41	2.12	2869.16	2823.40	45.76	19.83
J-42	2.27	2869.14	2810.90	58.24	25.24
J-43	1.48	2870.68	2846.00	24.68	10.70
J-44	4.17	2869.32	2831.40	37.92	16.43
J-45	5.46	2870.61	2841.40	29.21	12.66
J-46	4.40	2870.69	2818.20	52.49	22.75
J-47	1.79	2870.63	2843.20	27.43	11.89
J-48	1.58	2869.13	2818.80	50.33	21.81
J-49	2.04	2873.43	2820.00	53.43	23.15
J-50	2.50	2869.26	2818.80	50.46	21.87
J-51	1.23	2869.16	2836.50	32.66	14.15
J-52	3.04	2869.16	2815.90	53.26	23.08
J-53	0.82	2908.55	2836.00	72.55	31.44
J-54	0.29	2872.12	2857.00	15.12	6.55
J-55	3.58	2918.39	2853.80	64.59	27.99
J-56	2.64	2911.60	2842.60	69.00	29.90
J-57	2.55	2954.49	2841.90	112.59	48.79
J-58	4.65	2945.74	2857.90	87.84	38.06
J-59	4.30	2927.32	2848.80	78.52	34.02
J-60	2.36	2870.61	2852.50	18.11	7.85
J-61	0.31	2872.61	2820.00	52.61	22.80
J-62	5.51	2902.03	2857.60	44.43	19.25
J-63	0.71	2873.43	2810.00	63.43	27.49
J-64	0.22	2955.55	2842.20	113.35	49.12
J-65	0.00	2955.65	2842.00	113.65	49.25
J-66	0.00	2955.80	2842.00	113.80	49.32
VP-1	----	2955.80	2842.20	113.60	49.23
VP-2	----	2955.91	2842.00	113.91	49.36
I-AV-1	0.00	2886.37	2826.10	60.27	26.12

TOWNSHIP					
I-AV-2	0.00	2879.53	2822.30	57.23	24.80
O-AV-3	0.00	2879.14	2822.30	56.84	24.63
I-AV-4	0.00	2875.45	2816.70	58.75	25.46
I-AV-5	0.00	2874.96	2816.90	58.06	25.16
O-AV-6	0.00	2924.44	2854.00	70.44	30.52
I-AV-7	0.00	2930.26	2841.90	88.36	38.29
I-AV-8	0.00	2906.40	2849.50	56.90	24.66
O-AV-9	0.00	2872.50	2857.40	15.10	6.55
I-AV-10	0.00	2872.08	2856.80	15.28	6.62
I-AV-11	0.00	2871.06	2863.20	7.86	3.41
I-AV-12	0.00	2872.88	2819.50	53.38	23.13
I-AV-13	0.00	2872.50	2820.00	52.50	22.75
I-AV-14	0.00	2955.79	2842.00	113.79	49.31

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	52.06	J-29	1.10
VP-2	49.36	J-28	2.62
J-7	49.33	J-34	3.15
J-22	49.33	O-AV-11	3.39
J-66	49.32	I-AV-11	3.41

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-82	4.08	P-29	0.03
P-74	4.01	P-38	0.03
P-6	4.01	P-20	0.03

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-19	34.26	P-20	0.01

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-19	34.26	P-20	0.01

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES

(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
VP-2	160.00	
NET SYSTEM INFLOW = 160.00		
NET SYSTEM OUTFLOW = 0.00		
NET SYSTEM DEMAND = 160.00		

Total Power Cost

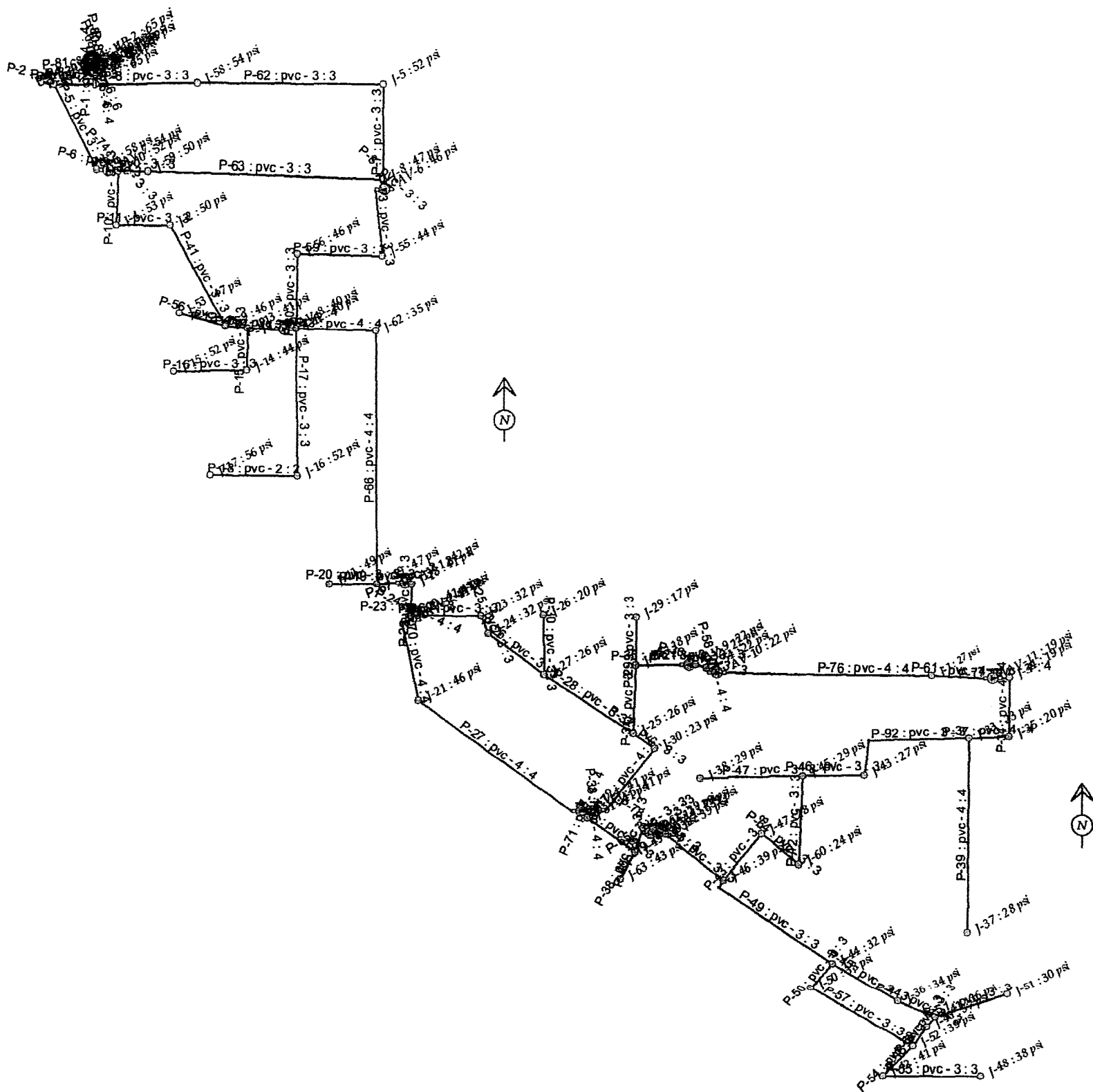
Pipe2010 Analysis Report



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TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.23

***** HYDRAULIC ANALYSIS COMPLETED *****



***** KYPIPE *****
 *
 * Pipe Network Modeling Software *
 *
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 * Version: 10.009 10/01/2019 *
 * Company: GEENGPA Serial #: 580207 *
 * Interface: KYnetic *
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Date & Time: Sun Jun 07 20:24:17 2020

Master File : c:\sdsk\proj\2027-towns water\townswtr.kyp\townswtrpumps.KYP\townswtrpumps.P2K

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1 #2		LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1	J-64	14.20	4.00	107.0000	0.00
P-2	J-3	J-7	59.30	3.00	107.0000	0.00
P-3	J-57	J-58	453.90	3.00	107.0000	0.00
P-4	J-57	J-7	189.50	3.00	107.0000	0.00
P-5	J-7	J-6	417.80	3.00	107.0000	0.00
P-6	J-6	I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8	J-5	415.60	3.00	107.0000	0.00
P-8	J-8	I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10	J-59	131.20	3.00	107.0000	0.00
P-10	J-10	J-4	240.00	3.00	107.0000	0.00
P-11	J-4	J-2	240.80	3.00	107.0000	0.00
P-12	J-13	J-9	100.50	3.00	107.0000	0.00
P-13	J-12	J-62	356.00	4.00	107.0000	0.00
P-14	J-12	O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13	J-14	196.70	3.00	107.0000	0.00
P-16	J-14	J-15	327.70	3.00	107.0000	0.00
P-17	J-12	J-16	676.30	3.00	107.0000	0.00
P-18	J-16	J-17	391.00	2.00	107.0000	0.00
P-19	J-19	I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11	J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9	J-32	28.50	3.00	107.0000	0.00
P-22	J-18	J-20	141.00	3.00	107.0000	0.00
P-23	J-20	I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20	I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23	J-24	83.10	3.00	107.0000	0.00
P-26	J-24	J-27	309.80	3.00	107.0000	0.00
P-27	J-21	I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27	J-25	480.70	3.00	107.0000	0.00
P-29	J-29	J-28	210.50	3.00	107.0000	0.00
P-30	J-27	J-26	261.90	3.00	107.0000	0.00
P-31	J-25	J-28	304.50	3.00	107.0000	0.00
P-32	J-25	J-30	120.50	3.00	107.0000	0.00
P-33	J-31	I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35	J-34	267.70	4.00	107.0000	0.00
P-35	J-28	O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32	J-54	50.50	3.00	107.0000	0.00
P-37	J-35	J-33	177.30	4.00	107.0000	0.00
P-38	J-63	J-49	134.50	3.00	107.0000	0.00
P-39	J-33	J-37	870.30	4.00	107.0000	0.00
P-40	J-49	I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2	J-9	524.80	3.00	107.0000	0.00
P-42	J-45	J-60	396.90	3.00	107.0000	0.00
P-43	J-47	J-46	267.80	3.00	107.0000	0.00
P-44	J-36	J-41	181.70	3.00	107.0000	0.00

TOWNSHIP						
P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	
O-AV-8		0.00	2849.50	
I-AV-9		0.00	2857.40	

townswtr			
O-AV-10	0.00	2856.80	
O-AV-11	0.00	2863.20	
O-AV-12	0.00	2819.50	
O-AV-13	0.00	2820.00	
O-AV-14	0.00	2842.00	
J-1	6.95	2846.60	
J-2	2.86	2839.20	
J-3	0.22	2827.10	
J-4	1.73	2836.00	
J-5	4.51	2849.60	
J-6	1.92	2833.90	
J-7	2.50	2833.40	
J-8	5.61	2854.50	
J-9	3.16	2839.00	
J-10	1.76	2843.90	
J-11	0.77	2815.00	
J-12	5.40	2849.80	
J-13	1.96	2848.00	
J-14	1.90	2842.80	
J-15	1.19	2822.90	
J-16	4.59	2822.30	
J-17	2.13	2813.20	
J-18	0.75	2826.10	
J-19	5.88	2819.70	
J-20	0.72	2822.30	
J-21	6.65	2808.40	
J-22	0.00	2842.00	
J-23	2.45	2840.00	
J-24	1.42	2839.20	
J-25	3.29	2852.00	
J-26	0.85	2866.30	
J-27	3.71	2852.70	
J-28	3.62	2867.30	
J-29	0.65	2870.80	
J-30	2.36	2857.70	
J-31	1.53	2816.80	
J-32	0.36	2857.10	
J-33	3.81	2853.90	
J-34	1.38	2863.70	
J-35	1.70	2862.40	
J-36	1.91	2826.40	
J-37	3.17	2842.20	
J-38	2.45	2839.70	
J-39	1.54	2818.00	
J-40	0.63	2819.50	
J-41	2.12	2823.40	
J-42	2.27	2810.90	
J-43	1.48	2846.00	
J-44	4.17	2831.40	
J-45	5.46	2841.40	
J-46	4.40	2818.20	
J-47	1.79	2843.20	
J-48	1.58	2818.80	
J-49	2.04	2820.00	
J-50	2.50	2818.80	
J-51	1.23	2836.50	
J-52	3.04	2815.90	
J-53	0.82	2836.00	
J-54	0.29	2857.00	
J-55	3.58	2853.80	
J-56	2.64	2842.60	
J-57	2.55	2841.90	
J-58	4.65	2857.90	
J-59	4.30	2848.80	
J-60	2.36	2852.50	
J-61	0.31	2820.00	
J-62	5.51	2857.60	
J-63	0.71	2810.00	
J-64	0.22	2842.20	
J-65	0.00	2842.00	
J-66	0.00	2842.00	
VP-1	----	2842.20	2842.20
VP-2	----	2842.00	2842.00
I-AV-1	0.00	2826.10	
I-AV-2	0.00	2822.30	
O-AV-3	0.00	2822.30	
I-AV-4	0.00	2816.70	
I-AV-5	0.00	2816.90	
O-AV-6	0.00	2854.00	
I-AV-7	0.00	2841.90	
I-AV-8	0.00	2849.50	
O-AV-9	0.00	2857.40	
I-AV-10	0.00	2856.80	
I-AV-11	0.00	2863.20	

I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	10
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES	(P) =	87
NUMBER OF END NODES	(J) =	80
NUMBER OF PRIMARY LOOPS	(L) =	6
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 19 TRIALS: ACCURACY = 0.67681E-06

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS #1 #2	FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
P-1	VP-1 J-64	160.00	0.37	0.00	4.08	25.72	25.72
P-2	J-3 J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57 J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57 J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7 J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6 I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8 J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8 I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10 J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10 J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4 J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13 J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12 J-62	99.82	3.82	0.00	2.55	10.74	10.74
P-14	J-12 O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13 J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14 J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12 J-16	6.71	0.20	0.00	0.30	0.29	0.29
P-18	J-16 J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19 I-AV-1	87.66	4.40	0.00	3.98	34.26	34.26
P-20	J-11 J-19	-0.77	0.00	0.00	0.03	0.01	0.01
P-21	I-AV-9 J-32	25.67	0.10	0.00	1.17	3.52	3.52
P-22	J-18 J-20	86.91	4.75	0.00	3.94	33.72	33.72
P-23	J-20 I-AV-2	31.77	0.08	0.00	1.44	5.23	5.23
P-24	J-20 I-AV-3	54.41	0.07	0.00	1.39	3.49	3.49
P-25	J-23 J-24	29.32	0.37	0.00	1.33	4.51	4.51
P-26	J-24 J-27	27.90	1.27	0.00	1.27	4.11	4.11
P-27	J-21 I-AV-4	47.77	2.44	0.00	1.22	2.74	2.74
P-28	J-27 J-25	23.34	1.42	0.00	1.06	2.95	2.95
P-29	J-29 J-28	-0.65	0.00	0.00	0.03	0.00	0.00
P-30	J-27 J-26	0.85	0.00	0.00	0.04	0.01	0.01
P-31	J-25 J-28	29.94	1.43	0.00	1.36	4.69	4.69
P-32	J-25 J-30	-9.90	0.07	0.00	0.45	0.60	0.60
P-33	J-31 I-AV-5	12.26	0.01	0.00	0.31	0.22	0.22
P-34	J-35 J-34	-16.69	0.10	0.00	0.43	0.39	0.39
P-35	J-28 O-AV-9	25.67	0.84	0.00	1.17	3.52	3.52
P-36	J-32 J-54	25.32	0.17	0.00	1.15	3.43	3.43
P-37	J-35 J-33	14.99	0.06	0.00	0.38	0.32	0.32
P-38	J-63 J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33 J-37	3.17	0.02	0.00	0.08	0.02	0.02

townswtr								
P-40	J-49	I-AV-12	31.23	0.55	0.00	1.42	5.07	5.07
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98
P-42	J-45	J-60	-1.37	0.01	0.00	0.06	0.02	0.02
P-43	J-47	J-46	-5.52	0.05	0.00	0.25	0.20	0.20
P-44	J-36	J-41	5.52	0.04	0.00	0.25	0.20	0.20
P-45	J-44	J-36	7.43	0.12	0.00	0.34	0.35	0.35
P-46	J-43	J-45	6.54	0.08	0.00	0.30	0.28	0.28
P-47	J-38	J-45	-2.45	0.02	0.00	0.11	0.05	0.05
P-48	J-31	J-49	33.98	1.54	0.00	1.54	5.92	5.92
P-49	J-46	J-44	19.46	1.37	0.00	0.88	2.11	2.11
P-50	J-44	J-50	7.86	0.06	0.00	0.36	0.39	0.39
P-51	J-41	J-51	1.23	0.00	0.00	0.06	0.01	0.01
P-52	J-41	J-40	2.17	0.00	0.00	0.10	0.04	0.04
P-53	J-40	J-52	1.54	0.00	0.00	0.07	0.02	0.02
P-54	J-52	J-42	3.85	0.02	0.00	0.17	0.11	0.11
P-55	J-42	J-48	1.58	0.01	0.00	0.07	0.02	0.02
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	5.36	0.10	0.00	0.24	0.19	0.19
P-58	J-54	I-AV-10	25.03	0.04	0.00	0.64	0.83	0.83
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50
P-61	J-1	I-AV-11	18.07	0.12	0.00	0.46	0.45	0.45
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44
P-64	J-60	J-47	-3.72	0.02	0.00	0.17	0.10	0.10
P-65	J-61	I-AV-13	30.91	0.11	0.00	1.40	4.97	4.97
P-66	J-62	J-19	94.31	11.26	0.00	2.41	9.66	9.66
P-67	O-AV-1	J-18	87.66	0.96	0.00	3.98	34.26	34.26
P-68	VP-1	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-69	O-AV-2	J-23	31.77	1.55	0.00	1.44	5.23	5.23
P-70	O-AV-3	J-21	54.41	1.25	0.00	1.39	3.49	3.49
P-71	O-AV-4	J-31	47.77	0.12	0.00	1.22	2.74	2.74
P-72	O-AV-5	J-30	12.26	0.09	0.00	0.31	0.22	0.22
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31
P-76	O-AV-10	J-1	25.03	0.79	0.00	0.64	0.83	0.83
P-77	O-AV-11	J-34	18.07	0.03	0.00	0.46	0.45	0.45
P-78	O-AV-12	J-61	31.23	0.11	0.00	1.42	5.07	5.07
P-79	O-AV-13	J-39	30.91	0.18	0.00	1.40	4.97	4.97
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-81	J-22	J-66	0.00	0.00	0.00	0.00	0.00	0.00
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66
P-83	J-64	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-84	J-66	I-AV-14	0.00	0.00	0.00	0.00	0.00	0.00
P-85	O-AV-14	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-92	J-43	J-33	-8.01	0.13	0.00	0.36	0.22	0.22
P-94	J-39	J-46	29.37	1.48	0.00	1.33	4.52	4.52
~@AV-1	I-AV-1	O-AV-1	87.66	0.00	1.05	0.00*****	0.00	
~@AV-2	I-AV-2	O-AV-2	31.77	0.00	0.14	0.00*****	0.00	
~@AV-3	I-AV-3	O-AV-3	54.41	0.00	0.40	0.00*****	0.00	
~@AV-4	I-AV-4	O-AV-4	47.77	0.00	0.37	0.00*****	0.00	
~@AV-5	I-AV-5	O-AV-5	12.26	0.00	0.02	0.00*****	0.00	
~@AV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00	
~@AV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00	
~@AV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00	
~@AV-9	I-AV-9	O-AV-9	-25.67	0.00	0.11	0.00*****	0.00	
~@AV-10	I-AV-10	O-AV-10	25.03	0.00	0.10	0.00*****	0.00	
~@AV-11	I-AV-11	O-AV-11	18.07	0.00	0.05	0.00*****	0.00	
~@AV-12	I-AV-12	O-AV-12	31.23	0.00	0.16	0.00*****	0.00	
~@AV-13	I-AV-13	O-AV-13	30.91	0.00	0.15	0.00*****	0.00	
~@AV-14-XX	I-AV-14	O-AV-14						

