MODELING OF PRESSURES AND QUALITY IN A WATER DISTRIBUTION SYSTEM

By

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MODELING OF PRESSURES AND QUALITY

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1.0 INTRODUCTION

1.1 Background

Most cities and towns within the United States of America have what is known as a water distribution system network. The water distribution network's primary purpose is to provide potable water at an adequate pressure, for each tract of land it is designed to serve. In order to serve this purpose the distribution network consists of pipes, valves, meters, pumps, fire hydrants, elevated and ground storage tanks. Distribution networks can be very complex or very simple, and the complexity of the system generally relies on the total population in which it is designed to serve. For instance, cities with an estimated population of 50,000 may have as much as 285 miles of distribution piping, 19,000 water meters, 1250 valves, 2,300 fire hydrants, 1 elevated tank, 1 ground storage tank, 4 booster pump stations, two water production facilities 150 water supply wells, and so on (City of Enid, Oklahoma Water System, 1999). For comparison a small community with an estimated population of 300 may only contain 7 miles of piping, 200 meters, 20 valves, 10 fire hydrants, 1 elevated tank, and 2 water supply wells (Town of Fargo, Oklahoma Water System, 1999). Although the systems can vary widely they do still serve the same purpose, and have similar components.

1.2 Analysis Tools

With these complex water distribution networks, engineers rely on proven techniques to evaluate the performance of the system. One such technique is the Hardy-Cross method, which uses "loop" equations and an iterative process to solve for the system pressures, and flow directions of the system. To simplify this process several desktop computer applications have been developed in order to perform this analysis. One of the first well-known computer analysis programs was

the KYPIPE model, developed at the University of Kentucky (Wood, 1980). With the advanced development of the Graphical User interface (GUI), today's computer simulation models are far simpler to use. Two of these models are WaterCad and Cybernet both developed by Haestad Methods, Inc. These computer programs allow for user to input information by point and click methods as well as tabular formats. The Cybernet 3.1 package software was chosen as the preferred software because of its CAD interface and user-friendly approach.

1.3 Purpose and Objectives of the Study

For the average rural America Water Superintendent, the task of evaluating the effect off any physical changes within their distribution system can be very difficult. With the new computer software available today, a computer model can be generated to reflect actual physical characteristics of the distribution system, which will allow the Superintendent to "virtually" modify his distribution system, and determine the resultant effect. Although, these new developed computer applications are very user-friendly the output still needs to be field verified, or "calibrated" to actual real world scenarios. Once the model is calibrated, the superintendent may perform "what-if" scenarios to evaluate the performance of the system. These "what-if" scenarios may be for fire flows simulations, system expansion, booster pump installation etc. Not only will the superintendent be able to perform pressure distribution analysis, but also water-quality tracing analysis. The computer software performs a time-stepped approach considering the decay of the chemical constituent in water and the reaction with the pipe material.

1.4 Limitations of the Study

The accurate representation of the water distribution system computer model is dependent on the most current available data. With the ease and availability to run computer simulations of a water distribution system network, the end user may desire to perform simulations that *do not* represent actual real world conditions, this is due to the limitations of the model. One such limitation is the actual water use demand throughout the system. Current historical records only

allow for monthly use at each meter throughout the system, therefore a fixed water use demand is allocated to each water meter, also it is assumed that all inlet and outlet points are metered, and read accurately. In reality, the distribution system will have leak losses; line breaks, and illegal taps were will be unaccounted for in the water use records. With the ever-expanding capability of the silicon computer chip, electronic devices can be installed at each inlet and outlet point, to record the pipe flow per second. Once communities begin to realize that potable water should be considered as a resource, more of these devices may be installed on the larger distribution system networks, to monitor the inlet and outlet quantities.

Another limitation of the resultant project is the accuracy of the Total Free Chlorine that was measured throughout the system. For budgetary concerns a HACH Test Kit Model No. CN-66F was used to measure the total free chlorine. This test kit has a color wheel, which is used to match a blank sample to one spike with a reactant. The test kit measures available chlorine from 0.0 ppm to 3.5 ppm, and relies on the users judgment and vision. To alleviate this limitation continuous chlorine analyzers, and digital analyzers may be used, but is not warranted on a system of this size.

2.0 LITERATURE REVIEW

2.1 Background

Several authors have published papers on the best approach of modeling a water distribution system. These authors include some highly respected individuals including Lewis. A. Rossman, Paul. F. Boulos, Thomas. M. Walski, Robert M. Clark, and Walter M. Grayman, to name a few. Each author has presented varying analysis on how best to approach the hydraulic and water quality modeling of a distribution system. Most are based on the theoretical analysis using some form of the Hardy-Cross method for the hydraulic aspect, and a first order decay rate for the water quality analysis. With the increased interest in the modeling of water distribution systems, software developers have incorporated the published theories into the latest desktop computer programs.

In reviewing the published journal articles it was apparent that present day desktop computer simulations have not been fully examined for their capabilities. With the relatively new computer boom that my generation is currently experiencing, there has been an increasing demand for a wide array of simulation programs. With the Microsoft Windows Operating System Environment and the Computer Aided Drafting packages the Graphical User Interface was born. Modeling software became user-friendly, and the engineer no longer had to use vast lines of text to develop a computer model.

The first graphical software packages were very limited, and could produce simple steady-state models, however today's software packages have been expanded to include the theories of Grayman, Boulos, Clark, Walski and others. Grayman, Clark, and Males published an article in

1988 to introduce a dynamic approach for modeling water quality in a distribution system With the added assistance of Rossman, theories have expanded and been validated in the area of modeling chlorine decay. Boulos, (Boulos, 1995) presented his Discrete Simulation Approach for Network-Water-Quality to compare his theory of the Event Driven Method to Rossman's Discrete Volume Element Method, and both methods yield acceptable results. As recently as November 1999 another study for measuring and modeling chlorine propagation was presented for the Cherry Hill/Brushy Plains area Branford Connecticut (Clark, 1999).

2.2 Rationale for Present Study

With the recent software developments, and the wide professional interest in the area of water distribution system modeling for pressures and water quality, it was apparent that these applications be investigated. Over the last decade several Oklahoma small town distribution systems, have been revamped or updated. Until recently the Oklahoma Department of Environmental Quality did not require a hydraulic analysis be submitted for approval, for these system improvements (State of Oklahoma, 1999). The Town of Fargo, Oklahoma, replaced their water distribution system in 1994, but still have problems relating to unsatisfactory pressure or strong chlorine residuals. Being familiar with people in the community, and my increasing interest in computer simulations, the development of water distribution was a cost effective solution. With a calibrated model the Water Superintendent, with my assistance, may perform "what-if" scenarios to better predict system response for fire flows, system expansion or the calibration of the existing chlorinator system.

3.0 THEORETICAL CONSIDERATION

3.1 System Definition

Distribution systems are comprised of pipes, fittings, service connections, storage tanks, reservoirs, valves, and pumps. In order to perform the hydraulic analysis, is it typical to simplify the system and the above described components into three distinct categories: junction nodes, boundary nodes, and links (Haestad, 1998). These categories are defined as follows:

Junction Nodes: Junctions are points in the system in which the analyst would like to know specific characteristics at those points. Junction may be used to simulate such physical characteristics as fire hydrants, pipe intersections, housing developments, or large commercial users. Junctions may be placed as frequently as desired by the analyst, in order to provide a more detailed simulation.

Boundary Nodes: Are points in the system in which the analyst knows such items as, hydraulic grade or chemical concentration. With these nodes items the analyst is able to define initial conditions to be used in the computational cycle. Boundaries nodes can be used for such items as tanks, reservoirs and pressure sources.

Links: Links include pipe, pumps, and various valves. These are system components, which connect to junctions or boundaries, and control flow rates and energy losses (or gains) between nodes.