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC- ENCY %	USEFUL POWER Hp	INCREMTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	160.00	0.00	150.34	150.3	75.00	6.	0.3	0.3	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	150.54	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
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Pipe2010 Analysis Report



<5>

townswtr					
O-AV-1	0.00	2921.95	2826.10	95.85	41.53
O-AV-2	0.00	2916.02	2822.30	93.72	40.61
I-AV-3	0.00	2916.17	2822.30	93.87	40.68
O-AV-4	0.00	2911.71	2816.70	95.01	41.17
O-AV-5	0.00	2911.56	2816.90	94.66	41.02
I-AV-6	0.00	2961.65	2854.00	107.65	46.65
O-AV-7	0.00	2965.82	2841.90	123.92	53.70
O-AV-8	0.00	2942.65	2849.50	93.15	40.36
I-AV-9	0.00	2909.03	2857.40	51.63	22.37
O-AV-10	0.00	2908.61	2856.80	51.81	22.45
O-AV-11	0.00	2907.64	2863.20	44.44	19.26
O-AV-12	0.00	2909.35	2819.50	89.85	38.93
O-AV-13	0.00	2908.98	2820.00	88.98	38.56
O-AV-14	0.00	2992.18	2842.00	150.18	65.08
J-1	6.95	2907.82	2846.60	61.22	26.53
J-2	2.86	2954.61	2839.20	115.41	50.01
J-3	0.22	2983.87	2827.10	156.77	67.94
J-4	1.73	2959.32	2836.00	123.32	53.44
J-5	4.51	2968.46	2849.60	118.86	51.51
J-6	1.92	2968.76	2833.90	134.86	58.44
J-7	2.50	2983.87	2833.40	150.47	65.21
J-8	5.61	2962.43	2854.50	107.93	46.77
J-9	3.16	2945.18	2839.00	106.18	46.01
J-10	1.76	2964.24	2843.90	120.34	52.15
J-11	0.77	2927.39	2815.00	112.39	48.70
J-12	5.40	2942.48	2849.80	92.68	40.16
J-13	1.96	2943.58	2848.00	95.58	41.42
J-14	1.90	2943.56	2842.80	100.76	43.66
J-15	1.19	2943.56	2822.90	120.66	52.29
J-16	4.59	2942.28	2822.30	119.98	51.99
J-17	2.13	2942.18	2813.20	128.98	55.89
J-18	0.75	2920.99	2826.10	94.89	41.12
J-19	5.88	2927.39	2819.70	107.69	46.67
J-20	0.72	2916.24	2822.30	93.94	40.71
J-21	6.65	2914.52	2808.40	106.12	45.99
J-22	0.00	2992.54	2842.00	150.54	65.23
J-23	2.45	2914.47	2840.00	74.47	32.27
J-24	1.42	2914.10	2839.20	74.90	32.45
J-25	3.29	2911.40	2852.00	59.40	25.74
J-26	0.85	2912.82	2866.30	46.52	20.16
J-27	3.71	2912.82	2852.70	60.12	26.05
J-28	3.62	2909.98	2867.30	42.68	18.49
J-29	0.65	2909.97	2870.80	39.17	16.98
J-30	2.36	2911.47	2857.70	53.77	23.30
J-31	1.53	2911.60	2816.80	94.80	41.08
J-32	0.36	2908.93	2857.10	51.83	22.46
J-33	3.81	2907.45	2853.90	53.55	23.20
J-34	1.38	2907.61	2863.70	43.91	19.03
J-35	1.70	2907.50	2862.40	45.10	19.54
J-36	1.91	2905.83	2826.40	79.43	34.42
J-37	3.17	2907.43	2842.20	65.23	28.27
J-38	2.45	2907.22	2839.70	67.52	29.26
J-39	1.54	2908.80	2818.00	90.80	39.35
J-40	0.63	2905.79	2819.50	86.29	37.39
J-41	2.12	2905.79	2823.40	82.39	35.70
J-42	2.27	2905.76	2810.90	94.86	41.11
J-43	1.48	2907.31	2846.00	61.31	26.57
J-44	4.17	2905.95	2831.40	74.55	32.30
J-45	5.46	2907.24	2841.40	65.84	28.53
J-46	4.40	2907.32	2818.20	89.12	38.62
J-47	1.79	2907.26	2843.20	64.06	27.76
J-48	1.58	2905.76	2818.80	86.96	37.68
J-49	2.04	2910.06	2820.00	90.06	39.02
J-50	2.50	2905.89	2818.80	87.09	37.74
J-51	1.23	2905.78	2836.50	69.28	30.02
J-52	3.04	2905.78	2815.90	89.88	38.95
J-53	0.82	2945.18	2836.00	109.18	47.31
J-54	0.29	2908.75	2857.00	51.75	22.43
J-55	3.58	2955.02	2853.80	101.22	43.86
J-56	2.64	2948.23	2842.60	105.63	45.77
J-57	2.55	2991.11	2841.90	149.21	64.66
J-58	4.65	2982.37	2857.90	124.47	53.93
J-59	4.30	2963.95	2848.80	115.15	49.90
J-60	2.36	2907.24	2852.50	54.74	23.72
J-61	0.31	2909.24	2820.00	89.24	38.67
J-62	5.51	2938.65	2857.60	81.05	35.12
J-63	0.71	2910.06	2810.00	100.06	43.36
J-64	0.22	2992.18	2842.20	149.98	64.99
J-65	0.00	2992.18	2842.00	150.18	65.08
J-66	0.00	2992.54	2842.00	150.54	65.23
VP-1	----	2992.54	2842.20	150.34	65.15
VP-2	----	2992.54	2842.00	150.54	65.23
I-AV-1	0.00	2923.00	2826.10	96.90	41.99

Pipe2010 Analysis Report

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I-AV-2	0.00	2916.16	2822.30	93.86	40.67
O-AV-3	0.00	2915.77	2822.30	93.47	40.50
I-AV-4	0.00	2912.08	2816.70	95.38	41.33
I-AV-5	0.00	2911.58	2816.90	94.68	41.03
O-AV-6	0.00	2961.07	2854.00	107.07	46.40
I-AV-7	0.00	2966.89	2841.90	124.99	54.16
I-AV-8	0.00	2943.03	2849.50	93.53	40.53
O-AV-9	0.00	2909.13	2857.40	51.73	22.42
I-AV-10	0.00	2908.71	2856.80	51.91	22.49
I-AV-11	0.00	2907.69	2863.20	44.49	19.28
I-AV-12	0.00	2909.50	2819.50	90.00	39.00
I-AV-13	0.00	2909.13	2820.00	89.13	38.62
I-AV-14	0.00	2992.54	2842.00	150.54	65.23

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	67.94	J-29	16.98
J-22	65.23	J-28	18.49
J-66	65.23	J-34	19.03
VP-2	65.23	O-AV-11	19.26
I-AV-14	65.23	I-AV-11	19.28
J-7	65.21	J-35	19.54
VP-1	65.15	J-26	20.16
O-AV-14	65.08	I-AV-9	22.37
J-65	65.08	O-AV-9	22.42
J-64	64.99	J-54	22.43

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-1	4.08	P-29	0.03
P-82	4.08	P-38	0.03
P-74	4.01	P-20	0.03

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-19	34.26	P-20	0.01

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-19	34.26	P-20	0.01

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

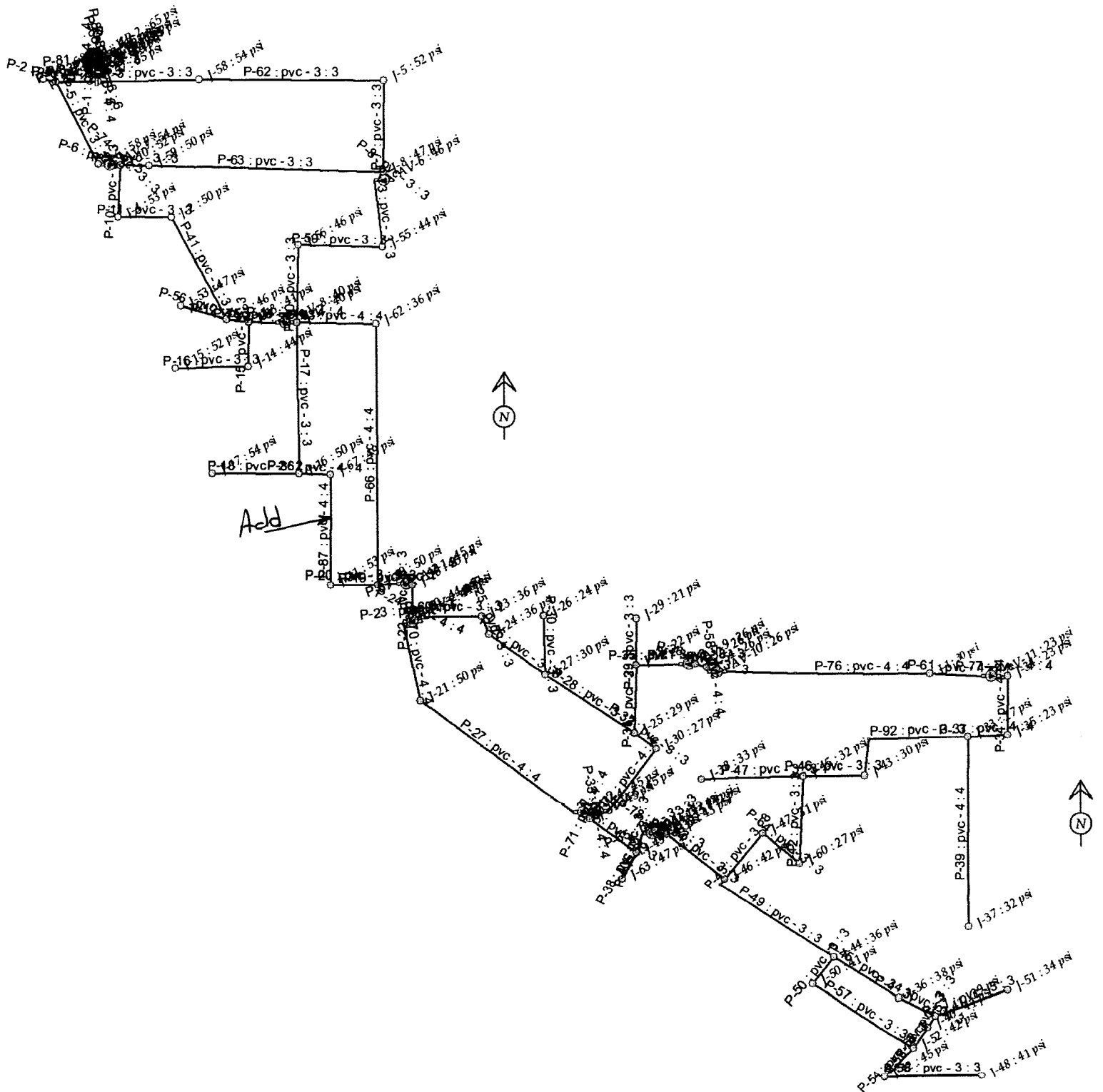
NODE NAME	FLOWRATE gpm	NODE TITLE
VP-1	160.00	

NET SYSTEM INFLOW = 160.00
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 160.00

Total Power Cost

TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.30

***** HYDRAULIC ANALYSIS COMPLETED *****



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*
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*
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Date & Time: Sun Jun 07 21:18:50 2020

Master File : c:\sds\proj\2027-towns water\townswtr.kyp\townswtrhouses.KYP\townswtrhouses.P2K

SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
HEAD (HGL) = feet
PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1 #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1 J-64	14.20	4.00	107.0000	0.00
P-2	J-3 J-7	59.30	3.00	107.0000	0.00
P-3	J-57 J-58	453.90	3.00	107.0000	0.00
P-4	J-57 J-7	189.50	3.00	107.0000	0.00
P-5	J-7 J-6	417.80	3.00	107.0000	0.00
P-6	J-6 I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8 J-5	415.60	3.00	107.0000	0.00
P-8	J-8 I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10 J-59	131.20	3.00	107.0000	0.00
P-10	J-10 J-4	240.00	3.00	107.0000	0.00
P-11	J-4 J-2	240.80	3.00	107.0000	0.00
P-12	J-13 J-9	100.50	3.00	107.0000	0.00
P-13	J-12 J-62	356.00	4.00	107.0000	0.00
P-14	J-12 O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13 J-14	196.70	3.00	107.0000	0.00
P-16	J-14 J-15	327.70	3.00	107.0000	0.00
P-17	J-12 J-16	676.30	3.00	107.0000	0.00
P-18	J-16 J-17	391.00	2.00	107.0000	0.00
P-19	J-19 I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11 J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9 J-32	28.50	3.00	107.0000	0.00
P-22	J-18 J-20	141.00	3.00	107.0000	0.00
P-23	J-20 I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20 I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23 J-24	83.10	3.00	107.0000	0.00
P-26	J-24 J-27	309.80	3.00	107.0000	0.00
P-27	J-21 I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27 J-25	480.70	3.00	107.0000	0.00
P-29	J-29 J-28	210.50	3.00	107.0000	0.00
P-30	J-27 J-26	261.90	3.00	107.0000	0.00
P-31	J-25 J-28	304.50	3.00	107.0000	0.00
P-32	J-25 J-30	120.50	3.00	107.0000	0.00
P-33	J-31 I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35 J-34	267.70	4.00	107.0000	0.00
P-35	J-28 O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32 J-54	50.50	3.00	107.0000	0.00
P-37	J-35 J-33	177.30	4.00	107.0000	0.00
P-38	J-63 J-49	134.50	3.00	107.0000	0.00
P-39	J-33 J-37	870.30	4.00	107.0000	0.00
P-40	J-49 I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2 J-9	524.80	3.00	107.0000	0.00
P-42	J-45 J-60	396.90	3.00	107.0000	0.00
P-43	J-47 J-46	267.80	3.00	107.0000	0.00
P-44	J-36 J-41	181.70	3.00	107.0000	0.00

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P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-86	J-16	J-67	140.70	4.00	150.0000	0.00
P-87	J-11	J-67	491.90	4.00	150.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	

TOWNSHIP		
O-AV-8	0.00	2849.50
I-AV-9	0.00	2857.40
O-AV-10	0.00	2856.80
O-AV-11	0.00	2863.20
O-AV-12	0.00	2819.50
O-AV-13	0.00	2820.00
O-AV-14	0.00	2842.00
J-1	6.95	2846.60
J-2	2.86	2839.20
J-3	0.22	2827.10
J-4	1.73	2836.00
J-5	4.51	2849.60
J-6	1.92	2833.90
J-7	2.50	2833.40
J-8	5.61	2854.50
J-9	3.16	2839.00
J-10	1.76	2843.90
J-11	0.77	2815.00
J-12	5.40	2849.80
J-13	1.96	2848.00
J-14	1.90	2842.80
J-15	1.19	2822.90
J-16	4.59	2822.30
J-17	2.13	2813.20
J-18	0.75	2826.10
J-19	5.88	2819.70
J-20	0.72	2822.30
J-21	6.65	2808.40
J-22	0.00	2842.00
J-23	2.45	2840.00
J-24	1.42	2839.20
J-25	3.29	2852.00
J-26	0.85	2866.30
J-27	3.71	2852.70
J-28	3.62	2867.30
J-29	0.65	2870.80
J-30	2.36	2857.70
J-31	1.53	2816.80
J-32	0.36	2857.10
J-33	3.81	2853.90
J-34	1.38	2863.70
J-35	1.70	2862.40
J-36	1.91	2826.40
J-37	3.17	2842.20
J-38	2.45	2839.70
J-39	1.54	2818.00
J-40	0.63	2819.50
J-41	2.12	2823.40
J-42	2.27	2810.90
J-43	1.48	2846.00
J-44	4.17	2831.40
J-45	5.46	2841.40
J-46	4.40	2818.20
J-47	1.79	2843.20
J-48	1.58	2818.80
J-49	2.04	2820.00
J-50	2.50	2818.80
J-51	1.23	2836.50
J-52	3.04	2815.90
J-53	0.82	2836.00
J-54	0.29	2857.00
J-55	3.58	2853.80
J-56	2.64	2842.60
J-57	2.55	2841.90
J-58	4.65	2857.90
J-59	4.30	2848.80
J-60	2.36	2852.50
J-61	0.31	2820.00
J-62	5.51	2857.60
J-63	0.71	2810.00
J-64	0.22	2842.20
J-65	0.00	2842.00
J-66	0.00	2842.00
J-67	0.00	2825.00
VP-1	----	2842.20
VP-2	----	2842.00
I-AV-1	0.00	2826.10
I-AV-2	0.00	2822.30
O-AV-3	0.00	2822.30
I-AV-4	0.00	2816.70
I-AV-5	0.00	2816.90
O-AV-6	0.00	2854.00
I-AV-7	0.00	2841.90
I-AV-8	0.00	2849.50
		2842.20
		2842.00

TOWNSHIP

O-AV-9	0.00	2857.40
I-AV-10	0.00	2856.60
I-AV-11	0.00	2863.20
I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	10
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

SYSTEM CONFIGURATION

NUMBER OF PIPES	(P) =	89
NUMBER OF END NODES	(J) =	81
NUMBER OF PRIMARY LOOPS	(L) =	7
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 19 TRIALS: ACCURACY = 0.18994E-06

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	MODE NUMBERS #1 #2	FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
P-1	VP-1 J-64	160.00	0.37	0.00	4.08	25.72	25.72
P-2	J-3 J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57 J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57 J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7 J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6 I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8 J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8 I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10 J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10 J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4 J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13 J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12 J-62	66.93	1.82	0.00	1.71	5.12	5.12
P-14	J-12 O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13 J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14 J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12 J-16	39.60	5.32	0.00	1.80	7.87	7.87
P-18	J-16 J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19 I-AV-1	87.66	4.40	0.00	3.98	34.26	34.26
P-20	J-11 J-19	32.12	1.13	0.00	1.46	5.34	5.34
P-21	I-AV-9 J-32	25.67	0.10	0.00	1.17	3.52	3.52
P-22	J-18 J-20	86.91	4.75	0.00	3.94	33.72	33.72
P-23	J-20 I-AV-2	31.77	0.08	0.00	1.44	5.23	5.23
P-24	J-20 I-AV-3	54.41	0.07	0.00	1.39	3.49	3.49
P-25	J-23 J-24	29.32	0.37	0.00	1.33	4.51	4.51
P-26	J-24 J-27	27.90	1.27	0.00	1.27	4.11	4.11
P-27	J-21 I-AV-4	47.77	2.44	0.00	1.22	2.74	2.74
P-28	J-27 J-25	23.34	1.42	0.00	1.06	2.95	2.95
P-29	J-29 J-28	-0.65	0.00	0.00	0.03	0.00	0.00
P-30	J-27 J-26	0.85	0.00	0.00	0.04	0.01	0.01
P-31	J-25 J-28	29.94	1.43	0.00	1.36	4.69	4.69
P-32	J-25 J-30	-9.90	0.07	0.00	0.45	0.60	0.60
P-33	J-31 I-AV-5	12.26	0.01	0.00	0.31	0.22	0.22
P-34	J-35 J-34	-16.69	0.10	0.00	0.43	0.39	0.39
P-35	J-28 O-AV-9	25.67	0.84	0.00	1.17	3.52	3.52
P-36	J-32 J-54	25.32	0.17	0.00	1.15	3.43	3.43

TOWNSHIP								
P-37	J-35	J-33	14.99	0.06	0.00	0.38	0.32	0.32
P-38	J-63	J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33	J-37	3.17	0.02	0.00	0.08	0.02	0.02
P-40	J-49	I-AV-12	31.23	0.55	0.00	1.42	5.07	5.07
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98
P-42	J-45	J-60	-1.37	0.01	0.00	0.06	0.02	0.02
P-43	J-47	J-46	-5.52	0.05	0.00	0.25	0.20	0.20
P-44	J-36	J-41	5.52	0.04	0.00	0.25	0.20	0.20
P-45	J-44	J-36	7.43	0.12	0.00	0.34	0.35	0.35
P-46	J-43	J-45	6.54	0.08	0.00	0.30	0.28	0.28
P-47	J-38	J-45	-2.45	0.02	0.00	0.11	0.05	0.05
P-48	J-31	J-49	33.98	1.54	0.00	1.54	5.92	5.92
P-49	J-46	J-44	19.46	1.37	0.00	0.88	2.11	2.11
P-50	J-44	J-50	7.86	0.06	0.00	0.36	0.39	0.39
P-51	J-41	J-51	1.23	0.00	0.00	0.06	0.01	0.01
P-52	J-41	J-40	2.17	0.00	0.00	0.10	0.04	0.04
P-53	J-40	J-52	1.54	0.00	0.00	0.07	0.02	0.02
P-54	J-52	J-42	3.85	0.02	0.00	0.17	0.11	0.11
P-55	J-42	J-48	1.58	0.01	0.00	0.07	0.02	0.02
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	5.36	0.10	0.00	0.24	0.19	0.19
P-58	J-54	I-AV-10	25.03	0.04	0.00	0.64	0.83	0.83
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50
P-61	J-1	I-AV-11	18.07	0.12	0.00	0.46	0.45	0.45
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44
P-64	J-60	J-47	-3.72	0.02	0.00	0.17	0.10	0.10
P-65	J-61	I-AV-13	30.91	0.11	0.00	1.40	4.97	4.97
P-66	J-62	J-19	61.42	5.09	0.00	1.57	4.37	4.37
P-67	O-AV-1	J-18	87.66	0.96	0.00	3.98	34.26	34.26
P-68	VP-1	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-69	O-AV-2	J-23	31.77	1.55	0.00	1.44	5.23	5.23
P-70	O-AV-3	J-21	54.41	1.25	0.00	1.39	3.49	3.49
P-71	O-AV-4	J-31	47.77	0.12	0.00	1.22	2.74	2.74
P-72	O-AV-5	J-30	12.26	0.09	0.00	0.31	0.22	0.22
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31
P-76	O-AV-10	J-1	25.03	0.79	0.00	0.64	0.83	0.83
P-77	O-AV-11	J-34	18.07	0.03	0.00	0.46	0.45	0.45
P-78	O-AV-12	J-61	31.23	0.11	0.00	1.42	5.07	5.07
P-79	O-AV-13	J-39	30.91	0.18	0.00	1.40	4.97	4.97
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-81	J-22	J-66	0.00	0.00	0.00	0.00	0.00	0.00
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66
P-83	J-64	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-84	J-66	I-AV-14	0.00	0.00	0.00	0.00	0.00	0.00
P-85	O-AV-14	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-86	J-16	J-67	32.89	0.10	0.00	0.84	0.73	0.73
P-87	J-11	J-67	-32.89	0.36	0.00	0.84	0.73	0.73
P-92	J-43	J-33	-8.01	0.13	0.00	0.36	0.22	0.22
P-94	J-39	J-46	29.37	1.48	0.00	1.33	4.52	4.52
~EAV-1	I-AV-1	O-AV-1	87.66	0.00	1.05	0.00*****	0.00	0.00
~EAV-2	I-AV-2	O-AV-2	31.77	0.00	0.14	0.00*****	0.00	0.00
~EAV-3	I-AV-3	O-AV-3	54.41	0.00	0.40	0.00*****	0.00	0.00
~EAV-4	I-AV-4	O-AV-4	47.77	0.00	0.37	0.00*****	0.00	0.00
~EAV-5	I-AV-5	O-AV-5	12.26	0.00	0.02	0.00*****	0.00	0.00
~EAV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00	0.00
~EAV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00	0.00
~EAV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00	0.00
~EAV-9	I-AV-9	O-AV-9	-25.67	0.00	0.11	0.00*****	0.00	0.00
~EAV-10	I-AV-10	O-AV-10	25.03	0.00	0.10	0.00*****	0.00	0.00
~EAV-11	I-AV-11	O-AV-11	18.07	0.00	0.05	0.00*****	0.00	0.00
~EAV-12	I-AV-12	O-AV-12	31.23	0.00	0.16	0.00*****	0.00	0.00
~EAV-13	I-AV-13	O-AV-13	30.91	0.00	0.15	0.00*****	0.00	0.00
~EAV-14-XX	I-AV-14	O-AV-14						

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC- ENCY %	USEFUL POWER Hp	INCREMENTAL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	160.00	0.00	150.34	150.3	75.00	6.	0.3	0.3	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	150.54	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
O-AV-1		0.00	2930.12	2826.10	104.02	45.07
O-AV-2		0.00	2924.19	2822.30	101.89	44.15
I-AV-3		0.00	2924.34	2822.30	102.04	44.22
O-AV-4		0.00	2919.88	2816.70	103.18	44.71
O-AV-5		0.00	2919.73	2816.90	102.83	44.56
I-AV-6		0.00	2961.65	2854.00	107.65	46.65
O-AV-7		0.00	2965.82	2841.90	123.92	53.70
O-AV-8		0.00	2942.65	2849.50	93.15	40.36
I-AV-9		0.00	2917.20	2857.40	59.80	25.91
O-AV-10		0.00	2916.76	2856.80	59.98	25.99
O-AV-11		0.00	2915.81	2863.20	52.61	22.80
O-AV-12		0.00	2917.52	2819.50	98.02	42.47
O-AV-13		0.00	2917.15	2820.00	97.15	42.10
O-AV-14		0.00	2992.18	2842.00	150.18	65.08
J-1		6.95	2915.99	2846.60	69.39	30.07
J-2		2.86	2954.61	2839.20	115.41	50.01
J-3		0.22	2983.87	2827.10	156.77	67.94
J-4		1.73	2959.32	2836.00	123.32	53.44
J-5		4.51	2968.46	2849.60	118.86	51.51
J-6		1.92	2968.76	2833.90	134.86	58.44
J-7		2.50	2983.87	2833.40	150.47	65.21
J-8		5.61	2962.43	2854.50	107.93	46.77
J-9		3.16	2945.18	2839.00	106.18	46.01
J-10		1.76	2964.24	2843.90	120.34	52.15
J-11		0.77	2936.69	2815.00	121.69	52.73
J-12		5.40	2942.48	2849.80	92.68	40.16
J-13		1.96	2943.58	2848.00	95.58	41.42
J-14		1.90	2943.56	2842.80	100.76	43.66
J-15		1.19	2943.56	2822.90	120.66	52.29
J-16		4.59	2937.16	2822.30	114.86	49.77
J-17		2.13	2937.06	2813.20	123.86	53.67
J-18		0.75	2929.16	2826.10	103.06	44.66
J-19		5.88	2935.56	2819.70	115.86	50.21
J-20		0.72	2924.41	2822.30	102.11	44.25
J-21		6.65	2922.69	2808.40	114.29	49.53
J-22		0.00	2992.54	2842.00	150.54	65.23
J-23		2.45	2922.64	2840.00	82.64	35.81
J-24		1.42	2922.27	2839.20	83.07	36.00
J-25		3.29	2919.57	2852.00	67.57	29.28
J-26		0.85	2920.99	2866.30	54.69	23.70
J-27		3.71	2920.99	2852.70	68.29	29.59
J-28		3.62	2918.15	2867.30	50.85	22.03
J-29		0.65	2918.14	2870.80	47.34	20.52
J-30		2.36	2919.65	2857.70	61.95	26.84
J-31		1.53	2919.77	2816.80	102.97	44.62
J-32		0.36	2917.10	2857.10	60.00	26.00
J-33		3.81	2915.62	2853.90	61.72	26.74
J-34		1.38	2915.78	2863.70	52.08	22.57
J-35		1.70	2915.67	2862.40	53.27	23.09
J-36		1.91	2914.00	2826.40	87.60	37.96
J-37		3.17	2915.60	2842.20	73.40	31.81
J-38		2.45	2915.39	2839.70	75.69	32.80
J-39		1.54	2916.97	2818.00	98.97	42.89
J-40		0.63	2913.96	2819.50	94.46	40.93
J-41		2.12	2913.96	2823.40	90.56	39.24
J-42		2.27	2913.93	2810.90	103.03	44.65
J-43		1.48	2915.48	2846.00	69.48	30.11
J-44		4.17	2914.12	2831.40	82.72	35.84
J-45		5.46	2915.41	2841.40	74.01	32.07
J-46		4.40	2915.49	2818.20	97.29	42.16
J-47		1.79	2915.43	2843.20	72.23	31.30
J-48		1.58	2913.93	2818.80	95.13	41.22
J-49		2.04	2918.23	2820.00	98.23	42.56
J-50		2.50	2914.06	2818.80	95.26	41.28
J-51		1.23	2913.95	2836.50	77.45	33.56
J-52		3.04	2913.95	2815.90	98.05	42.49
J-53		0.82	2945.18	2836.00	109.18	47.31
J-54		0.29	2916.92	2857.00	59.92	25.97
J-55		3.58	2955.02	2853.80	101.22	43.86
J-56		2.64	2948.23	2842.60	105.63	45.77
J-57		2.55	2991.11	2841.90	149.21	64.66
J-58		4.65	2982.37	2857.90	124.47	53.93
J-59		4.30	2963.95	2848.80	115.15	49.90
J-60		2.36	2915.41	2852.50	62.91	27.26
J-61		0.31	2917.41	2820.00	97.41	42.21
J-62		5.51	2940.65	2857.60	83.05	35.99
J-63		0.71	2918.23	2810.00	108.23	46.90
J-64		0.22	2992.18	2842.20	149.98	64.99

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J-65	0.00	2992.18	2842.00	150.18	65.08	
J-66	0.00	2992.54	2842.00	150.54	65.23	
J-67	0.00	2937.05	2825.00	112.05	48.56	
VP-1	----	2992.54	2842.20	150.34	65.15	
VP-2	----	2992.54	2842.00	150.54	65.23	
I-AV-1	0.00	2931.17	2826.10	105.07	45.53	
I-AV-2	0.00	2924.33	2822.30	102.03	44.21	
O-AV-3	0.00	2923.94	2822.30	101.64	44.04	
I-AV-4	0.00	2920.25	2816.70	103.55	44.87	
I-AV-5	0.00	2919.75	2816.90	102.85	44.57	
O-AV-6	0.00	2961.07	2854.00	107.07	46.40	
I-AV-7	0.00	2966.89	2841.90	124.99	54.16	
I-AV-8	0.00	2943.03	2849.50	93.53	40.53	
O-AV-9	0.00	2917.30	2857.40	59.90	25.96	
I-AV-10	0.00	2916.88	2856.80	60.08	26.03	
I-AV-11	0.00	2915.86	2863.20	52.66	22.82	
I-AV-12	0.00	2917.67	2819.50	98.17	42.54	
I-AV-13	0.00	2917.30	2820.00	97.30	42.16	
I-AV-14	0.00	2992.54	2842.00	150.54	65.23	

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	67.94	J-29	20.52
J-22	65.23	J-28	22.03
J-66	65.23	J-34	22.57
VP-2	65.23	O-AV-11	22.80
I-AV-14	65.23	I-AV-11	22.82
J-7	65.21	J-35	23.09
VP-1	65.15	J-26	23.70
O-AV-14	65.08	I-AV-9	25.91
J-65	65.08	O-AV-9	25.96
J-64	64.99	J-54	25.97

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-1	4.08	P-29	0.03
P-82	4.08	P-38	0.03
P-74	4.01	P-30	0.04

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-67	34.26	P-30	0.01

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-29	0.00
P-6	34.76	P-38	0.00
P-67	34.26	P-30	0.01

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

Pipe2010 Analysis Report



NODE NAME	FLOWRATE gpm	NODE TITLE
VP-1	160.00	
NET SYSTEM INFLOW = 160.00		
NET SYSTEM OUTFLOW = 0.00		
NET SYSTEM DEMAND = 160.00		

Total Power Cost

TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.30

***** HYDRAULIC ANALYSIS COMPLETED *****



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Date & Time: Sun Jun 07 21:39:47 2020

Master File : c:\sdsdk\proj\2027-towns water\townswtr.kyp\townswtrtrailer.KYP\townswtrtrailer.P2K

SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
HEAD (HGL) = feet
PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1	J-64	14.20	4.00	107.0000	0.00
P-2	J-3	J-7	59.30	3.00	107.0000	0.00
P-3	J-57	J-58	453.90	3.00	107.0000	0.00
P-4	J-57	J-7	189.50	3.00	107.0000	0.00
P-5	J-7	J-6	417.80	3.00	107.0000	0.00
P-6	J-6	I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8	J-5	415.60	3.00	107.0000	0.00
P-8	J-8	I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10	J-59	131.20	3.00	107.0000	0.00
P-10	J-10	J-4	240.00	3.00	107.0000	0.00
P-11	J-4	J-2	240.80	3.00	107.0000	0.00
P-12	J-13	J-9	100.50	3.00	107.0000	0.00
P-13	J-12	J-62	356.00	4.00	107.0000	0.00
P-14	J-12	O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13	J-14	196.70	3.00	107.0000	0.00
P-16	J-14	J-15	327.70	3.00	107.0000	0.00
P-17	J-12	J-16	676.30	3.00	107.0000	0.00
P-18	J-16	J-17	391.00	2.00	107.0000	0.00
P-19	J-19	I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11	J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9	J-32	28.50	3.00	107.0000	0.00
P-22	J-18	J-20	141.00	3.00	107.0000	0.00
P-23	J-20	I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20	I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23	J-24	83.10	3.00	107.0000	0.00
P-26	J-24	J-27	309.80	3.00	107.0000	0.00
P-27	J-21	I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27	J-25	480.70	3.00	107.0000	0.00
P-29	J-29	J-28	210.50	3.00	107.0000	0.00
P-30	J-27	J-26	261.90	3.00	107.0000	0.00
P-31	J-25	J-28	304.50	3.00	107.0000	0.00
P-32	J-25	J-30	120.50	3.00	107.0000	0.00
P-33	J-31	I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35	J-34	267.70	4.00	107.0000	0.00
P-35	J-28	O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32	J-54	50.50	3.00	107.0000	0.00
P-37	J-35	J-33	177.30	4.00	107.0000	0.00
P-38	J-63	J-49	134.50	3.00	107.0000	0.00
P-39	J-33	J-37	865.30	4.00	107.0000	0.00
P-40	J-49	I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2	J-9	524.80	3.00	107.0000	0.00
P-42	J-45	J-60	396.90	3.00	107.0000	0.00
P-43	J-47	J-46	267.80	3.00	107.0000	0.00
P-44	J-36	J-41	181.70	3.00	107.0000	0.00

townswtr						
P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	461.20	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-86	J-16	J-67	140.70	4.00	150.0000	0.00
P-87	J-11	J-67	491.90	4.00	150.0000	0.00
P-88	J-23	J-26	280.10	4.00	150.0000	0.00
P-89	J-26	J-29	414.50	4.00	150.0000	0.00
P-90	J-37	J-51	452.30	4.00	150.0000	0.00
P-91	J-51	J-48	406.80	4.00	150.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-93	J-30	J-38	246.10	3.00	150.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	