Using these three categories and looking at the selected distribution network the user may develop a hydraulic model, an example of the selected model network is shown in Figure 3.1.

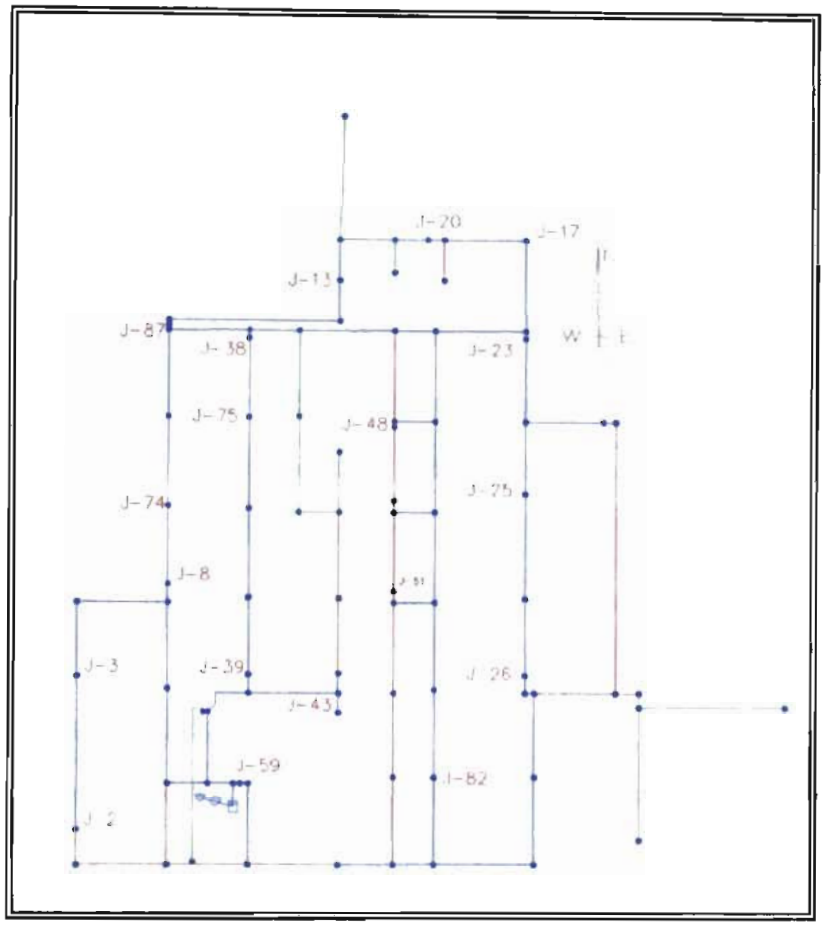

Figure 3.1: Water Distribution Network

3.2 Modeling Principles

While trying to calculate the effect of placing a water use demand at one junction node, the engineer has to use three engineering principles, Conservation of Mass, Conservation of Energy and the Energy Principle.

3.2.1 Conservation of Mass

With the use of this principle the flow into the distribution system is equal to the demand plus the change in the storage volume. Equation 3.1 represents this principle.

$$\sum Q_{in} * \Delta t = \sum Q_{out} * \Delta t + \Delta V \qquad (3.1)$$

where:

Q_{in} = *the total flow into the network*

Δt = *the change in time*

Q_{ou} = *the total flow out of the network*

ΔV = *the change in storage volume*

3.2.2 Conservation of Energy

This principle refers to the head losses through the system, and that any two paths from one point in the system to another point in the system must have equal head losses thus resulting in the same hydraulic grade at the destination point. This same principle can be used in going around one loop in the system in that the combined head loss around the loop must be zero in order to achieve the same hydraulic grade.

3.2.3 Energy Principle

The energy principle tracks the amount of energy that is stored in the water. There are three forms of energy that are of importance in a water distribution system: kinetic, pressure and elevation (Haestad, 1998). In a water distribution system, energy is usually expressed in terms of vertical distance (feet). Equations 3.2 and 3.3 can express the energy at a point

Energy = elevation head + pressure head + velocity head (3.2)

$$Energy\ (in\ feet) = z + \frac{P}{\gamma} + \frac{V^2}{2g} \quad (3.3)$$

Where:

z = *elevation at the specified point*

P = *pressure at the specified point*

γ = *specific weight of water*

V = *velocity of the water at the specified point*

g = *gravitational acceleration*

3.3 Modes of Analysis

The Cybernet modeling software allows for two types of simulations, a Steady State Analysis and an Extended Period Simulation (Haestad, 1998). Each type of simulation is appropriate for specific types of results that are desired. A more detailed explanation of when a modeler might choose a specific analysis is outlined in the following paragraphs.

3.3.1 Steady State Network Hydraulics

Steady state analyses determine the operating behavior of the system at a specific point in time, or under steady-state (unchanging) conditions. This type of analysis can be useful for determining short-term effects on the system due to fire flows or average demand conditions.

For this type of analysis, the network equations are determined and solved with tanks being treated as fixed grade boundaries. The results that are obtained from this type of analysis are instantaneous values, and may or may not be representative of the values of the system a few hours, or even a few minutes, later in time.

3.3.2 Extended Period Simulation

When the effects on the system over time are important, an extended period simulation is fitting. This type of analysis allows for the filling and draining of tanks, opening and closing of regulating valves, and changing of pressures and flow rates throughout the system in response to varying demand conditions.

While a steady state model may tell whether or not the system has the capability to meet a certain average demand, an extended period simulation indicates whether or not the system has the ability to provide acceptable levels of service over a period of minutes, hours, or days. Extended period simulations can also be used for energy consumption and cost studies, as well as water quality modeling.

Data requirements for extended period simulations are greater than for steady state runs. In addition to the information required by a steady state model, the user also needs to determine water usage patterns, more detailed tank information, and operational rules for pumps and valves.

3.4 Reaction Rate Model (Constituent Analysis)

The Cybernet software incorporates a reaction model, which recognizes that the growth or decay of a substance is driven by reactions occurring both within the bulk flow component and with the material along the pipe wall. The model uses first order kinetics to simulate the wall and bulk reactions.

The expression for the general substance decay rate model for each link, i, is given below:

$$R(C_i) = -k_b C_i - \left(\frac{k_f}{R_{hi}}\right)(C_i - C_{wi}) \qquad (3.4)$$

where k_b = first-order bulk reaction rate constant, 1/s

C_i = substance concentration in bulk flow, mass/ft^3, mass/m^3

k_f = mass transfer coefficient between bulk flow and pipe wall, ft/s, m/s

R_{hi} = hydraulic radius of pipe (Diameter / 4), ft, m

C_{wi} = substance concentration at the wall, mass/ ft^3, mass/ m^3

Assuming that the rate of reaction at the wall is first order and that no net accumulation of material occurs over the time step, the mass balance at the wall is given by:

$$k_f(C_i - C_{wi}) = k_w C_{wi} \tag{3.5}$$

where k_W is a wall reaction rate constant (ft/s, m/s).

Solving for the wall concentration and substituting into equation 3.4 results in the general first order reaction rate expression for substance decay:

$$R(C_i) = -KC_i \tag{3.6}$$

where K is an overall rate constant equal to:

$$K = k_b + \frac{k_w k_f}{R_{hi}(k_w + k_f)} \tag{3.7}$$

It follows that dropping the negative sign ahead of K in equation (3.6) will model the growth of a substance, with mass transfer from the pipe wall to the bulk flow.

3.5 Discrete Volume Method (DVEM) Algorithm

The Cybernet software uses the discrete volume-element method (DVEM), which is based on a plug-flow reactor assumption (Haestad, 1998). The plug flow model accounts for advective transport and the kinetics of the constituent reactions within the plug. According to the physical plug flow reactor model, each reactor plug would be advected through the system and composited with incoming plugs at flow-receiving nodes. In the Eulerian DVEM numerical modeling scheme this plug movement is simulated by transferring substance concentration state from one discrete volume-element (a "plug") to the next adjacent volume-element along the direction of flow.