TOWNSHIP			
I-AV-3	0.00	2822.30	
O-AV-4	0.00	2816.70	
O-AV-5	0.00	2816.90	
I-AV-6	0.00	2854.00	
O-AV-7	0.00	2841.90	
O-AV-8	0.00	2849.50	
I-AV-9	0.00	2857.40	
O-AV-10	0.00	2856.80	
O-AV-11	0.00	2863.20	
O-AV-12	0.00	2819.50	
O-AV-13	0.00	2820.00	
O-AV-14	0.00	2842.00	
J-1	6.95	2846.60	
J-2	2.86	2839.20	
J-3	0.22	2827.10	
J-4	1.73	2836.00	
J-5	4.51	2849.60	
J-6	1.92	2833.90	
J-7	2.50	2833.40	
J-8	5.61	2854.50	
J-9	3.16	2839.00	
J-10	1.76	2843.90	
J-11	0.77	2815.00	
J-12	5.40	2849.80	
J-13	1.96	2848.00	
J-14	1.90	2842.80	
J-15	1.19	2822.90	
J-16	4.59	2822.30	
J-17	2.13	2813.20	
J-18	0.75	2826.10	
J-19	5.88	2819.70	
J-20	0.72	2822.30	
J-21	6.65	2808.40	
J-22	0.00	2842.00	
J-23	2.45	2840.00	
J-24	1.42	2839.20	
J-25	3.29	2852.00	
J-26	0.85	2866.30	
J-27	3.71	2852.70	
J-28	3.62	2867.30	
J-29	0.65	2870.80	
J-30	2.36	2857.70	
J-31	1.53	2816.80	
J-32	0.36	2857.10	
J-33	3.81	2853.90	
J-34	1.38	2863.70	
J-35	1.70	2862.40	
J-36	1.91	2826.40	
J-37	3.17	2842.20	
J-38	2.45	2839.70	
J-39	1.54	2818.00	
J-40	0.63	2819.50	
J-41	2.12	2823.40	
J-42	2.27	2810.90	
J-43	1.48	2846.00	
J-44	4.17	2831.40	
J-45	5.46	2841.40	
J-46	4.40	2818.20	
J-47	1.79	2843.20	
J-48	1.58	2818.80	
J-49	2.04	2820.00	
J-50	2.50	2818.80	
J-51	1.23	2836.50	
J-52	3.04	2815.90	
J-53	0.82	2836.00	
J-54	0.29	2857.00	
J-55	3.58	2853.80	
J-56	2.64	2842.60	
J-57	2.55	2841.90	
J-58	4.65	2857.90	
J-59	4.30	2848.80	
J-60	2.36	2852.50	
J-61	0.31	2820.00	
J-62	5.51	2857.60	
J-63	0.71	2810.00	
J-64	0.22	2842.20	
J-65	0.00	2842.00	
J-66	0.00	2842.00	
J-67	0.00	2825.00	
VP-1	----	2842.20	2842.20
VP-2	----	2842.00	2842.00
I-AV-1	0.00	2826.10	
I-AV-2	0.00	2822.30	
O-AV-3	0.00	2822.30	

TOWNSHIP

I-AV-4	0.00	2816.70
I-AV-5	0.00	2816.90
O-AV-6	0.00	2854.00
I-AV-7	0.00	2841.90
I-AV-8	0.00	2849.50
O-AV-9	0.00	2857.40
I-AV-10	0.00	2856.80
I-AV-11	0.00	2863.20
I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	10
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

SYSTEM CONFIGURATION

NUMBER OF PIPES	(P) =	94
NUMBER OF END NODES	(J) =	81
NUMBER OF PRIMARY LOOPS	(L) =	12
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 19 TRIALS: ACCURACY = 0.38952E-06

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS #1 #2	FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
P-1	VP-1 J-64	160.00	0.37	0.00	4.08	25.72	25.72
P-2	J-3 J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57 J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57 J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7 J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6 I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8 J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8 I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10 J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10 J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4 J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13 J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12 J-62	66.93	1.82	0.00	1.71	5.12	5.12
P-14	J-12 O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13 J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14 J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12 J-16	39.60	5.32	0.00	1.80	7.87	7.87
P-18	J-16 J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19 I-AV-1	87.66	4.40	0.00	3.98	34.26	34.26
P-20	J-11 J-19	32.12	1.13	0.00	1.46	5.34	5.34
P-21	I-AV-9 J-32	19.19	0.06	0.00	0.87	2.06	2.06
P-22	J-18 J-20	86.91	4.75	0.00	3.94	33.72	33.72
P-23	J-20 I-AV-2	40.54	0.12	0.00	1.84	8.21	8.21
P-24	J-20 I-AV-3	45.65	0.05	0.00	1.17	2.52	2.52
P-25	J-23 J-24	10.73	0.06	0.00	0.49	0.70	0.70
P-26	J-24 J-27	9.30	0.17	0.00	0.42	0.54	0.54
P-27	J-21 I-AV-4	39.00	1.68	0.00	1.00	1.88	1.88
P-28	J-27 J-25	12.37	0.44	0.00	0.56	0.91	0.91
P-29	J-29 J-28	19.09	0.43	0.00	0.87	2.04	2.04
P-30	J-27 J-26	-6.78	0.08	0.00	0.31	0.30	0.30
P-31	J-25 J-28	3.72	0.03	0.00	0.17	0.10	0.10

Pipe2012 Analysis Report



<4>

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TOWNSHIP								
P-32	J-25	J-30	5.36	0.02	0.00	0.24	0.19	0.19
P-33	J-31	I-AV-5	17.49	0.02	0.00	0.45	0.43	0.43
P-34	J-35	J-34	-10.20	0.04	0.00	0.26	0.16	0.16
P-35	J-28	O-AV-9	19.19	0.49	0.00	0.87	2.06	2.06
P-36	J-32	J-54	18.83	0.10	0.00	0.85	1.99	1.99
P-37	J-35	J-33	8.51	0.02	0.00	0.22	0.11	0.11
P-38	J-63	J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33	J-37	12.12	0.19	0.00	0.31	0.22	0.22
P-40	J-49	I-AV-12	17.23	0.18	0.00	0.78	1.68	1.68
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98
P-42	J-45	J-60	3.68	0.04	0.00	0.17	0.10	0.10
P-43	J-47	J-46	-0.47	0.00	0.00	0.02	0.00	0.00
P-44	J-36	J-41	0.69	0.00	0.00	0.03	0.00	0.00
P-45	J-44	J-36	2.61	0.02	0.00	0.12	0.05	0.05
P-46	J-43	J-45	-8.90	0.14	0.00	0.40	0.50	0.50
P-47	J-38	J-45	18.04	0.85	0.00	0.82	1.83	1.83
P-48	J-31	J-49	19.98	0.58	0.00	0.91	2.22	2.22
P-49	J-46	J-44	10.51	0.44	0.00	0.48	0.67	0.67
P-50	J-44	J-50	3.73	0.02	0.00	0.17	0.10	0.10
P-51	J-41	J-51	-3.39	0.03	0.00	0.15	0.08	0.08
P-52	J-41	J-40	1.97	0.00	0.00	0.09	0.03	0.03
P-53	J-40	J-52	1.34	0.00	0.00	0.06	0.01	0.01
P-54	J-52	J-42	-0.48	0.00	0.00	0.02	0.00	0.00
P-55	J-42	J-48	-2.75	0.02	0.00	0.12	0.06	0.06
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	1.23	0.01	0.00	0.06	0.01	0.01
P-58	J-54	I-AV-10	18.54	0.02	0.00	0.47	0.48	0.48
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50
P-61	J-1	I-AV-11	11.59	0.05	0.00	0.30	0.20	0.20
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44
P-64	J-60	J-47	1.33	0.00	0.00	0.06	0.01	0.01
P-65	J-61	I-AV-13	16.91	0.04	0.00	0.77	1.63	1.63
P-66	J-62	J-19	61.42	5.09	0.00	1.57	4.37	4.37
P-67	O-AV-1	J-18	87.66	0.96	0.00	3.98	34.26	34.26
P-68	VP-1	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-69	O-AV-2	J-23	40.54	2.44	0.00	1.84	8.21	8.21
P-70	O-AV-3	J-21	45.65	0.90	0.00	1.17	2.52	2.52
P-71	O-AV-4	J-31	39.00	0.08	0.00	1.00	1.88	1.88
P-72	O-AV-5	J-30	17.49	0.17	0.00	0.45	0.43	0.43
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31
P-76	O-AV-10	J-1	18.54	0.45	0.00	0.47	0.48	0.48
P-77	O-AV-11	J-34	11.59	0.01	0.00	0.30	0.20	0.20
P-78	O-AV-12	J-61	17.23	0.04	0.00	0.78	1.68	1.68
P-79	O-AV-13	J-39	16.91	0.06	0.00	0.77	1.63	1.63
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-81	J-22	J-66	0.00	0.00	0.00	0.00	0.00	0.00
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66
P-83	J-64	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-84	J-66	I-AV-14	0.00	0.00	0.00	0.00	0.00	0.00
P-85	O-AV-14	J-65	0.00	0.00	0.00	0.00	0.00	0.00
P-86	J-16	J-67	32.89	0.10	0.00	0.84	0.73	0.73
P-87	J-11	J-67	-32.89	0.36	0.00	0.84	0.73	0.73
P-88	J-23	J-26	27.36	0.15	0.00	0.70	0.52	0.52
P-89	J-26	J-29	19.73	0.12	0.00	0.50	0.29	0.29
P-90	J-37	J-51	8.95	0.03	0.00	0.23	0.07	0.07
P-91	J-51	J-48	4.33	0.01	0.00	0.11	0.02	0.02
P-92	J-43	J-33	7.43	0.12	0.00	0.34	0.19	0.19
P-93	J-30	J-38	20.49	0.31	0.00	0.93	1.24	1.24
P-94	J-39	J-46	15.37	0.45	0.00	0.70	1.36	1.36
~EAV-1	I-AV-1	O-AV-1	87.66	0.00	1.05	0.00*****	0.00	0.00
~EAV-2	I-AV-2	O-AV-2	40.54	0.00	0.22	0.00*****	0.00	0.00
~EAV-3	I-AV-3	O-AV-3	45.65	0.00	0.28	0.00*****	0.00	0.00
~EAV-4	I-AV-4	O-AV-4	39.00	0.00	0.24	0.00*****	0.00	0.00
~EAV-5	I-AV-5	O-AV-5	17.49	0.00	0.05	0.00*****	0.00	0.00
~EAV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00	0.00
~EAV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00	0.00
~EAV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00	0.00
~EAV-9	I-AV-9	O-AV-9	-19.19	0.00	0.06	0.00*****	0.00	0.00
~EAV-10	I-AV-10	O-AV-10	18.54	0.00	0.06	0.00*****	0.00	0.00
~EAV-11	I-AV-11	O-AV-11	11.59	0.00	0.02	0.00*****	0.00	0.00
~EAV-12	I-AV-12	O-AV-12	17.23	0.00	0.05	0.00*****	0.00	0.00
~EAV-13	I-AV-13	O-AV-13	16.91	0.00	0.05	0.00*****	0.00	0.00
~EAV-14-XX	I-AV-14	O-AV-14						

PUMP/LOSS ELEMENT RESULTS

townswtr												
NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC- ENCY %	USEFUL POWER Hp	INCREMTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	160.00	0.00	150.34	150.3	75.00	6.	0.3	0.3	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	150.54	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000
N O D E R E S U L T S												
NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi						
O-AV-1		0.00	2930.12	2826.10	104.02	45.07						
O-AV-2		0.00	2924.06	2822.30	101.76	44.10						
I-AV-3		0.00	2924.36	2822.30	102.06	44.23						
O-AV-4		0.00	2921.25	2816.70	104.55	45.31						
O-AV-5		0.00	2921.10	2816.90	104.20	45.15						
I-AV-6		0.00	2961.65	2854.00	107.65	46.65						
O-AV-7		0.00	2965.82	2841.90	123.92	53.70						
O-AV-8		0.00	2942.65	2849.50	93.15	40.36						
I-AV-9		0.00	2920.38	2857.40	62.98	27.29						
O-AV-10		0.00	2920.14	2856.80	63.34	27.45						
O-AV-11		0.00	2919.61	2863.20	56.41	24.44						
O-AV-12		0.00	2920.37	2819.50	100.87	43.71						
O-AV-13		0.00	2920.25	2820.00	100.25	43.44						
O-AV-14		0.00	2992.18	2842.00	150.18	65.08						
J-1		6.95	2919.69	2846.60	73.09	31.67						
J-2		2.86	2954.61	2839.20	115.41	50.01						
J-3		0.22	2983.87	2827.10	156.77	67.94						
J-4		1.73	2959.32	2836.00	123.32	53.44						
J-5		4.51	2968.46	2849.60	118.86	51.51						
J-6		1.92	2968.76	2833.90	134.86	58.44						
J-7		2.50	2983.87	2833.40	150.47	65.21						
J-8		5.61	2962.43	2854.50	107.93	46.77						
J-9		3.16	2945.18	2839.00	106.18	46.01						
J-10		1.76	2964.24	2843.90	120.34	52.15						
J-11		0.77	2936.69	2815.00	121.69	52.73						
J-12		5.40	2942.48	2849.80	92.68	40.16						
J-13		1.96	2943.58	2848.00	95.58	41.42						
J-14		1.90	2943.56	2842.80	100.76	43.66						
J-15		1.19	2943.56	2822.90	120.66	52.29						
J-16		4.59	2937.16	2822.30	114.86	49.77						
J-17		2.13	2937.06	2813.20	123.86	53.67						
J-18		0.75	2929.16	2826.10	103.06	44.66						
J-19		5.88	2935.56	2819.70	115.86	50.21						
J-20		0.72	2924.41	2822.30	102.11	44.25						
J-21		6.65	2923.17	2808.40	114.77	49.74						
J-22		0.00	2992.54	2842.00	150.54	65.23						
J-23		2.45	2921.62	2840.00	81.62	35.37						
J-24		1.42	2921.57	2839.20	82.37	35.69						
J-25		3.29	2920.96	2852.00	68.96	29.88						
J-26		0.85	2921.48	2866.30	55.18	23.91						
J-27		3.71	2921.40	2852.70	68.70	29.77						
J-28		3.62	2920.93	2867.30	53.63	23.24						
J-29		0.65	2921.36	2870.80	50.56	21.91						
J-30		2.36	2920.94	2857.70	63.24	27.40						
J-31		1.53	2921.17	2816.80	104.37	45.23						
J-32		0.36	2920.32	2857.10	63.22	27.40						
J-33		3.81	2919.53	2853.90	65.63	28.44						
J-34		1.38	2919.60	2863.70	55.90	24.22						
J-35		1.70	2919.55	2862.40	57.15	24.77						
J-36		1.91	2919.29	2826.40	92.89	40.25						
J-37		3.17	2919.35	2842.20	77.15	33.43						
J-38		2.45	2920.63	2839.70	80.93	35.07						
J-39		1.54	2920.19	2818.00	102.19	44.28						
J-40		0.63	2919.29	2819.50	99.79	43.24						
J-41		2.12	2919.29	2823.40	95.89	41.55						
J-42		2.27	2919.29	2810.90	108.39	46.97						
J-43		1.48	2919.65	2846.00	73.65	31.91						
J-44		4.17	2919.31	2831.40	87.91	38.09						
J-45		5.46	2919.79	2841.40	78.39	33.97						
J-46		4.40	2919.74	2818.20	101.54	44.00						
J-47		1.79	2919.74	2843.20	76.54	33.17						
J-48		1.58	2919.31	2818.80	100.51	43.55						
J-49		2.04	2920.60	2820.00	100.60	43.59						
J-50		2.50	2919.29	2818.80	100.49	43.55						
J-51		1.23	2919.32	2836.50	82.82	35.89						
J-52		3.04	2919.29	2815.90	103.39	44.80						
J-53		0.82	2945.18	2836.00	109.18	47.31						
J-54		0.29	2920.22	2857.00	63.22	27.40						
Pipe2010 Analysis Report												
 KYPIPE PIPE2012												

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J-55	3.58	2955.02	2853.80	101.22	43.86
J-56	2.64	2948.23	2842.60	105.63	45.77
J-57	2.55	2991.11	2841.90	149.21	64.66
J-58	4.65	2982.37	2857.90	124.47	53.93
J-59	4.30	2963.95	2848.80	115.15	49.90
J-60	2.36	2919.75	2852.50	67.25	29.14
J-61	0.31	2920.33	2820.00	100.33	43.48
J-62	5.51	2940.65	2857.60	83.05	35.99
J-63	0.71	2920.60	2810.00	110.60	47.93
J-64	0.22	2992.18	2842.20	149.98	64.99
J-65	0.00	2992.18	2842.00	150.18	65.08
J-66	0.00	2992.54	2842.00	150.54	65.23
J-67	0.00	2937.05	2825.00	112.05	48.56
VP-1	----	2992.54	2842.20	150.34	65.15
VP-2	----	2992.54	2842.00	150.54	65.23
I-AV-1	0.00	2931.17	2826.10	105.07	45.53
I-AV-2	0.00	2924.28	2822.30	101.98	44.19
O-AV-3	0.00	2924.08	2822.30	101.78	44.10
I-AV-4	0.00	2921.50	2816.70	104.80	45.41
I-AV-5	0.00	2921.15	2816.90	104.25	45.18
O-AV-6	0.00	2961.07	2854.00	107.07	46.40
I-AV-7	0.00	2966.89	2841.90	124.99	54.16
I-AV-8	0.00	2943.03	2849.50	93.53	40.53
O-AV-9	0.00	2920.44	2857.40	63.04	27.32
I-AV-10	0.00	2920.20	2856.80	63.40	27.47
I-AV-11	0.00	2919.63	2863.20	56.43	24.45
I-AV-12	0.00	2920.41	2819.50	100.91	43.73
I-AV-13	0.00	2920.30	2820.00	100.30	43.46
I-AV-14	0.00	2992.54	2842.00	150.54	65.23