The DVEM proceeds by subdividing each link in the network into a number of equal sized elements at every hydraulic event (i.e. a single extended period simulation time step duration in

which flow and velocity patterns are assumed to remain constant) in the simulation. To preserve accuracy the volumetric element for each link over the duration of every hydraulic event must be correctly computed To this end, the methodology is parameterized by the quality time step parameter. To ensure that fluid is not transported beyond the confines of any link within a single analytical step, the total link volume must be less than the product of link discharge and time step. It follows that the time step cannot exceed the shortest travel time through any network link over the analysis interval.

The constituent mass is propagated through the system network over each water quality time step, in four phases:

1. Kinetic reaction - the mass concentration undergoes a kinetic concentration change by applying the kinetic reaction function;
2. Nodal mixing - constituent mass and incoming volumes are mixed at nodes;
3. Advection - constituent mass is transferred between volume-elements; and,
4. Allocation - nodal mass is assigned to the first volume element of all outgoing links.

4.0 DATA COLLECTION

4.1 General

In order to apply the theory as described in Chapter II, a distribution system had to be selected. The Town of Fargo, Oklahoma was selected because of its modest size and the functionality of all of the components of a typical distribution system. Figure 4.1 identifies the topographical features present if the Fargo area. The general lay of the land slopes from the south to the north- northeast.

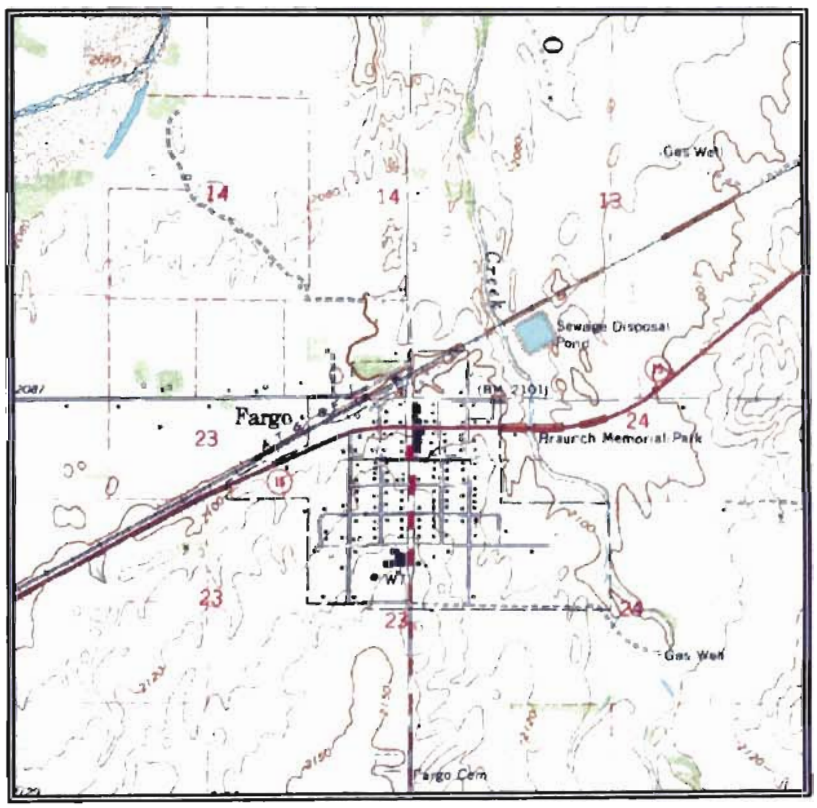

Figure 4.1: U.S.G.S. Topographic Map of Fargo

The highest part of town is in the southwest area in which the elevated storage tank is located; this is typical for most towns of Oklahoma in which the elevated storage tank is located at the topographical high point in town.

4.2 Survey

As with any engineering project it is important to determine the surveying requirements to provide for accurate representation of the field parameters. It was deemed appropriate to physically perform an elevation survey across town, in lieu of, trying to interpolate surface elevations from the U.S.G.S. quadrangle map. An elevation survey was performed using a Nikon automatic Level, and Philadelphia rod. The survey was based on an assumed elevation, as the actual elevation was not critical, and a loop was performed, by taking rod readings at each intersection. A summary of the rod readings and a map of the spot elevations are contained within the appendix.

4.3 Physical Characteristics Audit

After the survey data was collected, a complete review of the physical characteristics of the water distribution system was completed with the assistance the towns Water Superintendent. Items to be considered were pipe sizes, location, age and material; water well location, capacity, pumping curves and any pressure switches; elevated storage tank size, location, bowl and overflow elevations; chlorinator location, capacity, and configuration. A complete water atlas of the distribution system is identified in Figure 4.2.

4.4 Water Use Demands

With the acknowledgement of the physical characteristics of the distribution system, the next vital step was to determine the daily water demands throughout the system. With the assistance of the Town Clerk and the Water Superintendent, a printout of the monthly water use records (December 1997) was reviewed and compared to the physical location of each meter in

Figure 4.2: Town of Fargo Water Distribution System

town. This was completed in order to correlate meter locations and monthly uses records spatially throughout the system. With the monthly water consumption record an average daily demand could be calculated for each meter. (This is the best available information that could be collected within the budget constraints of this project. More accurate daily records could be generated, if digital recording devices could be placed at each water meter location, so a daily demand curve could be generated for each user). Appendix B contains the water use records for the month in which the average daily demands were calculated, as well as water use summaries

for peak months. Comparing the selected month to the peak months, a peaking factor can then be calculated to evaluate the system under peak month conditions.

4.5 Pressure and Flow Characteristics

To simulate the pressure and flow characteristics of the system, field test had to be performed at various locations throughout town. The simplest and most reliable way to determine the pressure gradient throughout the system was the placement of analog pressure gauges at various points within the system. In order to determine the water surface elevation in the elevated storage tank the analog gauge was initially placed at the fire hydrant adjacent to the tank. Additional readings were then collected throughout the system. Once static pressure readings were collected throughout the system, fire flow simulations were performed and residual pressures were observed. Upon model development these residual pressures could be compared to the simulated fire flow results.

4.6 Water Quality Concerns

Also of interest was the addition of chlorine into the distribution system. Chlorine is used as a disinfectant, and as required by the Oklahoma Department of Environmental Quality (ODEQ) a minimum residual of 0.2 ppm, shall be maintained at distant points within the system. Also a residual of 1.00 ppm shall be maintained at the point leaving the treatment facility. In order to insure that the town maintains compliance with ODEQ requirements, an inspection of the chlorination system was completed. At the well house the town injects a water-chlorine solution by the use of a small chlorinator pump. The solution has between 10% and 15% total free chlorine, depending upon storage length and temperature. By introducing the effect of the chlorine in the computer simulation, the town will be able to efficiently calibrate the chlorinator for optimal operation on a cost basis, while maintaining ODEQ requirements. In order to model the effect of the introduction of chlorine into the system, samples were collected at fire hydrants and outdoor taps throughout town, as well as, at the wellhouse where it is injected.

5.0 MODEL DEVELOPMENT AND CALIBRATION

5.1 Overview

Upon completion of data collection, it was now time to begin model development. Cybernet 3.1, by Haestad Methods Inc., was selected as the preferred modeling software, primarily for its ease of use and the Graphical User Interface (GUI). The Cybernet software runs inside of the AutoCAD software package, which provides for accurate model development. Two very important phases for water distribution system modeling are development and calibration. Model development consists of simulating the characteristics of a water distribution system by using at least three parameters, piping network, water use demands, and water storage or source. A fourth parameter of interest, for the purposes of this study, is the amount, and point source of the injection of chlorine. Once all parameters have been defined in the model, and a successful model run has been completed, the modeler needs to compare the results with actual real world conditions. The "tweaking" of the model to simulate real world conditions is known as calibration, the second is phase. A description of each activity for model development and calibration is described in more detail in the following sections.

5.2 Model Development

Model development requires the input of four parameters and their associated functions, piping network, water use demands, water storage/source, and water quality. Each of these four parameters is critical in the development of the model and are independent variables with respect to each other.

5.2.1 Piping Network

When most people think of a water distribution system they imagine the piping network. The piping network consists of the links and nodes (pipes and tee or crosses) when intertwined together complete the network. The software allows the modeler to graphically draw the piping network by the use of links and nodes. Nodes may be junction points, or critical points (such as fire hydrants) in the system where the modeler may want specific information. Each link (pipe segment) will have two nodes which are used to described its beginning and ending point. The nodes are assigned spatially with X, Y, and Z coordinates. The links are further defined by pipe diameter and the Hazen Williams "C" factor. Check valves may be placed along the link to define the flow path through a pipe segment. The software also allows for the placement of various valves, in lieu of junction nodes, these include flow control, pressure sustaining, and pressure reducing, to name a few.

The Town of Fargo's piping network is very modest, and can easily be incorporated into the model. The system consists of two, three, four and six inch PVC pipe. An inventory of each pipe size is identified in Table 5.1

Table 5.1: Pipe Inventory

Pipe Diameter	Length (approximate)
2 inch	3,766
3 inch	720
4 inch	5,534
6 inch	16,758
Total Length	26,778

The developed model incorporate 97 pipe segments (links), and 83 junction nodes. A graphical representation of the model is identified in Figure 5.1. Of the 83 junction nodes, only a select few are labeled, as these will be used for calibration purposes.

Figure 5.1: Computer Model of Fargo Water Distribution System

5.2.2 Water Use Demands

Water use demands are designated in the model at junction node locations. Each junction is assigned a specific rate of flow (gallons per minute) and a flow pattern. The flow pattern may be represented by a sinusoidal wave to mimic morning, afternoon, and

evening patterns (Nelson, 1983). To determine the actual water use pattern, a digital recording device would be required to monitor flow. For the Town of Fargo water distribution system, this was not practical or available. Therefore, it was assumed that the water use patterns were fixed, or a constant flow. This is one of the limitations, however, a good representation of water use demands can be calculated for each junction node. The December 1997 water meter records were reviewed with the town, and allocated spatially across town according to the associated meter location. Then each meter record was converted from a monthly total to an average gallon per minute demand. To simulate the spatial variability the town was broken up into several nodal areas defined at the street intersections. Each nodal area contained one half of a block in each direction from the intersection. The calculated average gallon per minute demands contained within each nodal area was summed, and assigned to the models junction node which represents the total gallon per minute demand of the nodal area.

5.2.3 Water Storage/Source

With the extraction of water from the model (water use demands) the system needed to provide for an input source. This is usually completed be a pump and storage tank system. The Town of Fargo's water system is provided potable water by two groundwater wells, which are piped directly to an elevated storage tank. Only one of the water wells is used continuously, while the other is used during peak-day conditions. Thus, to simulate the groundwater well and elevated storage tank system, the model incorporates a reservoir, 90 gpm pump and 125,000-gallon storage tank. The reservoir is used to simulate the groundwater basin, while the pump and storage tank represents physical characteristics.

5.2.4 Water Quality

The introduction of liquid chlorine into the system for disinfection purposes is critical in order to maintain a safe potable water supply. The town currently injects a liquid based chlorine solution into the system at the well house. The chlorine concentration throughout the system will vary depending upon temperature, water use demands throughout the system and initial concentration. Chlorine is only introduced into the system when the water well is active. In order to model this parameter effectively, the reservoir (groundwater basin) is assumed to have a constant chlorine constituent source of 1.7 ppm. In an extended simulation model, the elevation of the water storage tank will drop, which turns on the water well pump. The pump fills the elevated tank with the chlorinated water until the shut-off point has been achieved. Two decay parameters, bulk reaction and wall reaction, have been incorporated into the model as indicated in the previous chapters. The bulk decay parameter is the time rate of decay for the chlorine constituent in water, while the wall reaction is the rate of decay of the chlorine with respect to the pipe or tank material.

5.3 Calibration

To achieve model calibration, an iterative process is performed to validate field-collected data against simulated results. Model parameters such as, pipe roughness, water use demand patterns, and bulk and wall reaction constants are varied to achieve the desired result. Once the parameters have been adjusted to effectively simulate real world conditions, the modeler is free to perform "what-if" scenarios within the limitations of the model. For the purpose of this study, simulated model results that are within 5% of the measured values will be considered calibrated.

6.0 RESULTS AND DISCUSSION

6.1 Results of Analyses

The following sections present the results of the pressure and water quality analyses. Several model runs were completed during model calibration and are included within the appendix. Water pressures and chlorine samples were collected on two different occasions to validate the effect of the model based upon initial site conditions.

6.1.1 Steady State Average Day Pressures

One of the main objectives of this study was to develop a computer simulation model to mimic real world measurements. Table 6.1 compares field record pressures at all of the fire hydrants within the system to modeled pressures.

Table 6.1: Pressure Comparison, Model vs. Measured

Node Designation	Measured Pressure (psi)	Simulated Pressure (psi)	Percent Difference
J-2	51	51.39	0.38%
J-3	53	53.36	0.34%
J-8	52	53.72	1.63%
J-13	60	59.28	0.60%
J-20	59	59.56	0.47%
J-23	58	58.39	0.34%
J-25	55	56.10	0.99%
J-26	56	56.36	0.32%
J-38	57	58.80	1.55%
J-39	50	50.72	0.71%
J-43	48	49.19	1.22%
J-48	56	57.65	1.45%
J-51	52	54.12	2.00%
J-59	46	45.93	0.08%

To compare the model results with the measured results a calculation of the percent difference was completed for each nodal point. The percent difference was calculated according to Equation 6.1.

$$\%D = \frac{|a-b|}{|a+b|} x100 \qquad \text{(Equation 6.1)}$$

Figure 6.1 graphically depicts the pressure contours across town as developed by the model. The pressure contours shown are set a 2.5 psi interval.