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	67.94	J-29	21.91
J-22	65.23	J-28	23.24
J-66	65.23	J-26	23.91
VP-2	65.23	J-34	24.22
I-AV-14	65.23	O-AV-11	24.44
J-7	65.21	I-AV-11	24.45
VP-1	65.15	J-35	24.77
O-AV-14	65.08	I-AV-9	27.29
J-65	65.08	O-AV-9	27.32
J-64	64.99	J-54	27.40

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-1	4.08	P-43	0.02
P-82	4.08	P-54	0.02
P-6	4.01	P-44	0.03

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-6	34.76	P-43	0.00
P-74	34.76	P-54	0.00
P-19	34.26	P-44	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00

P-6	34.76	P-43	0.00
P-74	34.76	P-54	0.00
P-19	34.26	P-44	0.00

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S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

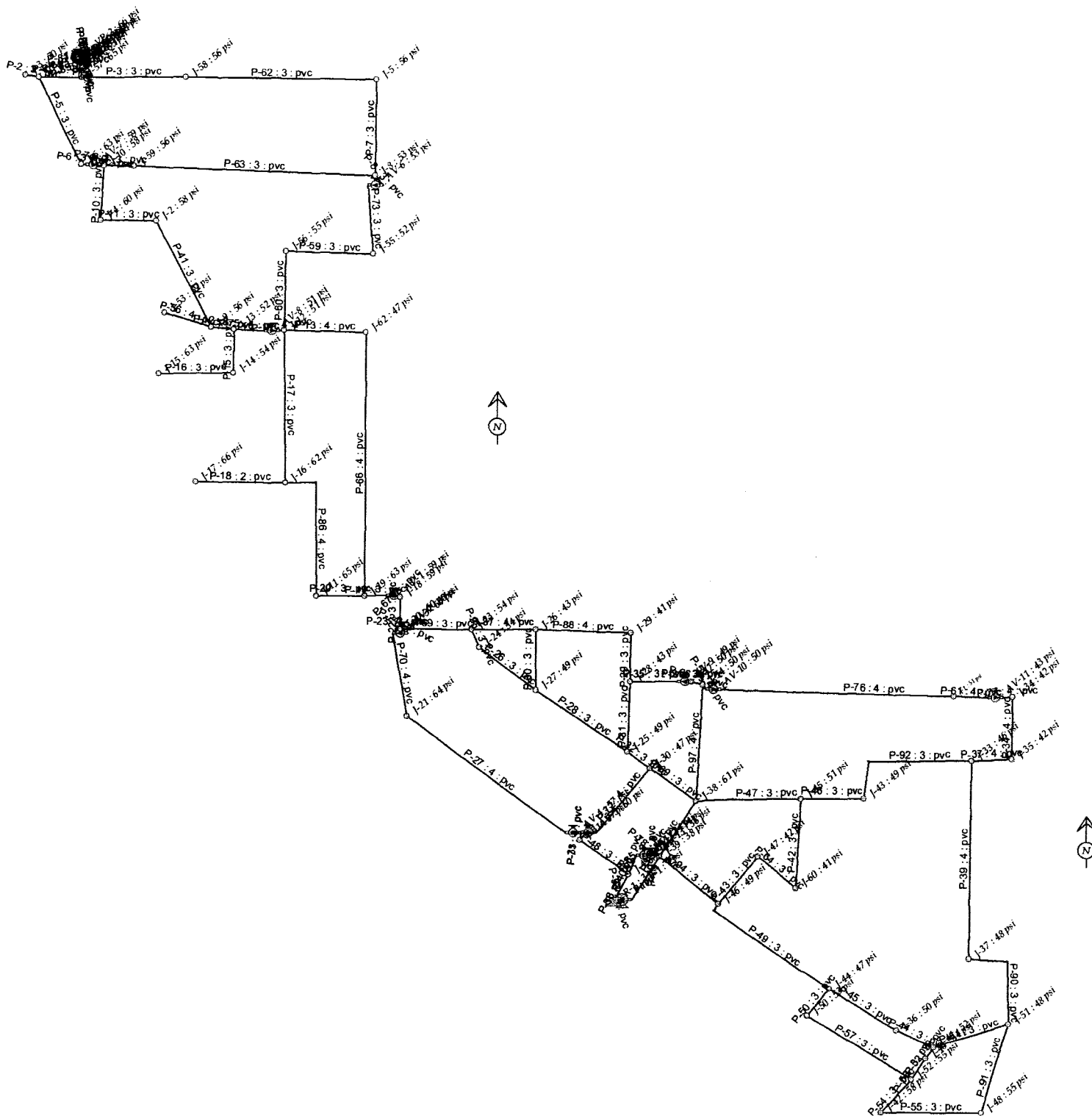
NODE NAME	FLOWRATE gpm	NODE TITLE
VP-1	160.00	

NET SYSTEM INFLOW = 160.00
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 160.00

Total Power Cost

TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.30

***** HYDRAULIC ANALYSIS COMPLETED *****



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***** K Y P I P E *****
*
* Pipe Network Modeling Software
*
* CopyRighted by KYPIPE LLC (www.kypipe.com)
* Version: 10.009 10/01/2019
* Company: GEENGPA Serial #: 580207
* Interface: KYnetic
* Licensed for Pipe2020
*
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Date & Time: Mon Jun 08 10:33:20 2020

Master File : c:\sdsk\proj\2027-towns water\townswtr.KYP\townswtr.P2K

SUMMARY OF ORIGINAL DATA

U N I T S S P E C I F I E D

FLOWRATE = gallons/minute
HEAD (HGL) = feet
PRESSURE = psig

R E G U L A T I N G V A L V E D A T A

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
Pump-1	Const_HEAD_Pump	2814.31

P I P E L I N E D A T A

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	NODE NAMES #1 #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1 J-64	20.90	4.00	107.0000	0.00
P-2	J-3 J-7	59.30	3.00	107.0000	0.00
P-3	J-57 J-58	453.90	3.00	107.0000	0.00
P-4	J-57 J-7	189.50	3.00	107.0000	0.00
P-5	J-7 J-6	417.80	3.00	107.0000	0.00
P-6	J-6 I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8 J-5	415.60	3.00	107.0000	0.00
P-8	J-8 I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10 J-59	131.20	3.00	107.0000	0.00
P-10	J-10 J-4	240.00	3.00	107.0000	0.00
P-11	J-4 J-2	240.80	3.00	107.0000	0.00
P-12	J-13 J-9	100.50	3.00	107.0000	0.00
P-13	J-12 J-62	356.00	4.00	107.0000	0.00
P-14	J-12 O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13 J-14	196.70	3.00	107.0000	0.00
P-16	J-14 J-15	327.70	3.00	107.0000	0.00
P-17	J-12 J-16	676.30	3.00	107.0000	0.00
P-18	J-16 J-17	391.00	2.00	107.0000	0.00
P-19	J-19 I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11 J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9 J-32	28.50	3.00	107.0000	0.00
P-22	J-18 J-20	141.00	3.00	107.0000	0.00
P-23	J-20 I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20 I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23 J-24	83.10	3.00	107.0000	0.00
P-26	J-24 J-27	309.80	3.00	107.0000	0.00
P-27	J-21 I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27 J-25	480.70	3.00	107.0000	0.00
P-29	J-29 J-28	210.50	3.00	107.0000	0.00
P-30	J-27 J-26	261.90	3.00	107.0000	0.00
P-31	J-25 J-28	304.50	3.00	107.0000	0.00
P-32	J-25 J-30	120.50	3.00	107.0000	0.00
P-33	J-31 I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35 J-34	267.70	4.00	107.0000	0.00

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P-35	J-28	O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32	J-54	50.50	3.00	107.0000	0.00
P-37	J-35	J-33	177.30	4.00	107.0000	0.00
P-38	R-1	J-49	133.10	3.00	107.0000	0.00
P-39	J-33	J-37	870.30	4.00	107.0000	0.00
P-40	J-49	I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2	J-9	524.80	3.00	107.0000	0.00
P-42	J-45	J-60	396.90	3.00	107.0000	0.00
P-43	J-47	J-46	267.80	3.00	107.0000	0.00
P-44	J-36	J-41	181.70	3.00	107.0000	0.00
P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	52.00	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	184.70	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-19	1165.20	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	10.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	1047.40	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	21.70	6.00	150.0000	0.00
P-81	J-22	J-66	14.40	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	15.80	3.00	107.0000	0.00
P-84	J-66	I-AV-14	14.10	4.00	107.0000	0.00
P-85	O-AV-14	J-65	17.10	4.00	107.0000	0.00
P-86	J-16	J-11	634.50	4.00	150.0000	0.00
P-87	J-23	J-26	280.10	4.00	150.0000	0.00
P-88	J-26	J-29	414.50	4.00	150.0000	0.00
P-89	J-30	J-38	249.20	3.00	150.0000	0.00
P-90	J-37	J-51	454.90	3.00	150.0000	0.00
P-91	J-51	J-48	406.80	3.00	150.0000	0.00
P-92	J-43	J-33	610.10	3.00	150.0000	0.00
P-93	R-1	O-Pump-1	39.40	4.00	140.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00
P-95	I-Pump-1	J-38	542.50	4.00	126.0000	0.00
P-97	J-38	J-54	505.10	4.00	126.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	
O-AV-8		0.00	2849.50	
I-AV-9		0.00	2857.40	
O-AV-10		0.00	2856.80	
O-AV-11		0.00	2863.20	
O-AV-12		0.00	2819.50	
O-AV-13		0.00	2820.00	
O-AV-14		0.00	2842.00	
J-1		6.95	2846.60	
J-2		2.86	2839.20	
J-3		0.22	2827.10	
J-4		1.73	2836.00	
J-5		4.51	2849.60	
J-6		1.92	2833.90	
J-7		2.50	2833.40	
J-8		5.61	2854.50	
J-9		3.16	2839.00	
J-10		1.76	2843.90	
J-11		0.77	2815.00	
J-12		5.40	2849.80	
J-13		1.96	2848.00	
J-14		1.90	2842.80	
J-15		1.19	2822.90	
J-16		4.59	2822.30	
J-17		2.13	2813.20	
J-18		0.75	2826.10	
J-19		5.88	2819.70	
J-20		0.72	2822.30	
J-21		6.65	2808.40	
J-22		0.00	2842.00	
J-23		2.45	2840.00	
J-24		1.42	2839.20	
J-25		3.29	2852.00	
J-26		0.85	2866.30	
J-27		3.71	2852.70	
J-28		3.62	2867.30	
J-29		0.65	2870.80	
J-30		2.36	2857.70	
J-31		1.53	2816.80	
J-32		0.36	2857.10	
J-33		3.81	2853.90	
J-34		1.38	2863.70	
J-35		1.70	2862.40	
J-36		1.91	2826.40	
J-37		3.17	2842.20	
J-38		2.45	2839.70	
J-39		1.54	2818.00	
J-40		0.63	2819.50	
J-41		2.12	2823.40	
J-42		2.27	2810.90	
J-43		1.48	2846.00	
J-44		4.17	2831.40	
J-45		5.46	2841.40	
J-46		4.40	2818.20	
J-47		1.79	2843.20	
J-48		1.58	2818.80	
J-49		2.75	2820.00	
J-50		2.50	2818.80	
J-51		1.23	2836.50	
J-52		3.04	2815.90	
J-53		0.82	2836.00	
J-54		0.29	2857.00	
J-55		3.58	2853.80	
J-56		2.64	2842.60	
J-57		2.55	2841.90	
J-58		4.65	2857.90	
J-59		4.30	2848.80	
J-60		2.36	2852.50	