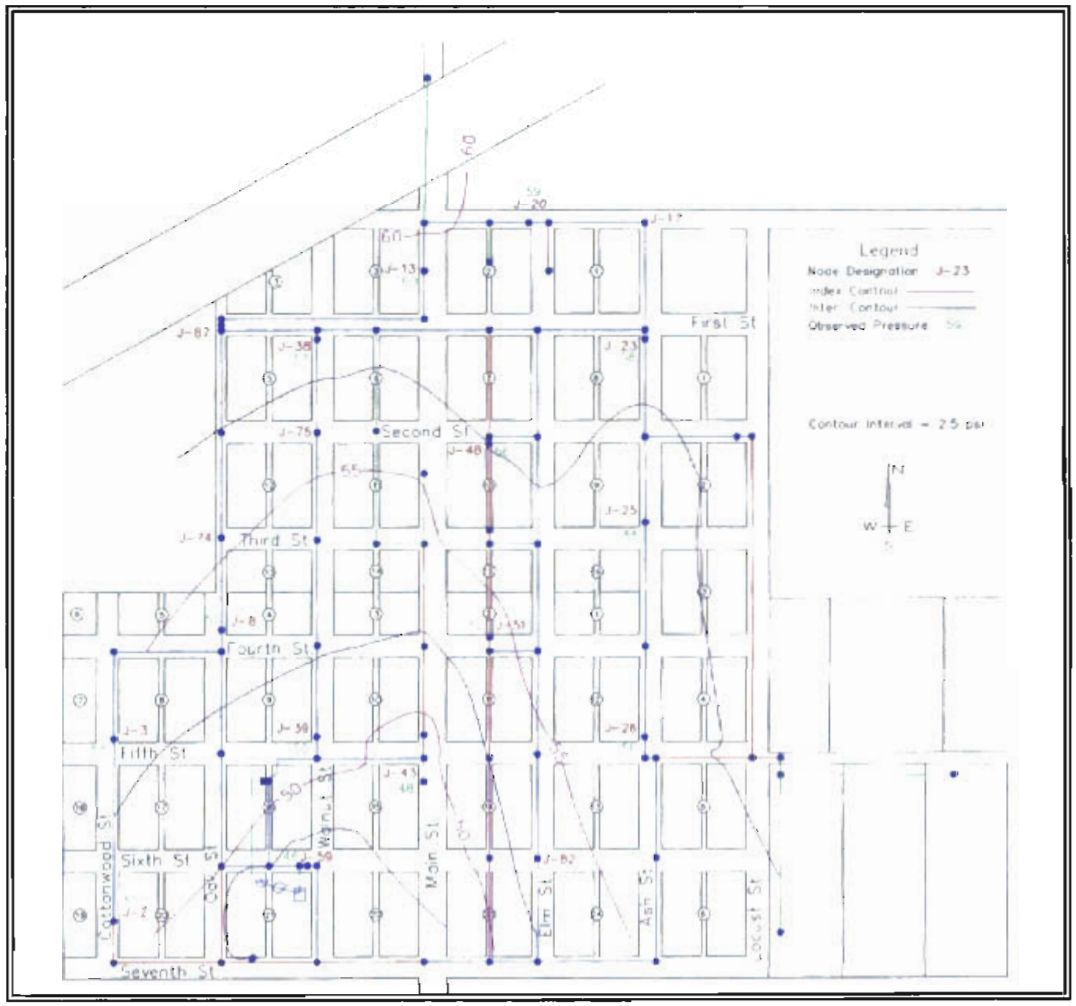

Figure 6.1: Average Day Pressure

6.1.2 Water Quality Analysis

Water quality is very difficult to model throughout a water distribution system, the variables include; the initial constituent concentration, the bulk reaction constant, K_b, the wall reaction constant, K_w, and the water use demand patterns. Upon calibration of the model for steady-state conditions, an extended simulation was warranted in order to model the chlorine decay throughout the system. The Cybernet software is very user-friendly and an extended simulation can be easily run, once the mode has been calibrated.

To simulate the input of chlorine into the system, the model was setup up to draw from a constant reservoir source with a concentration of 1.7 ppm, and was pumped into the elevated storage tank and then distributed throughout the system. The reservoir was set to a constant 1.7 ppm to correlate with the measured, free chlorine, at the wellhouse. With a measured concentration of 1.7 ppm at the input source, the only other variables that need to be calibrated were the bulk, K_b, and wall reaction, K_w, constants. Initially, K_b was set to 0.55 per day, while values for K_w ranged from 0 to 1.5, as Rossman deducted in his Cherry Hills study (Rossman, 1994). The simulation resulted in a growth of the constituent and no equilibrium condition could be achieved. As an alternative, the inverse of the above constants were incorporated and a simulation was completed. The results of this simulation showed a decrease in the constituent concentration but no variability between varying K_w values.

With the above varying simulation results, the software developers were contacted and it was confirmed that both the bulk and wall constants would be negative in number, thus indicating a decay in the constituent. Also, in lieu of using the bulk chlorine decay as determined in previous studies, grab samples were collected and monitored over a 1-week period. The grab samples were measured daily for free chlorine, with no apparent

decay, so the bulk reaction, K_b, was assigned values of –0.05, -0.075, -0.1 and –0.5. Values of the wall reaction, K_w, were assigned –1.0 and –2.0 for the bulk reaction run of –0.1, but was set at 0 for the other runs. In order to achieve equilibrium conditions the model runs were computed for a 30-day simulation period. In reviewing the model results, it was apparent, that the wall reaction constant should best be set to 0, for the constituent decay was too rapid and equilibrium could not be achieved. The remaining model runs, showed that the constituent had achieved equilibrium within a 221-hour simulation period. The length of this equilibrium period is significant, because under the average day demand scenario with no apparent chlorine contained within the system, it will take a minimum of 10 days to effectively chlorinate Fargo's water system. Table 6.2 identifies the comparative values of the measured and simulated chlorine concentration for the model with K_b = -0.5, and K_w =0.

Table 6.2: Chlorine Concentrations, Measured vs. Actual

Node Designation	Measured (mg/L)	Simulated (mg/L)	Percent Difference
J-2	1.3	1.3	0%
J-17	1.2	1.2	0%
J-25	1.2	1.1	4.35%
J-26	1.3	1.2	4%
J-74	1.3	1.3	0%
J-75	1.2	1.3	4%
J-82	1.2	1.3	4%
J-87	1.4	1.3	3.7%

Figure 6.2 graphically depicts the calculated chlorine concentrations across town, compared to the measured values.

Figure 6.2: Calculated Residual Chlorine Concentrations

7.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary

The Town of Fargo's water distribution system is relatively modest compared to larger systems that are seen in Stillwater or Enid. By comparison, Fargo's system contains approximately 5 miles of distribution system piping, while Enid's system contains more than 235 miles. Although the systems vary in size the system components are very similar. Both systems contain elevated storage tanks, water wells, meters, valves and fire hydrants.

With the different components contained in a water distribution system, and the varying water use demands, it can be a very tedious task to estimate pressure and water quality parameters system wide. With the implementation of desktop computers and software development, this task of predicating of pressure and water quality system wide has been greatly enhanced. The Cybernet 3.1 software developed by Haestad Methods, Inc., as used for this study, can provide very realistic simulations and "what-if" scenarios at the click of a button.

With the use of the software, the Town of Fargo's distribution was modeled for average pressure and water quality analysis. The model was calibrated by adjusting system parameters to provide the "best possible fit" to the measured conditions.

7.2 Discussion of Research Findings

With the review of all of the known system parameters, such as, water use demand, surface elevations, pipe sizes and lengths, and elevated storage tank dimensions a computer model was developed to simulate the Fargo water distribution system. The goal of the study was to develop

and calibrate a model that the town's Water Superintendent could use to perform "what-if" scenarios, for system expansion or fire flow analysis. Several papers and software packages have been developed and published over the last decade, and with the advancement of the Graphical User Interface model development, current models are very user-friendly and flexible. Prior to the current software programs, engineers had to hard code computer programs for various alternatives. To validate the developed computer mode, calibration needs to be performed to verify model results with measured values.

7.3 Conclusions

The developed model is well within the acceptable limits of accuracy (<5%) for steady-state average day pressure and chlorine residuals. The model may be used to predict average day and peak day pressure contours based upon best available information (Comparing the initial December 1997 water use data with the August 1998 water use date an average peak day factor of 3.44 can be applied to the model). Limitations exist in the model as a result of the instantaneous (single point) data collection that was performed. The model may be further refined to provide dynamic results, by collecting data using time-based digital recording devices, to measure pressure, flow, and chlorine residuals.

7.4 Recommendations

Engineers are trained to be problem solvers, and therefore have an instinctive desire to strive for the best possible solution for any given problem. However, one key factor in determining the best possible solution is project funding. For the Town of Fargo, with their modest distribution system and budget, this study warranted the use of simple analog gauges, a HACH color wheel test kit, and monthly water use demands. The results of this study are therefore limited by the available resources.

The Cybernet software is very flexible and can handle various parameters, and extended simulation modes. For one example, flow control valves can be modeled for on-off states based on nodal pressures or constituent concentration. The base model has been developed for the Fargo distribution system, but further study needs to be completed, in order to fully model the entire system for various states. In order to complete this task several digital recorders need to be placed system wide to measure water pressure and flow, as well as, chlorine concentrations. The town will need to acquire grant funding to bring this project to maturity, but for a system of this size, is the funding really warranted? Therefore, the town should periodically compare the model with future collected data and refine as appropriate.

7.5 Concluding Comment

The Cybernet software is a valuable tool in determining system wide pressures and water quality analysis. As with any modeling software, the best possible solutions are achieved within the constraints of the available data.

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APPENDIX A

Town of Fargo Water Meter Readings

*** Normal & Estimated Account Readings ***
P -Billing Usage Report (TOWN OF FARGO) Mon Dec 29, 1997 4:24pm

M Bk Wseq Acct#	Acct Name	Current	Usage	Type
1-01-001A-000002	READ, J.W. (DUB) 1	614920	3780	M*
1-01-002A-094018	FARMER, BILLY 2	581880	22240	M*
1-01-003A-000006	CROUSE, DWIGHT 3	932190	2280	M*
1-01-004A-000061	NOREUIL, RON 4	583620	0	N
1-01-005A-000062	PEEBLES, TONY 5	996820	2950	M*
1-01-005A-082697	ALLISON, TONY 6	187920	0	N
1-01-006A-000007	REASONER, MARY ANN 7	854340	4850	M*
1-01-007A-007000	WINGO TRAILOR PARK, 10	%96500	162200	M*
1-01-007A-007004	RAULSTON, RANDY 9	45590	4060	M*
1-01-007A-007006	BOJORQUES, HECTOR 8	364910	3330	M*
1-01-008A-000063	HARRINGTON, JAMES D. 12	385490	4810	M*
1-01-008A-052096	HARRINGTON, JAMES 11	526740	7510	M*
1-01-009A-000064	CARTER, BILL 13	291110	6590	M*
1-01-010A-000097	CURRIOR, TROY 15	755550	3730	M*
1-01-011A-000098	WHITE, TOM 14	688370	20890	M*
1-01-012A-000099	CRAIG, TED 16	989960	2980	M*
1-01-013A-000100	WAUHOB, LEE 17	886190	1940	N
1-01-014A-040397	JENKINS, TERRY 18	32180	680	M*
1-01-015A-020196	NICHOLS, DANNY 20	238030	1110	M*
1-01-016A-000083	HARRELL, CLYDE 19	550160	1320	M*
1-01-017A-000084	WALKER, BILLIE 21	620520	4620	M*
1-01-017A-000082	ARMSTRONG, LEE 22	%5990	0	N
1-01-018A-050896	GIRTON, DUSTY 24	555190	6750	M*
1-01-019A-000086	CROUSE, EDWIN 23	228290	5720	N
1-01-020A-000087	WOODS, ALSIE 25	335950	1380	N
1-01-021A-000088	NORMAN, CHLOE 26	192970	1330	N
1-01-022A-000089	BRUNSON #2, RICK 30	466840	0	N
1-01-024A-000090	HUTCHISON, BARBARA 28	405750	1120	M*
1-01-025A-070194	FOALE, SANDRA 29	411200	9080	M*
1-01-026A-000152	METHODIST CHURCH #2, 31	44970	0	N
1-01-027A-000147	BRUNSON #1, RICK 27	954050	6730	M*
1-01-028A-000155	METHODIST CHURCH #1, 32	152740	460	M*
1-01-029a-940208	SHERMAN, LU E. 34	972130	1930	N
1-01-030A-070595	EVERETT, ALLEN 33	84210	8230	M*
1-01-031A-000040	KEEPER, JOHN 35	793720	4400	M*
1-01-032A-101997	CRITES, TERRY 36	305580	-8640	N
1-01-033A-000070	LARKEY, DAIL 37	417890	12570	M*
1-01-034A-940404	HOWARD, RANDY 39	551230	3160	M*
1-01-034A-010197	FARRER, LOUIE 41	463260	4550	M*
1-01-034a-007897	SEMMEL, REBEKAH 38	562420	6140	N
1-01-035A-010995	WALLIS, BUFFY 42	372640	3440	M*
1-01-037A-000017	ASHPAUGH, MELODIE 40	582040	6630	M*
1-01-038A-001050	WOLGAMOTT, TERRY 44	427420	2940	M*
1-01-039A-000092	FAUST, LYDIA 43	354400	1600	N
1-01-042A-000095	CARSON, CHRIS 45	509660	2570	M*
1-01-042a-940722	BORTH, ROD 46	805880	4160	M*
1-01-043A-000101	ALLISON, TONY 48	943120	5200	M*
1-01-043A-070795	COOK, JUDY 47	255320	1350	M*
1-01-044A-000042	MADSEN, BOB 49	553950	3960	M*
1-01-045A-000109	RABE, WILBER 50	653640	1880	M*
1-01-046A-000015	ADAMS, SHAWN 51	728010	1420	M*
1-01-047A-000110	MINNICK, LESLIE 52	533450	270	N
1-01-048A-000113	REININGER, DON 53	631140	1870	M*
1-01-049A-000115	WADE, KENNETH 54	241950	2500	M*
1-01-050A-000019	CRABTREE, JOHN 55	768730	4710	M*
1-01-052A-000117	CROUSE, GLENN 56	51720	0	N
1-01-053A-094019	DAVIS, KENNETH 57	565580	5030	M*