townswtr								
J-61	0.31	2820.00						
J-62	5.51	2857.60						
J-64	0.22	2842.20						
J-65	0.00	2842.00						
J-66	0.00	2842.00						
I-Pump-1	0.00	2812.00						
R-1	----	2810.00				2818.00		
VP-1	----	2842.20				2842.20		
VP-2	----	2842.00				2842.00		
I-AV-1	0.00	2826.10						
I-AV-2	0.00	2822.30						
O-AV-3	0.00	2822.30						
I-AV-4	0.00	2816.70						
I-AV-5	0.00	2816.90						
O-AV-6	0.00	2854.00						
I-AV-7	0.00	2841.90						
I-AV-8	0.00	2849.50						
O-AV-9	0.00	2857.40						
I-AV-10	0.00	2856.80						
I-AV-11	0.00	2863.20						
I-AV-12	0.00	2819.50						
I-AV-13	0.00	2820.00						
I-AV-14	0.00	2842.00						
O-Pump-1	----	2812.00				2814.31		
O U T P U T O P T I O N D A T A								
O U T P U T S E L E C T I O N : A L L R E S U L T S A R E I N C L U D E D I N T H E T A B U L A T E D O U T P U T								
M A X I M U M A N D M I N I M U M P R E S S U R E S = 5								
M A X I M U M A N D M I N I M U M V E L O C I T I E S = 5								
M A X I M U M A N D M I N I M U M H E A D L O S S / 1 0 0 0 = 5								
S Y S T E M C O N F I G U R A T I O N								
N U M B E R O F P I P E S (P) = 9 6								
N U M B E R O F E N D N O D E S (J) = 8 0								
N U M B E R O F P R I M A R Y L O O P S (L) = 1 3								
N U M B E R O F S U P P L Y N O D E S (F) = 4								
N U M B E R O F S U P P L Y Z O N E S (Z) = 1								
Case: 0								
R E S U L T S O B T A I N E D A F T E R 4 5 T R I A L S : A C C U R A C Y = 0.29851E-05								
S I M U L A T I O N D E S C R I P T I O N (L A B E L)								
P I P E L I N E R E S U L T S								
S T A T U S C O D E : X X - C L O S E D P I P E C V - C H E C K V A L V E								
P I P E N A M E	N O D E N U M B E R S		F L O W R A T E	H E A D L O S S	M I N O R L O S S	L I N E V E L O .	H L + M L / 1 0 0 0	H L / 1 0 0 0
	#1	#2	gpm	ft	ft	ft/s	ft/f	ft/f
P-1	VP-1	J-64	92.43	0.19	0.00	2.36	9.31	9.31
P-2	J-3	J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57	J-58	47.81	5.06	0.00	2.17	11.15	11.15
P-4	J-57	J-7	68.10	4.07	0.00	3.09	21.47	21.47
P-5	J-7	J-6	65.39	8.32	0.00	2.97	19.91	19.91
P-6	J-6	I-AV-7	63.47	1.02	0.00	2.88	18.84	18.84
P-7	J-8	J-5	-38.65	3.12	0.00	1.75	7.52	7.52
P-8	J-8	I-AV-6	44.53	0.39	0.00	2.02	9.77	9.77
P-9	J-10	J-59	15.78	0.19	0.00	0.72	1.43	1.43
P-10	J-10	J-4	45.92	2.48	0.00	2.08	10.35	10.35
P-11	J-4	J-2	44.19	2.32	0.00	2.01	9.64	9.64
P-12	J-13	J-9	-37.35	0.71	0.00	1.70	7.06	7.06
P-13	J-12	J-62	41.13	0.74	0.00	1.05	2.08	2.08
P-14	J-12	O-AV-8	-32.30	0.07	0.00	0.82	1.33	1.33
P-15	J-13	J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14	J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12	J-16	24.09	2.12	0.00	1.09	3.13	3.13
P-18	J-16	J-17	2.13	0.10	0.00	0.22	0.25	0.25
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townswtr								
P-19	J-19	I-AV-1	46.34	1.35	0.00	2.10	10.52	10.52
P-20	J-11	J-19	16.61	0.33	0.00	0.75	1.57	1.57
P-21	I-AV-9	J-32	-62.81	0.53	0.00	2.85	18.48	18.48
P-22	J-18	J-20	45.59	1.44	0.00	2.07	10.21	10.21
P-23	J-20	I-AV-2	-44.61	0.15	0.00	2.02	9.81	9.81
P-24	J-20	I-AV-3	89.48	0.17	0.00	2.28	8.77	8.77
P-25	J-23	J-24	-9.63	0.05	0.00	0.44	0.57	0.57
P-26	J-24	J-27	-11.06	0.23	0.00	0.50	0.74	0.74
P-27	J-21	I-AV-4	82.83	6.76	0.00	2.11	7.60	7.60
P-28	J-27	J-25	-17.62	0.84	0.00	0.80	1.75	1.75
P-29	J-29	J-28	-36.08	1.39	0.00	1.64	6.62	6.62
P-30	J-27	J-26	2.84	0.02	0.00	0.13	0.06	0.06
P-31	J-25	J-28	-23.11	0.88	0.00	1.05	2.90	2.90
P-32	J-25	J-30	2.20	0.00	0.00	0.10	0.04	0.04
P-33	J-31	I-AV-5	-168.72	1.46	0.00	4.31	28.38	28.38
P-34	J-35	J-34	-72.99	1.61	0.00	1.86	6.01	6.01
P-35	J-28	O-AV-9	-62.81	4.42	0.00	2.85	18.48	18.48
P-36	J-32	J-54	-63.16	0.94	0.00	2.87	18.67	18.67
P-37	J-35	J-33	71.29	1.02	0.00	1.82	5.76	5.76
P-38	R-1	J-49	-379.44	68.79	0.00	17.22	516.81	516.81
P-39	J-33	J-37	78.15	5.94	0.00	2.00	6.82	6.82
P-40	J-49	I-AV-12	-132.17	7.99	0.00	6.00	73.30	73.30
P-41	J-2	J-9	41.33	4.47	0.00	1.88	8.51	8.51
P-42	J-45	J-60	87.05	13.42	0.00	3.95	33.82	33.82
P-43	J-47	J-46	82.90	8.28	0.00	3.76	30.90	30.90
P-44	J-36	J-41	-34.82	1.13	0.00	1.58	6.20	6.20
P-45	J-44	J-36	-32.90	1.93	0.00	1.49	5.58	5.58
P-46	J-43	J-45	-12.15	0.24	0.00	0.55	0.88	0.88
P-47	J-38	J-45	104.66	21.76	0.00	4.75	47.57	47.57
P-48	J-31	J-49	250.02	62.01	0.00	11.35	238.67	238.67
P-49	J-46	J-44	-55.53	9.55	0.00	2.52	14.71	14.71
P-50	J-44	J-50	-26.79	0.58	0.00	1.22	3.81	3.81
P-51	J-41	J-51	-44.54	3.34	0.00	2.02	9.78	9.78
P-52	J-41	J-40	7.60	0.02	0.00	0.35	0.37	0.37
P-53	J-40	J-52	6.97	0.03	0.00	0.32	0.32	0.32
P-54	J-52	J-42	-25.36	0.66	0.00	1.15	3.45	3.45
P-55	J-42	J-48	-27.63	1.76	0.00	1.25	4.04	4.04
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	-29.29	2.42	0.00	1.33	4.50	4.50
P-58	J-54	I-AV-10	81.32	0.38	0.00	2.08	7.35	7.35
P-59	J-55	J-56	40.95	3.18	0.00	1.86	8.37	8.37
P-60	J-56	J-12	38.31	2.58	0.00	1.74	7.40	7.40
P-61	J-1	I-AV-11	74.37	1.15	0.00	1.90	6.23	6.23
P-62	J-58	J-5	43.16	7.65	0.00	1.96	9.22	9.22
P-63	J-59	J-8	11.49	0.84	0.00	0.52	0.80	0.80
P-64	J-60	J-47	84.70	6.90	0.00	3.84	32.15	32.15
P-65	J-61	I-AV-13	-132.49	1.64	0.00	6.01	73.63	73.63
P-66	J-62	J-19	35.61	1.85	0.00	0.91	1.59	1.59
P-67	O-AV-1	J-18	46.34	0.29	0.00	2.10	10.52	10.52
P-68	VP-1	J-22	26.25	0.00	0.00	0.30	0.13	0.13
P-69	O-AV-2	J-23	-44.61	2.91	0.00	2.02	9.81	9.81
P-70	O-AV-3	J-21	89.48	3.13	0.00	2.28	8.77	8.77
P-71	O-AV-4	J-31	82.83	0.33	0.00	2.11	7.60	7.60
P-72	O-AV-5	J-30	-168.72	11.01	0.00	4.31	28.38	28.38
P-73	O-AV-6	J-55	44.53	2.98	0.00	2.02	9.77	9.77
P-74	O-AV-7	J-10	63.47	0.86	0.00	2.88	18.84	18.84
P-75	I-AV-8	J-13	-32.30	0.22	0.00	0.82	1.33	1.33
P-76	O-AV-10	J-1	81.32	7.69	0.00	2.08	7.35	7.35
P-77	O-AV-11	J-34	74.37	0.45	0.00	1.90	6.23	6.23
P-78	O-AV-12	J-61	-132.17	1.55	0.00	6.00	73.30	73.30
P-79	O-AV-13	J-39	-132.49	2.61	0.00	6.01	73.63	73.63
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-81	J-22	J-66	26.25	0.01	0.00	0.67	0.90	0.90
P-82	J-64	J-57	118.46	0.61	0.00	3.02	14.74	14.74
P-83	J-64	J-65	-26.25	0.06	0.00	1.19	3.67	3.67
P-84	J-66	I-AV-14	26.25	0.01	0.00	0.67	0.90	0.90
P-85	O-AV-14	J-65	26.25	0.02	0.00	0.67	0.90	0.90
P-86	J-16	J-11	17.38	0.14	0.00	0.44	0.23	0.23
P-87	J-23	J-26	-37.43	0.26	0.00	0.96	0.93	0.93
P-88	J-26	J-29	-35.43	0.35	0.00	0.90	0.84	0.84
P-89	J-30	J-38	-168.87	15.38	0.00	7.66	61.73	61.73
P-90	J-37	J-51	74.98	6.24	0.00	3.40	13.72	13.72
P-91	J-51	J-48	29.21	0.97	0.00	1.33	2.39	2.39
P-92	J-43	J-33	10.67	0.23	0.00	0.48	0.37	0.37
P-93	R-1	O-Pump-1	420.76	3.69	0.00	10.74	93.72	93.72
P-94	J-39	J-46	-134.03	24.66	0.00	6.08	75.22	75.22
P-95	I-Pump-1	J-38	420.76	61.79	0.00	10.74	113.91	113.91
P-97	J-38	J-54	144.78	7.98	0.00	3.70	15.79	15.79
~@AV-1	I-AV-1	O-AV-1	46.34	0.00	0.29	0.00*****	0.00	0.00
~@AV-2	I-AV-2	O-AV-2	-44.61	0.00	0.27	0.00*****	0.00	0.00
~@AV-3	I-AV-3	O-AV-3	89.48	0.00	1.09	0.00*****	0.00	0.00
~@AV-4	I-AV-4	O-AV-4	82.83	0.00	1.10	0.00*****	0.00	0.00
~@AV-5	I-AV-5	O-AV-5	-168.72	0.00	4.56	0.01*****	0.00	0.00
~@AV-6	I-AV-6	O-AV-6	44.53	0.00	0.27	0.00*****	0.00	0.00

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TOWNSHIP												
~@AV-7	I-AV-7	O-AV-7	63.47	0.00	0.55	0.00*****	0.00					
~@AV-8	I-AV-8	O-AV-8	32.30	0.00	0.14	0.00*****	0.00					
~@AV-9	I-AV-9	O-AV-9	62.81	0.00	0.63	0.00*****	0.00					
~@AV-10	I-AV-10	O-AV-10	81.32	0.00	1.06	0.00*****	0.00					
~@AV-11	I-AV-11	O-AV-11	74.37	0.00	0.89	0.00*****	0.00					
~@AV-12	I-AV-12	O-AV-12	-132.17	0.00	2.80	0.01*****	0.00					
~@AV-13	I-AV-13	O-AV-13	-132.49	0.00	2.81	0.01*****	0.00					
~@AV-14-CV	I-AV-14	O-AV-14	26.25	0.00	0.09	0.00*****	0.00					

PUMP/LOSS ELEMENT RESULTS												
NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFICI- ENCY %	USEFUL POWER Hp	INCREMENTAL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	118.68	0.00	151.18	151.2	75.00	5.	0.2	0.2	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	151.38	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000

NODE RESULTS						
NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
O-AV-1		0.00	2963.11	2826.10	137.01	59.37
O-AV-2		0.00	2961.80	2822.30	139.50	60.45
I-AV-3		0.00	2961.21	2822.30	138.91	60.20
O-AV-4		0.00	2949.12	2816.70	132.42	57.38
O-AV-5		0.00	2954.81	2816.90	137.91	59.76
I-AV-6		0.00	2976.35	2854.00	122.35	53.02
O-AV-7		0.00	2978.62	2841.90	136.72	59.25
O-AV-8		0.00	2967.42	2849.50	117.92	51.10
I-AV-9		0.00	2971.76	2857.40	114.36	49.56
O-AV-10		0.00	2971.79	2856.80	114.99	49.83
O-AV-11		0.00	2962.06	2863.20	98.86	42.84
O-AV-12		0.00	2897.58	2819.50	78.08	33.83
O-AV-13		0.00	2903.58	2820.00	83.58	36.22
O-AV-14		0.00	2993.26	2842.00	151.26	65.54
J-1		6.95	2964.10	2846.60	117.50	50.91
J-2		2.86	2972.96	2839.20	133.76	57.96
J-3		0.22	2988.50	2827.10	161.40	69.94
J-4		1.73	2975.28	2836.00	139.28	60.35
J-5		4.51	2979.86	2849.60	130.26	56.45
J-6		1.92	2980.19	2833.90	146.29	63.39
J-7		2.50	2988.50	2833.40	155.10	67.21
J-8		5.61	2976.74	2854.50	122.24	52.97
J-9		3.16	2968.49	2839.00	129.49	56.11
J-10		1.76	2977.76	2843.90	133.86	58.01
J-11		0.77	2965.09	2815.00	150.09	65.04
J-12		5.40	2967.35	2849.80	117.55	50.94
J-13		1.96	2967.78	2848.00	119.78	51.91
J-14		1.90	2967.77	2842.80	124.97	54.15
J-15		1.19	2967.77	2822.90	144.87	62.77
J-16		4.59	2965.23	2822.30	142.93	61.94
J-17		2.13	2965.13	2813.20	151.93	65.84
J-18		0.75	2962.82	2826.10	136.72	59.25
J-19		5.88	2964.76	2819.70	145.06	62.86
J-20		0.72	2961.38	2822.30	139.08	60.27
J-21		6.65	2956.99	2808.40	148.59	64.39
J-22		0.00	2993.38	2842.00	151.38	65.60
J-23		2.45	2964.71	2840.00	124.71	54.04
J-24		1.42	2964.76	2839.20	125.56	54.41
J-25		3.29	2965.83	2852.00	113.83	49.33
J-26		0.85	2964.97	2866.30	98.67	42.76
J-27		3.71	2964.99	2852.70	112.29	48.66
J-28		3.62	2966.71	2867.30	99.41	43.08
J-29		0.65	2965.32	2870.80	94.52	40.96
J-30		2.36	2965.83	2857.70	108.13	46.85
J-31		1.53	2948.80	2816.80	132.00	57.20
J-32		0.36	2972.29	2857.10	115.19	49.91
J-33		3.81	2958.98	2853.90	105.08	45.53
J-34		1.38	2961.61	2863.70	97.91	42.43
J-35		1.70	2960.00	2862.40	97.60	42.29
J-36		1.91	2942.34	2826.40	115.94	50.24
J-37		3.17	2953.04	2842.20	110.84	48.03
J-38		2.45	2981.21	2839.70	141.51	61.32
J-39		1.54	2906.19	2818.00	88.19	38.22

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J-40	0.63	2943.44	2819.50	123.94	53.71	
J-41	2.12	2943.46	2823.40	120.06	52.03	
J-42	2.27	2944.06	2810.90	133.16	57.70	
J-43	1.48	2959.21	2846.00	113.21	49.06	
J-44	4.17	2940.40	2831.40	109.00	47.23	
J-45	5.46	2959.45	2841.40	118.05	51.15	
J-46	4.40	2930.85	2818.20	112.65	48.81	
J-47	1.79	2939.12	2843.20	95.92	41.57	
J-48	1.58	2945.82	2818.80	127.02	55.04	
J-49	2.75	2886.79	2820.00	66.79	28.94	
J-50	2.50	2940.99	2818.80	122.19	52.95	
J-51	1.23	2946.80	2836.50	110.30	47.80	
J-52	3.04	2943.40	2815.90	127.50	55.25	
J-53	0.82	2968.49	2836.00	132.49	57.41	
J-54	0.29	2973.23	2857.00	116.23	50.37	
J-55	3.58	2973.10	2853.80	119.30	51.70	
J-56	2.64	2969.93	2842.60	127.33	55.18	
J-57	2.55	2992.57	2841.90	150.67	65.29	
J-58	4.65	2987.51	2857.90	129.61	56.17	
J-59	4.30	2977.58	2848.80	128.78	55.80	
J-60	2.36	2946.02	2852.50	93.52	40.53	
J-61	0.31	2899.12	2820.00	79.12	34.29	
J-62	5.51	2966.61	2857.60	109.01	47.24	
J-64	0.22	2993.18	2842.20	150.98	65.43	
J-65	0.00	2993.24	2842.00	151.24	65.54	
J-66	0.00	2993.36	2842.00	151.36	65.59	
I-Pump-1	0.00	3043.00	2812.00	231.00	100.10	
R-1	----	2818.00	2810.00	8.00	3.47	
VP-1	----	2993.38	2842.20	151.18	65.51	
VP-2	----	2993.38	2842.00	151.38	65.60	
I-AV-1	0.00	2963.41	2826.10	137.31	59.50	
I-AV-2	0.00	2961.53	2822.30	139.23	60.33	
O-AV-3	0.00	2960.12	2822.30	137.82	59.72	
I-AV-4	0.00	2950.22	2816.70	133.52	57.86	
I-AV-5	0.00	2950.25	2816.90	133.35	57.79	
O-AV-6	0.00	2976.08	2854.00	122.08	52.90	
I-AV-7	0.00	2979.17	2841.90	137.27	59.48	
I-AV-8	0.00	2967.56	2849.50	118.06	51.16	
O-AV-9	0.00	2971.13	2857.40	113.73	49.28	
I-AV-10	0.00	2972.85	2856.80	116.05	50.29	
I-AV-11	0.00	2962.95	2863.20	99.75	43.22	
I-AV-12	0.00	2894.78	2819.50	75.28	32.62	
I-AV-13	0.00	2900.77	2820.00	80.77	35.00	
I-AV-14	0.00	2993.35	2842.00	151.35	65.59	
O-Pump-1	----	2814.31	2812.00	2.31	1.00	

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
I-Pump-1	100.10	O-Pump-1	1.00
J-3	69.94	R-1	3.47
J-7	67.21	J-49	28.94
J-17	65.84	I-AV-12	32.62
J-22	65.60	O-AV-12	33.83

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-38	17.22	P-2	0.01
P-48	11.35	P-56	0.02
P-95	10.74	P-16	0.05
P-93	10.74	P-32	0.10
P-89	7.66	P-30	0.13

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-38	516.81	P-2	0.00
P-48	238.67	P-56	0.00
P-95	113.91	P-16	0.01

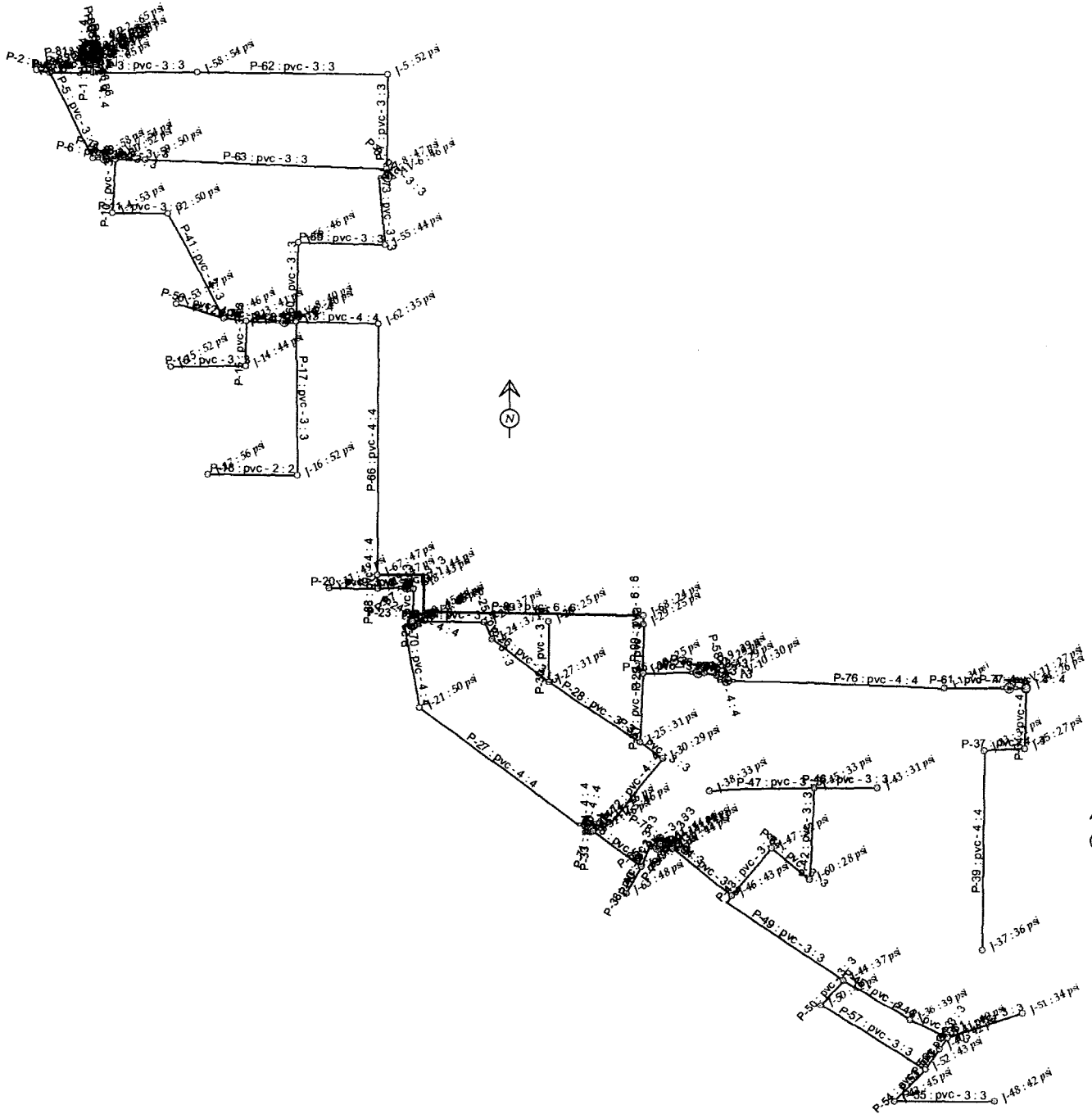
				townswtr		
P-93	93.72	P-32	0.04			
P-94	75.22	P-30	0.06			
H L / 1 0 0 0						
PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)			
P-38	516.81	P-2	0.00			
P-48	238.67	P-56	0.00			
P-95	113.91	P-16	0.01			
P-93	93.72	P-32	0.04			
P-94	75.22	P-30	0.06			
REGULATING VALVE REPORT						
VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
Pump-1	PRV-2	1.00	ACTIVATED	100.10	1.00	-420.76
SUMMARY OF INFLOWS AND OUTFLOWS						
(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES						
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES						
NODE NAME	FLOWRATE gpm	NODE TITLE				
R-1	41.32					
VP-1	118.68					
NET SYSTEM INFLOW = 160.00						
NET SYSTEM OUTFLOW = 0.00						
NET SYSTEM DEMAND = 160.00						
Total Power Cost						

TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.23						

***** HYDRAULIC ANALYSIS COMPLETED *****						

Pipe2010 Analysis Report

 **KYPipe**
PIPE2012



***** KYPIPE *****
 *
 * Pipe Network Modeling Software *
 *
 * Copyrighted by KYPIPE LLC (www.kypipe.com) *
 * Version: 10.009 10/01/2019 *
 * Company: GEENGPA Serial #: 580207 *
 * Interface: Kynetic *
 * Licensed for Pipe2020 *
 *

Date & Time: Thu Jun 18 15:57:12 2020

Master File : c:\sds\proj\2027-towns water\townswtr.kyp\townswt6totoh.KYP\townswt6totoh.P2K

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1 #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-1	VP-1 J-64	14.20	4.00	107.0000	0.00
P-2	J-3 J-7	59.30	3.00	107.0000	0.00
P-3	J-57 J-58	453.90	3.00	107.0000	0.00
P-4	J-57 J-7	189.50	3.00	107.0000	0.00
P-5	J-7 J-6	417.80	3.00	107.0000	0.00
P-6	J-6 I-AV-7	53.90	3.00	107.0000	0.00
P-7	J-8 J-5	415.60	3.00	107.0000	0.00
P-8	J-8 I-AV-6	39.50	3.00	107.0000	0.00
P-9	J-10 J-59	131.20	3.00	107.0000	0.00
P-10	J-10 J-4	240.00	3.00	107.0000	0.00
P-11	J-4 J-2	240.80	3.00	107.0000	0.00
P-12	J-13 J-9	100.50	3.00	107.0000	0.00
P-13	J-12 J-62	356.00	4.00	107.0000	0.00
P-14	J-12 O-AV-8	52.30	4.00	107.0000	0.00
P-15	J-13 J-14	196.70	3.00	107.0000	0.00
P-16	J-14 J-15	327.70	3.00	107.0000	0.00
P-17	J-12 J-16	676.30	3.00	107.0000	0.00
P-18	J-16 J-17	391.00	2.00	107.0000	0.00
P-19	J-19 I-AV-1	128.30	3.00	107.0000	0.00
P-20	J-11 J-19	211.50	3.00	107.0000	0.00
P-21	I-AV-9 J-32	28.50	3.00	107.0000	0.00
P-22	J-18 J-20	141.00	3.00	107.0000	0.00
P-23	J-20 I-AV-2	15.10	3.00	107.0000	0.00
P-24	J-20 I-AV-3	19.10	4.00	107.0000	0.00
P-25	J-23 J-24	83.10	3.00	107.0000	0.00
P-26	J-24 J-27	309.80	3.00	107.0000	0.00
P-27	J-21 I-AV-4	890.10	4.00	107.0000	0.00
P-28	J-27 J-25	480.70	3.00	107.0000	0.00
P-29	J-29 J-28	210.50	3.00	107.0000	0.00
P-30	J-27 J-26	261.90	3.00	107.0000	0.00
P-31	J-25 J-28	304.50	3.00	107.0000	0.00
P-32	J-25 J-30	120.50	3.00	107.0000	0.00
P-33	J-31 I-AV-5	51.30	4.00	107.0000	0.00
P-34	J-35 J-34	267.70	4.00	107.0000	0.00
P-35	J-28 O-AV-9	239.00	3.00	107.0000	0.00
P-36	J-32 J-54	54.50	3.00	107.0000	0.00
P-37	J-35 J-33	177.30	4.00	107.0000	0.00
P-38	J-63 J-49	134.50	3.00	107.0000	0.00
P-39	J-33 J-37	870.30	4.00	107.0000	0.00
P-40	J-49 I-AV-12	109.00	3.00	107.0000	0.00
P-41	J-2 J-9	524.80	3.00	107.0000	0.00
P-42	J-45 J-60	396.90	3.00	107.0000	0.00
P-43	J-47 J-46	267.80	3.00	107.0000	0.00
P-44	J-36 J-41	101.70	3.00	107.0000	0.00

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P-45	J-44	J-36	346.50	3.00	107.0000	0.00
P-46	J-43	J-45	274.40	3.00	107.0000	0.00
P-47	J-38	J-45	457.40	3.00	107.0000	0.00
P-48	J-31	J-49	259.80	3.00	107.0000	0.00
P-49	J-46	J-44	649.50	3.00	107.0000	0.00
P-50	J-44	J-50	153.30	3.00	107.0000	0.00
P-51	J-41	J-51	341.10	3.00	107.0000	0.00
P-52	J-41	J-40	62.60	3.00	107.0000	0.00
P-53	J-40	J-52	110.90	3.00	107.0000	0.00
P-54	J-52	J-42	191.60	3.00	107.0000	0.00
P-55	J-42	J-48	435.50	3.00	107.0000	0.00
P-56	J-9	J-53	214.50	4.00	107.0000	0.00
P-57	J-50	J-52	537.30	3.00	107.0000	0.00
P-58	J-54	I-AV-10	49.60	4.00	107.0000	0.00
P-59	J-55	J-56	379.60	3.00	107.0000	0.00
P-60	J-56	J-12	348.50	3.00	107.0000	0.00
P-61	J-1	I-AV-11	275.10	4.00	107.0000	0.00
P-62	J-58	J-5	829.10	3.00	107.0000	0.00
P-63	J-59	J-8	1052.30	3.00	107.0000	0.00
P-64	J-60	J-47	214.60	3.00	107.0000	0.00
P-65	J-61	I-AV-13	22.30	3.00	107.0000	0.00
P-66	J-62	J-67	1104.10	4.00	107.0000	0.00
P-67	O-AV-1	J-18	27.90	3.00	107.0000	0.00
P-68	VP-1	J-22	17.40	6.00	107.0000	0.00
P-69	O-AV-2	J-23	296.60	3.00	107.0000	0.00
P-70	O-AV-3	J-21	357.50	4.00	107.0000	0.00
P-71	O-AV-4	J-31	43.00	4.00	107.0000	0.00
P-72	O-AV-5	J-30	388.10	4.00	107.0000	0.00
P-73	O-AV-6	J-55	304.60	3.00	107.0000	0.00
P-74	O-AV-7	J-10	45.50	3.00	107.0000	0.00
P-75	I-AV-8	J-13	165.60	4.00	107.0000	0.00
P-76	O-AV-10	J-1	956.80	4.00	107.0000	0.00
P-77	O-AV-11	J-34	72.30	4.00	107.0000	0.00
P-78	O-AV-12	J-61	21.10	3.00	107.0000	0.00
P-79	O-AV-13	J-39	35.50	3.00	107.0000	0.00
P-80	VP-2	J-22	34.20	6.00	150.0000	0.00
P-81	J-22	J-66	33.60	4.00	107.0000	0.00
P-82	J-64	J-57	41.40	4.00	107.0000	0.00
P-83	J-64	J-65	22.20	3.00	107.0000	0.00
P-84	J-66	I-AV-14	17.00	4.00	107.0000	0.00
P-85	O-AV-14	J-65	18.30	4.00	107.0000	0.00
P-88	J-67	J-19	61.10	4.00	107.0000	0.00
P-89	J-67	J-68	1320.40	6.00	150.0000	0.00
P-90	J-29	J-68	39.80	4.00	107.0000	0.00
P-94	J-39	J-46	327.80	3.00	107.0000	0.00

PUMP/LOSS ELEMENT DATA

THERE IS A DEVICE AT NODE VP-1 DESCRIBED BY THE FOLLOWING DATA: (ID= 3)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
152.31	0.00	75.00
151.15	120.00	75.00
148.14	240.00	75.00

THERE IS A DEVICE AT NODE VP-2 DESCRIBED BY THE FOLLOWING DATA: (ID= 4)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
115.38	0.00	75.00
114.23	140.00	75.00
111.22	280.00	75.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
O-AV-1		0.00	2826.10	
O-AV-2		0.00	2822.30	
I-AV-3		0.00	2822.30	
O-AV-4		0.00	2816.70	
O-AV-5		0.00	2816.90	
I-AV-6		0.00	2854.00	
O-AV-7		0.00	2841.90	

townswtr			
O-AV-8	0.00	2849.50	
I-AV-9	0.00	2857.40	
O-AV-10	0.00	2856.80	
O-AV-11	0.00	2863.20	
O-AV-12	0.00	2819.50	
O-AV-13	0.00	2820.00	
O-AV-14	0.00	2842.00	
J-1	6.95	2846.60	
J-2	2.86	2839.20	
J-3	0.22	2827.10	
J-4	1.73	2836.00	
J-5	4.51	2849.60	
J-6	1.92	2833.90	
J-7	2.50	2833.40	
J-8	5.61	2854.50	
J-9	3.16	2839.00	
J-10	1.76	2843.90	
J-11	0.77	2815.00	
J-12	5.40	2849.80	
J-13	1.96	2848.00	
J-14	1.90	2842.80	
J-15	1.19	2822.90	
J-16	4.59	2822.30	
J-17	2.13	2813.20	
J-18	0.75	2826.10	
J-19	1.90	2819.70	
J-20	0.72	2822.30	
J-21	6.65	2808.40	
J-22	0.00	2842.00	
J-23	2.45	2840.00	
J-24	1.42	2839.20	
J-25	3.29	2852.00	
J-26	0.85	2866.30	
J-27	3.71	2852.70	
J-28	3.62	2867.30	
J-29	0.65	2870.80	
J-30	2.36	2857.70	
J-31	1.53	2816.80	
J-32	0.36	2857.10	
J-33	3.81	2853.90	
J-34	1.38	2863.70	
J-35	1.70	2862.40	
J-36	1.91	2826.40	
J-37	3.17	2842.20	
J-38	2.45	2839.70	
J-39	1.54	2818.00	
J-40	0.63	2819.50	
J-41	2.12	2823.40	
J-42	2.27	2810.90	
J-43	1.48	2846.00	
J-44	4.17	2831.40	
J-45	5.46	2841.40	
J-46	4.40	2818.20	
J-47	1.79	2843.20	
J-48	1.58	2818.80	
J-49	2.04	2820.00	
J-50	2.50	2818.80	
J-51	1.23	2836.50	
J-52	3.04	2815.90	
J-53	0.82	2836.00	
J-54	0.29	2857.00	
J-55	3.58	2853.80	
J-56	2.64	2842.60	
J-57	2.55	2841.90	
J-58	4.65	2857.90	
J-59	4.30	2848.80	
J-60	2.36	2852.50	
J-61	0.31	2820.00	
J-62	5.27	2857.60	
J-63	0.71	2810.00	
J-64	0.22	2842.20	
J-65	0.00	2842.00	
J-66	0.00	2842.00	
J-67	4.22	2820.00	
J-68	0.00	2871.00	
VP-1	----	2842.20	2842.20
VP-2	----	2842.00	2842.00
I-AV-1	0.00	2826.10	
I-AV-2	0.00	2822.30	
O-AV-3	0.00	2822.30	
I-AV-4	0.00	2816.70	
I-AV-5	0.00	2816.90	
O-AV-6	0.00	2854.00	
I-AV-7	0.00	2841.90	
Pipe2010 Analysis Report			
<3>			

I-AV-8	0.00	2849.50
O-AV-9	0.00	2857.40
I-AV-10	0.00	2856.80
I-AV-11	0.00	2863.20
I-AV-12	0.00	2819.50
I-AV-13	0.00	2820.00
I-AV-14	0.00	2842.00

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

MAXIMUM AND MINIMUM PRESSURES	=	5
MAXIMUM AND MINIMUM VELOCITIES	=	5
MAXIMUM AND MINIMUM HEAD LOSS/1000	=	5

SYSTEM CONFIGURATION

NUMBER OF PIPES	(P) =	89
NUMBER OF END NODES	(J) =	82
NUMBER OF PRIMARY LOOPS	(L) =	6
NUMBER OF SUPPLY NODES	(F) =	2
NUMBER OF SUPPLY ZONES	(Z) =	1

Case: 0

RESULTS OBTAINED AFTER 45 TRIALS: ACCURACY = 0.67807E-05

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS #1 #2	FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
P-1	VP-1 J-64	132.72	0.26	0.00	3.39	18.20	18.20
P-2	J-3 J-7	-0.22	0.00	0.00	0.01	0.00	0.00
P-3	J-57 J-58	64.26	8.75	0.00	2.92	19.28	19.28
P-4	J-57 J-7	92.98	7.24	0.00	4.22	38.21	38.21
P-5	J-7 J-6	90.26	15.11	0.00	4.10	36.17	36.17
P-6	J-6 I-AV-7	88.34	1.87	0.00	4.01	34.76	34.76
P-7	J-8 J-5	-55.09	6.02	0.00	2.50	14.50	14.50
P-8	J-8 I-AV-6	65.30	0.78	0.00	2.96	19.86	19.86
P-9	J-10 J-59	20.11	0.29	0.00	0.91	2.24	2.24
P-10	J-10 J-4	66.47	4.93	0.00	3.02	20.52	20.52
P-11	J-4 J-2	64.74	4.71	0.00	2.94	19.54	19.54
P-12	J-13 J-9	-57.90	1.60	0.00	2.63	15.89	15.89
P-13	J-12 J-62	99.82	3.82	0.00	2.55	10.74	10.74
P-14	J-12 O-AV-8	-52.85	0.17	0.00	1.35	3.31	3.31
P-15	J-13 J-14	3.09	0.01	0.00	0.14	0.07	0.07
P-16	J-14 J-15	1.19	0.00	0.00	0.05	0.01	0.01
P-17	J-12 J-16	6.71	0.20	0.00	0.30	0.29	0.29
P-18	J-16 J-17	2.13	0.10	0.00	0.22	0.25	0.25
P-19	J-19 I-AV-1	41.81	1.12	0.00	1.90	8.70	8.70
P-20	J-11 J-19	-0.77	0.00	0.00	0.03	0.01	0.01
P-21	I-AV-9 J-32	17.66	0.05	0.00	0.80	1.76	1.76
P-22	J-18 J-20	41.06	1.19	0.00	1.86	8.41	8.41
P-23	J-20 I-AV-2	11.70	0.01	0.00	0.53	0.82	0.82
P-24	J-20 I-AV-3	28.64	0.02	0.00	0.73	1.06	1.06
P-25	J-23 J-24	9.25	0.04	0.00	0.42	0.53	0.53
P-26	J-24 J-27	7.82	0.12	0.00	0.36	0.39	0.39
P-27	J-21 I-AV-4	22.00	0.58	0.00	0.56	0.65	0.65
P-28	J-27 J-25	3.26	0.04	0.00	0.15	0.08	0.08
P-29	J-29 J-28	45.20	2.12	0.00	2.05	10.05	10.05
P-30	J-27 J-26	0.85	0.00	0.00	0.04	0.01	0.01
P-31	J-25 J-28	-23.92	0.94	0.00	1.09	3.09	3.09
P-32	J-25 J-30	23.89	0.37	0.00	1.08	3.08	3.08
P-33	J-31 I-AV-5	-21.53	0.03	0.00	0.55	0.63	0.63
P-34	J-35 J-34	-8.68	0.03	0.00	0.22	0.12	0.12
P-35	J-28 O-AV-9	17.66	0.42	0.00	0.80	1.76	1.76