*** Normal & Estimated Account Readings ***
Pre-Billing Usage Report (TOWN OF FARGO) Mon Dec 29, 1997 4:24pm

M Bk Wseq Acct#	Acct Name	Current	Usage	Type
1-01-054A-000038	JOHNSON, JANA 58	288920	5410	M*
1-01-054A-010896	PATTON, DORIS 61	3150	2330	M*
1-01-054a-110195	CROUSE, DWIGHT 59	61240	710	M*
1-01-055A-012595	PATTON, NEAL 60	426820	1880	M*
1-01-055A-053195	BELLOWS, FAY 62	157710	210	M*
1-01-057A-000118	DORR, GLENN 63	87690	940	M*
1-01-058A-020596	AND TIRE CENTER, FARGO AUTO SA 64	326450	950	M*
1-01-059A-000119	MILLER, SHEILA 65	636980	480	M*
1-01-060A-020696	ALLISON, TONY 66	237430	250	M*
1-01-061A-000125	FARGO FOUNTAIN, HOLLY HAINES 67	69180	4720	M*
1-01-062A-000031	FARMERS CO-OP ASSN. 68	601580	103000	M*
1-01-063A-000033	BEAVERS, HENERY 69	685820	4210	M*
1-01-064A-000126	FARMERS CO-OP ASSN. 70	38590	0	N
1-01-065A-000032	FARMERS CO-OP ASSN. 71	646880	2480	M*
1-01-066A-000127	WILBERS GARAGE, 72	129100	3050	M*
1-01-067A-940812	STEINERT BUILDING, FLOYD STEIN 73	31210	120	N
1-01-068A-000010	AGRI FARM SUPPLY #2, 74	5090	1380	M*
1-01-069A-000128	FARGO, TOWN OF 75	189600	3420	M*
1-01-070A-000129	LATTA'S A.T.I., 76	61010	410	M*
1-01-071A-000077	JOHNSTON CPA INC., MELVIN L 77	287550	800	M*
1-01-072A-000037	SHEPHERD, JOHN 78	623610	2230	N
1-01-073A-000102	POST OFFICE, U.S. 79	137790	710	M*
1-01-074A-000103	PIONEER TELEPHONE, 80	16950	580	M*
1-01-075A-000104	HICKMAN, YVONNE 81	341910	20	M*
1-01-076A-000105	COSGRAVE, BETTY 82	387560	2390	M*
1-01-077A-000029	FARGO SCHOOL SYSTEM 83	922350	9200	M*
1-01-078A-000106	BRAWLEY, ANITA 84	895130	2850	M*
1-01-079A-000107	WINDECKER, MRS FRED 85	220350	590	N
1-01-079a-950405	WINDECKER, GERALD 86	126080	2420	M*
1-01-080A-000163	FARGO SCHOOL SYSTEM, 87	377600	23600	N
1-01-080b-092297	LUTHI, CHUCK 88	979980	2710	M*
1-01-081A-000030	FARGO SCHOOL SYSTEM, 89	724170	100	M*
1-01-082A-000108	NICKESON, LARRY 91	30490	1940	M*
1-01-082b-062097	LUTHI, CHUCK 92	43780	5520	N
1-01-083A-030196	LAUHAN, WAYNE 90	799560	3720	M*
1-01-084A-000052	WILCOXSON, FLORENCE 93	540080	1540	M*
1-01-085A-000021	COLVARD, CHERLYN 94	842560	20	M*
1-01-086a-00004e	XXXXXXX, XXXXXXXX	429870	0	N
1-01-086A-000060	COLVARD, SHERILYN 95	489500	11950	M*
1-01-087A-000050	GOFF, KRISTI 96	389570	2810	M*
1-01-088A-000065	RANDALL, CHARLA 97	772210	6210	M*
1-01-089A-000066	MOREHART, FRANKLIN 98	371480	2030	M*
1-01-090A-000067	SCHNEIDER, OMER 99	206240	8300	M*
1-01-091A-000068	RAKESTRAW, BILL 100	523820	6120	M*
1-01-092A-000096	METHODIST PARSONAGE, 101	849250	2290	M*
1-01-094A-000043	SUTHERS, SANZEE 102	667640	5860	M*
1-01-095A-941804	PREWETT, ROGER 104	56540	7450	M*
1-01-095A-000004	VORE, EARL DAVID 103	205970	3460	M*
1-01-095a-070197	WHISMAN, CRYSTAL 105	356780	5140	M*
1-01-096a-051596	WILLIAMS, MILDRED 106	168560	5120	N
~~1-01-096A-000026~~	~~WILLIAMS, MILDRED~~	168560	5120	N
1-01-098A-000080	VO, CINDY 107	313440	2940	M*
1-01-099A-940609	MORRIS, BOB 108	377370	4430	M*
1-01-100A-000081	AULD, PAT 109	122770	2550	M*
1-01-101A-000148	NICKLES, JANET 110	382300	2540	M*
1-01-102A-000149	WALLACE, MIKE 111	842500	5550	M*
1-01-103A-000150	PARKER, BETTY 112	425470	3630	M*

*** Normal & Estimated Account Readings ***
Pre-Billing Usage Report (TOWN Of FARGO) Mon Dec 29, 1997 4:24pm

M Bk Wseq Acct#	Acct Name	Current	Usage	Type
1-01-105A-000035	FORBES, WAYNE 113	901850	4830	M*
1-01-106A-000153	TAYLOR, MADLINE 115	580870	5970	M*
1-01-107A-000154	BRANSON, LELA 116	198270	4770	N
1-01-108A-000072	NAZARENE CHURCH, 114	191390	300	N
1-01-109A-000073	REININGER, GLADYS 117	258810	930	M*
1-01-110A-000111	WATKINS, A.T. 118	302670	1510	M*
1-01-111A-000112	COULTER, ARBIE 119	189350	790	M*
1-01-112A-000114	FOALE, BRIAN 120	438360	2920	M*
1-01-113A-000120	HAMAKER, RAEDEAN 121	329880	390	M*
1-01-114A-000022	E.Z. STOP, 122	69360	5110	M*
1-01-115a-940108	DODD, JEFF 123	408810	1000	M*
1-01-116A-950228	RABE, LARRY 124	619890	6330	N
1-01-117A-000122	MITCHELL, KERRY 125	945180	5420	M*
1-01-118A-000123	STEINERT, FLOYD 126	721120	1720	M*
1-01-119A-000124	WROTEN, ROBERT 127	832920	4160	M*
1-01-120A-000130	KEIFER, LINDA 128	919680	510	M*
1-01-121a-020195	GARVIN, SCOTT 129	533450	2770	M*
1-01-122A-129301	SHEPHERD, BARBARA 130	848480	5500	M*
1-01-123A-000131	STAHLMAN #1, MONTE 131	30270	5120	M*
1-01-123A-120595	SHEPERD, VICKY 132	453950	6650	N
1-01-124A-000162	STAHLMAN #2, MONTE 133	157180	0	N
1-01-125A-000161	STAHLMAN #3, MONTE 134	18860	0	N
1-01-126A-000132	NAZARENE PARSONAGE, 135	480870	1650	N
1-01-126A-000200	WELLS, GERRY 136	9790	3090	M*
1-01-127A-000133	HOHWEILER, PAULINE 137	127300	790	M*
1-01-128A-000134	STAHLMAN, MONTE 138	109220	0	N
1-01-129a-000020	CONWAY, MARTIN 139	836810	7720	M*
1-01-130A-000055	MC CASLIN, DENNIS 140	826050	3110	M*
1-01-131A-000056	LOONEY, JACK 141	946870	5400	M*
1-01-132A-000057	HALL, GERALD 142	809470	3960	M*
1-01-133A-000058	BUTLER, WANDA 143	335100	1540	M*
1-01-134a-042297	SLOAN, KIM 144	663580	2180	M*
1-01-135A-000059	WADE, STEPHEN C. 145	84560	610	M*
~~1-01-136A-990195~~	~~HALL, CRUCK 146~~	~~529500~~	~~0~~	~~N~~
1-01-136a-071097	FARRAR, JINGER 146	97230	2030	M*
1-01-138A-000075	WADE, MARGARET B. 147	386900	4430	M*
1-01-138A-092597	FORBES, JEREMOY 148	343050	1230	M*
1-01-139A-000076	THOMAS, MRS MELVIN 149	403580	1820	M*
1-01-140a-050696	LANE, JUSTIN, 150	529760	2410	M*
1-01-141A-000079	FEIL, EMMITT 151	608160	3400	N
1-01-142A-000091	TAPIA, JERRY 152	900460	3900	M*
1-01-143A-000139	BORTH, HERMAN 153	541340	270	M*
1-01-144A-000140	COPE, JOHN 154	665130	4810	M*
1-01-145A-000141	SCHNEIDER, BRUCE 155	387940	1200	M*
1-01-146A-000142	JOHNSTON, MELVIN 156	301920	5860	M*
1-01-147A-000143	GLENN, RUTH 157	420360	2230	M*
1-01-148A-000014	ABBOTT, MIKE 158	507380	2360	M*
1-01-150A-000144	JOHNSTON (FARM), MELVIN 159	791940	350	M*
1-01-151A-000145	STAHLMAN, LARRY 160	352900	2820	M*
1-01-152A-000146	STAHLMAN, STEVE 161	848540	3790	M*
1-01-153A-000041	KERCHNER, MRS. E.J. 162	506440	2530	M*
1-01-154A-000001	F.F.A. HOG BARN, 163	208650	7840	M*
1-01-155A-000025	FARGO SCHOOL SYSTEM, 164	918400	7300	M*
1-01-156A-000026	FARGO SCHOOL SYSTEM, 165	3539900	32300	M*
1-01-157A-000027	FARGO SCHOOL SYSTEM, 166	277830	0	N
1-01-158A-000156	BAPTIST CHURCH, 167	674530	1100	M*
1-01-159A-000157	BAPTIST PARSONAGE, 168	830290	7320	M*