townswtr								
P-36	J-32	J-54	17.31	0.09	0.00	0.79	1.70	1.70
P-37	J-35	J-33	6.98	0.01	0.00	0.18	0.08	0.08
P-38	J-63	J-49	-0.71	0.00	0.00	0.03	0.00	0.00
P-39	J-33	J-37	3.17	0.02	0.00	0.08	0.02	0.02
P-40	J-49	I-AV-12	39.24	0.84	0.00	1.78	7.73	7.73
P-41	J-2	J-9	61.88	9.43	0.00	2.81	17.98	17.98
P-42	J-45	J-60	-9.38	0.22	0.00	0.43	0.55	0.55
P-43	J-47	J-46	-13.53	0.29	0.00	0.61	1.08	1.08
P-44	J-36	J-41	5.52	0.04	0.00	0.25	0.20	0.20
P-45	J-44	J-36	7.43	0.12	0.00	0.34	0.35	0.35
P-46	J-43	J-45	-1.48	0.00	0.00	0.07	0.02	0.02
P-47	J-38	J-45	-2.45	0.02	0.00	0.11	0.05	0.05
P-48	J-31	J-49	41.99	2.28	0.00	1.91	8.77	8.77
P-49	J-46	J-44	19.46	1.37	0.00	0.88	2.11	2.11
P-50	J-44	J-50	7.86	0.06	0.00	0.36	0.39	0.39
P-51	J-41	J-51	1.23	0.00	0.00	0.06	0.01	0.01
P-52	J-41	J-40	2.17	0.00	0.00	0.10	0.04	0.04
P-53	J-40	J-52	1.54	0.00	0.00	0.07	0.02	0.02
P-54	J-52	J-42	3.85	0.02	0.00	0.17	0.11	0.11
P-55	J-42	J-48	1.58	0.01	0.00	0.07	0.02	0.02
P-56	J-9	J-53	0.82	0.00	0.00	0.02	0.00	0.00
P-57	J-50	J-52	5.36	0.10	0.00	0.24	0.19	0.19
P-58	J-54	I-AV-10	17.01	0.02	0.00	0.43	0.41	0.41
P-59	J-55	J-56	61.72	6.79	0.00	2.80	17.89	17.89
P-60	J-56	J-12	59.08	5.75	0.00	2.68	16.50	16.50
P-61	J-1	I-AV-11	10.06	0.04	0.00	0.26	0.15	0.15
P-62	J-58	J-5	59.60	13.91	0.00	2.71	16.77	16.77
P-63	J-59	J-8	15.82	1.51	0.00	0.72	1.44	1.44
P-64	J-60	J-47	-11.74	0.18	0.00	0.53	0.83	0.83
P-65	J-61	I-AV-13	38.93	0.17	0.00	1.77	7.62	7.62
P-66	J-62	J-67	94.55	10.72	0.00	2.41	9.71	9.71
P-67	O-AV-1	J-18	41.81	0.24	0.00	1.90	8.70	8.70
P-68	VP-1	J-22	27.28	0.00	0.00	0.31	0.13	0.13
P-69	O-AV-2	J-23	11.70	0.24	0.00	0.53	0.82	0.82
P-70	O-AV-3	J-21	28.64	0.38	0.00	0.73	1.06	1.06
P-71	O-AV-4	J-31	22.00	0.03	0.00	0.56	0.65	0.65
P-72	O-AV-5	J-30	-21.53	0.24	0.00	0.55	0.63	0.63
P-73	O-AV-6	J-55	65.30	6.05	0.00	2.96	19.86	19.86
P-74	O-AV-7	J-10	88.34	1.58	0.00	4.01	34.76	34.76
P-75	I-AV-8	J-13	-52.85	0.55	0.00	1.35	3.31	3.31
P-76	O-AV-10	J-1	17.01	0.39	0.00	0.43	0.41	0.41
P-77	O-AV-11	J-34	10.06	0.01	0.00	0.26	0.15	0.15
P-78	O-AV-12	J-61	39.24	0.16	0.00	1.78	7.73	7.73
P-79	O-AV-13	J-39	38.93	0.27	0.00	1.77	7.62	7.62
P-80	VP-2	J-22	0.00	0.00	0.00	0.00	0.00	0.00
P-81	J-22	J-66	27.28	0.03	0.00	0.70	0.97	0.97
P-82	J-64	J-57	159.78	1.06	0.00	4.08	25.66	25.66
P-83	J-64	J-65	-27.28	0.09	0.00	1.24	3.94	3.94
P-84	J-66	I-AV-14	27.28	0.02	0.00	0.70	0.97	0.97
P-85	O-AV-14	J-65	27.28	0.02	0.00	0.70	0.97	0.97
P-88	J-67	J-19	44.48	0.15	0.00	1.14	2.40	2.40
P-89	J-67	J-68	45.85	0.25	0.00	0.52	0.19	0.19
P-90	J-29	J-68	-45.85	0.10	0.00	1.17	2.54	2.54
P-94	J-39	J-46	37.38	2.32	0.00	1.70	7.07	7.07
~@AV-1	I-AV-1	O-AV-1	41.81	0.00	0.24	0.00*****	0.00	0.00
~@AV-2	I-AV-2	O-AV-2	11.70	0.00	0.02	0.00*****	0.00	0.00
~@AV-3	I-AV-3	O-AV-3	28.64	0.00	0.11	0.00*****	0.00	0.00
~@AV-4	I-AV-4	O-AV-4	22.00	0.00	0.08	0.00*****	0.00	0.00
~@AV-5	I-AV-5	O-AV-5	-21.53	0.00	0.07	0.00*****	0.00	0.00
~@AV-6	I-AV-6	O-AV-6	65.30	0.00	0.58	0.00*****	0.00	0.00
~@AV-7	I-AV-7	O-AV-7	88.34	0.00	1.07	0.00*****	0.00	0.00
~@AV-8	I-AV-8	O-AV-8	52.85	0.00	0.38	0.00*****	0.00	0.00
~@AV-9	I-AV-9	O-AV-9	-17.66	0.00	0.05	0.00*****	0.00	0.00
~@AV-10	I-AV-10	O-AV-10	17.01	0.00	0.05	0.00*****	0.00	0.00
~@AV-11	I-AV-11	O-AV-11	10.06	0.00	0.02	0.00*****	0.00	0.00
~@AV-12	I-AV-12	O-AV-12	39.24	0.00	0.25	0.00*****	0.00	0.00
~@AV-13	I-AV-13	O-AV-13	38.93	0.00	0.24	0.00*****	0.00	0.00
~@AV-14-CV	I-AV-14	O-AV-14	27.28	0.00	0.10	0.00*****	0.00	0.00

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFICI- ENCY %	USEFUL POWER Hp	INCREMENTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft	Case
VP-1	160.00	0.00	150.34	150.3	75.00	6.	0.3	0.3	**	**	33.2	0.0000
Device "VP-2" is closed												
VP-2	0.00	0.00	150.54	0.0	75.00	0.	0.0	0.0	**	**	33.2	0.0000

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
O-AV-1		0.00	2926.54	2826.10	100.44	43.52
O-AV-2		0.00	2925.08	2822.30	102.78	44.54
I-AV-3		0.00	2925.09	2822.30	102.79	44.54
O-AV-4		0.00	2923.94	2816.70	107.24	46.47
O-AV-5		0.00	2924.02	2816.90	107.12	46.42
I-AV-6		0.00	2961.76	2854.00	107.76	46.69
O-AV-7		0.00	2965.93	2841.90	124.03	53.75
O-AV-8		0.00	2942.76	2849.50	93.26	40.41
I-AV-9		0.00	2925.10	2857.40	67.70	29.34
O-AV-10		0.00	2924.89	2856.80	68.09	29.51
O-AV-11		0.00	2924.45	2863.20	61.25	26.54
O-AV-12		0.00	2920.54	2819.50	101.04	43.79
O-AV-13		0.00	2919.97	2820.00	99.97	43.32
O-AV-14		0.00	2992.39	2842.00	150.39	65.17
J-1		6.95	2924.51	2846.60	77.91	33.76
J-2		2.86	2954.72	2839.20	115.52	50.06
J-3		0.22	2983.98	2827.10	156.88	67.98
J-4		1.73	2959.42	2836.00	123.42	53.48
J-5		4.51	2968.57	2849.60	118.97	51.55
J-6		1.92	2968.87	2833.90	134.97	58.49
J-7		2.50	2983.98	2833.40	150.58	65.25
J-8		5.61	2962.54	2854.50	108.04	46.82
J-9		3.16	2945.28	2839.00	106.28	46.06
J-10		1.76	2964.35	2843.90	120.45	52.19
J-11		0.77	2927.89	2815.00	112.89	48.92
J-12		5.40	2942.58	2849.80	92.78	40.21
J-13		1.96	2943.69	2848.00	95.69	41.46
J-14		1.90	2943.67	2842.80	100.87	43.71
J-15		1.19	2943.67	2822.90	120.77	52.33
J-16		4.59	2942.38	2822.30	120.08	52.04
J-17		2.13	2942.29	2813.20	129.09	55.94
J-18		0.75	2926.30	2826.10	100.20	43.42
J-19		1.90	2927.89	2819.70	108.19	46.88
J-20		0.72	2925.11	2822.30	102.81	44.55
J-21		6.65	2924.60	2808.40	116.20	50.35
J-22		0.00	2992.54	2842.00	150.54	65.23
J-23		2.45	2924.83	2840.00	84.83	36.76
J-24		1.42	2924.79	2839.20	85.59	37.09
J-25		3.29	2924.63	2852.00	72.63	31.47
J-26		0.85	2924.67	2866.30	58.37	25.29
J-27		3.71	2924.67	2852.70	71.97	31.19
J-28		3.62	2925.57	2867.30	58.27	25.25
J-29		0.65	2927.69	2870.80	56.89	24.65
J-30		2.36	2924.26	2857.70	66.56	28.84
J-31		1.53	2923.91	2816.80	107.11	46.41
J-32		0.36	2925.05	2857.10	67.95	29.45
J-33		3.81	2924.39	2853.90	70.49	30.55
J-34		1.38	2924.44	2863.70	60.74	26.32
J-35		1.70	2924.40	2862.40	62.00	26.87
J-36		1.91	2915.89	2826.40	89.49	38.78
J-37		3.17	2924.38	2842.20	82.18	35.61
J-38		2.45	2916.68	2839.70	76.98	33.36
J-39		1.54	2919.70	2818.00	101.70	44.07
J-40		0.63	2915.85	2819.50	96.35	41.75
J-41		2.12	2915.85	2823.40	92.45	40.06
J-42		2.27	2915.83	2810.90	104.93	45.47
J-43		1.48	2916.69	2846.00	70.69	30.63
J-44		4.17	2916.01	2831.40	84.61	36.66
J-45		5.46	2916.70	2841.40	75.30	32.63
J-46		4.40	2917.38	2818.20	99.18	42.98
J-47		1.79	2917.09	2843.20	73.89	32.02
J-48		1.58	2915.82	2818.80	97.02	42.04
J-49		2.04	2921.63	2820.00	101.63	44.04
J-50		2.50	2915.95	2818.80	97.15	42.10
J-51		1.23	2915.85	2836.50	79.35	34.38
J-52		3.04	2915.85	2815.90	99.95	43.31
J-53		0.82	2945.28	2836.00	109.28	47.36
J-54		0.29	2924.96	2857.00	67.96	29.45
J-55		3.58	2955.12	2853.80	101.32	43.91
J-56		2.64	2948.33	2842.60	105.73	45.82
J-57		2.55	2991.22	2841.90	149.32	64.71
J-58		4.65	2982.47	2857.90	124.57	53.98
J-59		4.30	2964.05	2848.80	115.25	49.94
J-60		2.36	2916.91	2852.50	64.41	27.91
J-61		0.31	2920.38	2820.00	100.38	43.50
J-62		5.27	2938.76	2857.60	81.16	35.17
J-63		0.71	2921.63	2810.00	111.63	48.37

townswtr						
J-64	0.22	2992.28	2842.20	150.08	65.04	
J-65	0.00	2992.37	2842.00	150.37	65.16	
J-66	0.00	2992.51	2842.00	150.51	65.22	
J-67	4.22	2928.04	2820.00	108.04	46.82	
J-68	0.00	2927.79	2871.00	56.79	24.61	
VP-1	----	2992.54	2842.20	150.34	65.15	
VP-2	----	2992.54	2842.00	150.54	65.23	
I-AV-1	0.00	2926.78	2826.10	100.68	43.63	
I-AV-2	0.00	2925.10	2822.30	102.80	44.55	
O-AV-3	0.00	2924.98	2822.30	102.68	44.49	
I-AV-4	0.00	2924.02	2816.70	107.32	46.50	
I-AV-5	0.00	2923.94	2816.90	107.04	46.39	
O-AV-6	0.00	2961.17	2854.00	107.17	46.44	
I-AV-7	0.00	2966.99	2841.90	125.09	54.21	
I-AV-8	0.00	2943.14	2849.50	93.64	40.58	
O-AV-9	0.00	2925.15	2857.40	67.75	29.36	
I-AV-10	0.00	2924.94	2856.80	68.14	29.53	
I-AV-11	0.00	2924.46	2863.20	61.26	26.55	
I-AV-12	0.00	2920.79	2819.50	101.29	43.89	
I-AV-13	0.00	2920.21	2820.00	100.21	43.42	
I-AV-14	0.00	2992.49	2842.00	150.49	65.21	

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-3	67.98	J-68	24.61
J-7	65.25	J-29	24.65
J-22	65.23	J-28	25.25
VP-2	65.23	J-26	25.29
J-66	65.22	J-34	26.32

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-4	4.22	P-2	0.01
P-5	4.10	P-56	0.02
P-82	4.08	P-38	0.03
P-74	4.01	P-20	0.03
P-6	4.01	P-30	0.04

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-38	0.00
P-6	34.76	P-20	0.01
P-82	25.66	P-30	0.01

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-4	38.21	P-2	0.00
P-5	36.17	P-56	0.00
P-74	34.76	P-38	0.00
P-6	34.76	P-20	0.01
P-82	25.66	P-30	0.01

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
--------------	-----------------	---------------

VP-1 160.00

NET SYSTEM INFLOW = 160.00
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 160.00

Total Power Cost

TOTAL POWER COST(\$) FOR THIS SIMULATION = 0.30

***** HYDRAULIC ANALYSIS COMPLETED *****

Exhibit B

DAILY PRESSURE READING LOG SHEET

Water System Name Towns Riverview S.

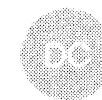
Month June 2020

Date	Address	Time	Pressure Reading	Initial
6/9	5930 Weldon Rd.	5:50 PM	50	DT II
	6145 Waterhole	5:58 PM	54	DT II
	1315 Rolling Hills	6:00 PM	63	DT II
	1320 Trailsend	6:04 PM	70	DT II
6/10	1125 Teardrop	4:45 PM	50	DT II
	5915 Skyline	4:48 PM	40	DT II
	6060 Weldon	4:52 PM	44	DT II
	6067 Waterhole	4:55 PM	45	DT II
6/11	6012 Skyline	4:05 PM	35	DT II
	5930 Weldon	4:09 PM	27	DT II
	1765 Rolling Hills	4:12 PM	35	DT II
	6165 Waterhole	4:16 PM	25	DT II
6/12	6127 Waterhole	4:30 PM	26	DT II
	1095 Ridge Rd.	4:35 PM	25	DT II
	5915 Skyline	4:38 PM	22	DT II
	1135	4:40 PM	21	DT II
6/13	6260	7:30 AM	30	DT II
	1068	7:40 AM	25	DT II
	1235 W Lakeview	7:43 AM	28	DT II
	5910 Weldon	7:58 AM	18	DT II
6/14	5782 Crestview	5:05 PM	22	DT II
	5855 Old Post	5:10 PM	25	DT II
	5908 Weldon	5:15 PM	19	DT II
	1320 Trailsend	5:20 PM	40	DT II

6/15	6060 Weldon	6:23 PM	23	DT II
	6127 Waterhole	6:26 PM	23	DT II
	1135 Rolling Hills	6:29 PM	20	DT II
	1235 Rolling Hills	6:33 PM	35	DT II
	1320 Trailsend	6:35 PM	38	DT II
6/16	590	6:34 PM	19	DT II
	6005 Water	6:39 PM	25	DT II
	6010 Skyline	6:42 PM	18	DT II
6/17	1365 Rolling Hills	6:47 PM	17	DT II
	6060 Weldon Rd.	7:37 PM	34	DT II
	6127 Waterhole	7:39 PM	33	DT II
	1105 Rolling Hills	7:43 PM	32	DT II
6/18	6100 Skyline	9:44 AM	33	DT II
	6012 Skyline	6:12 PM	26	DT II
	6120 Old Post	6:15 PM	30	DT II
	6067 Waterhole	6:19 PM	21	
	6060 Weldon Rd.	6:22 PM	22	

Exhibit C

From: David Cohen [KDHE] David.Cohen@ks.gov
Subject: Re: River view
Date: May 15, 2020 at 5:10 PM
To: john@lmandk.com



Also it would be better if the letter to the customers was in English and Spanish. I apologize for the multiple emails

Get [Outlook for iOS](#)

From: David Cohen [KDHE]
Sent: Friday, May 15, 2020 5:03:45 PM
To: john@lmandk.com <john@lmandk.com>
Subject: River view

One thing I forgot to mention on the phone. Once the notices have been delivered we would like something signed and notarized that says something to the effect of "we sent this letter to these addresses"

Thanks

David

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From: **John Lindner** john@lmandk.com 
Subject: **Towns / 20-E-008 BOW**
Date: **May 18, 2020 at 2:16 PM**
To: **David Cohen [KDHE]** David.Cohen@ks.gov



Dear David:

Attached please find the notice that was delivered to all addresses and the affidavit of service, both pursuant to our discussions last week on Friday. I want to continue to move toward complete resolution of this matter by agreement as soon as possible, so please get back to me in that regard as soon as your schedule allows. Thank you.

JML

John M. Lindner
Attorney at law
505 N. 6th Street
Garden City, KS 67846
P: 620-275-9193
F: 620-276-9454

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affidavit.pdf

AFFIDAVIT OF SERVICE

STATE OF KANSAS)
) ss
COUNTY OF FINNEY)

Delmer E. Towns, of lawful age after being first duly sworn upon oath states:

We currently have 249 water connections/customer addresses. This affidavit is to certify that on Saturday, May 16, 2020 through Sunday, May 17, 2020 we (me, my family members, and our employees) delivered a copy of the attached notice to each of the 249 addresses. At each address, if the door was answered, the notice was handed personally and if the door was not answered, the notice was left at the front door. No requests were or have been received and if we receive any, I will take appropriate action promptly and will notify our counsel so that all concerned can be advised.

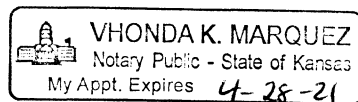


Delmer E. Towns

STATE OF KANSAS)
) ss
COUNTY OF FINNEY)

BE IT REMEMBERED, that on this 18th day of May, 2020, before me, the undersigned Notary Public in and for the County and State aforesaid, came Delmer E. Towns who is personally known to me to be the same person who executed the above and foregoing instrument of writing and such person duly acknowledged the execution of the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal, the day and year last above written.



Vhonda K. Marquez
NOTARY PUBLIC

My appointment expires: 4-28-21

Hello. We regret the inconvenience you may have experienced from any recent loss of water pressure at your address. We hope the issue is resolved and we are working toward a permanent solution so that the issue does not occur again. If this issue has caused you to be without water suitable for normal inside household purposes at the present time or if a portable toilet and hand washing station is desired, please notify me and your area will be supplied. Thank you.

Hola. Sentimos la inconveniencia que usted esta experimentado por la reciente perdida de presión de agua. Esperamos que este asunto sea resuelto y estamos trabajando hacia una resolución permanente, para que este problema no vuelva ha ocurrir. Si este asunto a causado que usted ha estado sin agua suficiente para las necesidades normales dentro de su casa o si es necesario un baño portable y una estación para lavarse las manos, por favor notifiquemelo y sera proveído para el area. Gracias.

Delmer E. Towns
Towns Riverview Subdivision
725 S. Towns Rd.
Garden City, KS 67846
620-275-5305