*** Normal & Estimated Account Readings ***
Pre-Billing Usage Report (TOWN Of FARGO) Mon Dec 29, 1997 4:24pm

M Bk Wseq Acct#	Acct Name	Current	Usage	Type
1-01-160A-000028	FARGO SCHOOL SYSTEM, 169	28940	7440	M*
1-01-161A-070296	LENNINGTON, MELODY 170	592810	1310	M*
1-01-162a-000039	BUTTLER, WENDY 171	158710	1530	M*
1-01-164A-000158	FISHER, FOREST 172	267290	740	M*
1-01-165A-000016	ALLEN, GARY 173	668350	4680	M*

Pre-Billing Summary Report (TOWN Of FARGO)

Pre-Billing Summary Page

This billing run was for All Valid Accounts
Meter Reading Date: 07/21/98
Billing Date: 08/01/98
Past Due Date: 08/10/98
Billing Cycle: M

Total Gallons Billed	3,015,926	
Total Bills Printed	186	
Total Current Billing.....	7,581.16	
OF WHICH...		
Total Past Due.....	2,066.08	
Total Amount Due:Water.....	3,547.22	179
Total Amount Due:Sewer.....	459.00	153
Total Amount Due:Garbage.....	1,260.05	157
Total Amount Due:Dumpster.....	0.00	0
Total Amount Due:SW Fees.....	37.25	149
Total Amount Due:Mileage.....	0.00	0
Total Amount Due:Penalties.....	211.56	30
Total Amount Due:Service Charge.....	0.00	0
Total Amount Due:Return Charge.....	0.00	0
Total Amount Due:Miscellaneous.....	0.00	0
---User-Defined Amounts---		
Recurring:	169.65	8
Non-Recurring:	211.56	45

2,097,910

===Overall Summary===

Total Accounts:	276	
Current Billed:	188	
Prior Billed:	0	
Closed:	68	
Inactive:	4	
Zero Accounts:	19	*
Total Meters:	197	
Inactive:	4	
Prior Billed:	0	
UnRead:	14	
Normal:	66	
Estimated:	0	
Excessive:	114	*
Transfers:	0	

2,097,910

Pre-Billing Summary Report (TOWN Of FARGO) [redacted] 24pm

Pre-Billing Summary Page

This billing run was for All Valid Accounts
Meter Reading Date: 08/24/98
Billing Date: 09/01/98
Past Due Date: 09/10/98
Billing Cycle: M

Total Gallons Billed	2,916,114	
Total Bills Printed	186	
Total Current Billing.....	8,339.90	
OF WHICH...		
Total Past Due.....	2,964.18	
Total Amount Due:Water.....	3,418.96	176
Total Amount Due:Sewer.....	441.00	147
Total Amount Due:Garbage.....	1,215.05	151
Total Amount Due:Dumpster.....	0.00	0
Total Amount Due:SW Fees.....	36.00	144
Total Amount Due:Mileage.....	0.00	0
Total Amount Due:Penalties.....	264.71	32
Total Amount Due:Service Charge.....	0.00	0
Total Amount Due:Return Charge.....	0.00	0
Total Amount Due:Miscellaneous.....	0.00	0
---User-Defined Amounts---		
Recurring:	169.65	8
Non-Recurring:	264.71	50

===Overall Summary===

Total Accounts:	277	
Current Billed:	186	
Prior Billed:	0	
Closed:	68	
Inactive:	4	
Zero Accounts:	20	*
Total Meters:	197	
Inactive:	4	
Prior Billed:	0	
UnRead:	16	
Normal:	58	
Estimated:	0	
Excessive:	120	*
Transfers:	0	

Pre-Billing Summary Report (TOWN Of FARGO)

Pre-Billing Summary Page

This billing run was for All Valid Accounts
Meter Reading Date: 09/24/96
Billing Date: 10/01/96
Past Due Date: 10/10/96
Billing Cycle: M

Total Gallons Billed	1,232,299	
Total Bills Printed	181	
Total Current Billing.....	5,160.20	
OF WHICH...		
Total Past Due.....	1,993.77	
Total Amount Due:Water.....	2,363.45	174
Total Amount Due:Sewer.....	438.00	146
Total Amount Due:Garbage.....	1,173.05	153
Total Amount Due:Dumpster.....	0.00	0
Total Amount Due:SW Fees.....	37.25	149
Total Amount Due:Mileage.....	0.00	0
Total Amount Due:Penalties.....	154.68	24
Total Amount Due:Service Charge.....	0.00	0
Total Amount Due:Return Charge.....	0.00	0
Total Amount Due:Miscellaneous.....	0.00	0
---User-Defined Amounts---		
Recurring:	103.43	5
Non-Recurring:	194.68	31

===Overall Summary===

Total Accounts:	236	
Current Billed:	181	
Prior Billed:	0	
Closed:	31	
Inactive:	13	
Zero Accounts:	12	*
Total Meters:	193	
Inactive:	12	
Prior Billed:	0	
UnRead:	9	
Normal:	89	
Estimated:	0	
Excessive:	83	*
Transfers:	0	

re-Billing Summary Report (TOWN Of FARGO) Thu

re-Billing Summary Page

' s billing run was for All Valid Accounts
. er Reading Date; 08/20/96
illing Date: 09/01/96
ast Due Date: 09/10/96
illing Cycle: M

otal Gallons Billed	1,099,401	
otal Bills Printed	181	
otal Current Billing.....	6,777.14	
WHICH...		
otal Past Due.....	2,543.76	
otal Amount Due:Water.....	2,345.72	173
otal Amount Due:Sewer.....	447.00	149
otal Amount Due:Garbage.....	1,208.60	155
otal Amount Due:Dumpster.....	0.00	0
otal Amount Due:SW Fees.....	37.75	151
otal Amount Due:Mileage.....	0.00	0
otal Amount Due:Penalties.....	194.31	31
otal Amount Due:Service Charge.....	0.00	0
otal Amount Due:Return Charge.....	0.00	0
otal Amount Due:Miscellaneous.....	0.00	0
---User-Defined Amounts---		
Recurring:	68.83	4
Non-Recurring:	194.31	37

===Overall Summary===

Total Accounts:	235	
Current Billed:	181	
Prior Billed:	0	
Closed:	31	
Inactive:	12	
Zero Accounts:	12	
Total Meters:	193	
Inactive:	12	
Prior Billed:	0	
UnRead:	9	
Normal:	49	
Estimated:	0	
Excessive:	123	*
Transfers:	0	

Pre-Billing Summary Report (TOWN Of FARGO) 1 12am

Pre-Billing Summary Page

This billing run was for All Valid Accounts
Meter Reading Date: 07/23/96
Billing Date: 08/01/96
Past Due Date: 08/10/96
Billing Cycle: M

Total Gallons Billed	2,225,810	
Total Bills Printed	180	
Total Current Billing.....	6,636.80	
OF WHICH...		
Total Past Due.....	1,791.82	
Total Amount Due:Water.....	3,009.59	172
Total Amount Due:Sewer.....	444.00	148
Total Amount Due:Garbage.....	1,201.10	154
Total Amount Due:Dumpster.....	0.00	0
Total Amount Due:SW Fees.....	37.50	150
Total Amount Due:Mileage.....	0.00	0
Total Amount Due:Penalties.....	152.79	27
Total Amount Due:Service Charge.....	0.00	0
Total Amount Due:Return Charge.....	0.00	0
Total Amount Due:Miscellaneous.....	0.00	0
---User-Defined Amounts---		
Recurring:	68.83	4
Non-Recurring:	152.79	33

===Overall Summary===

Total Accounts:	235	
Current Billed:	180	
Prior Billed:	0	
Closed:	31	
Inactive:	13	
Zero Accounts:	12	*
Total Meters:	193	
Inactive:	13	
Prior Billed:	0	
UnRead:	9	
Normal:	78	
Estimated:	0	
Excessive:	93	*

Transfers:	0	

METER RECORD LOCATIONS

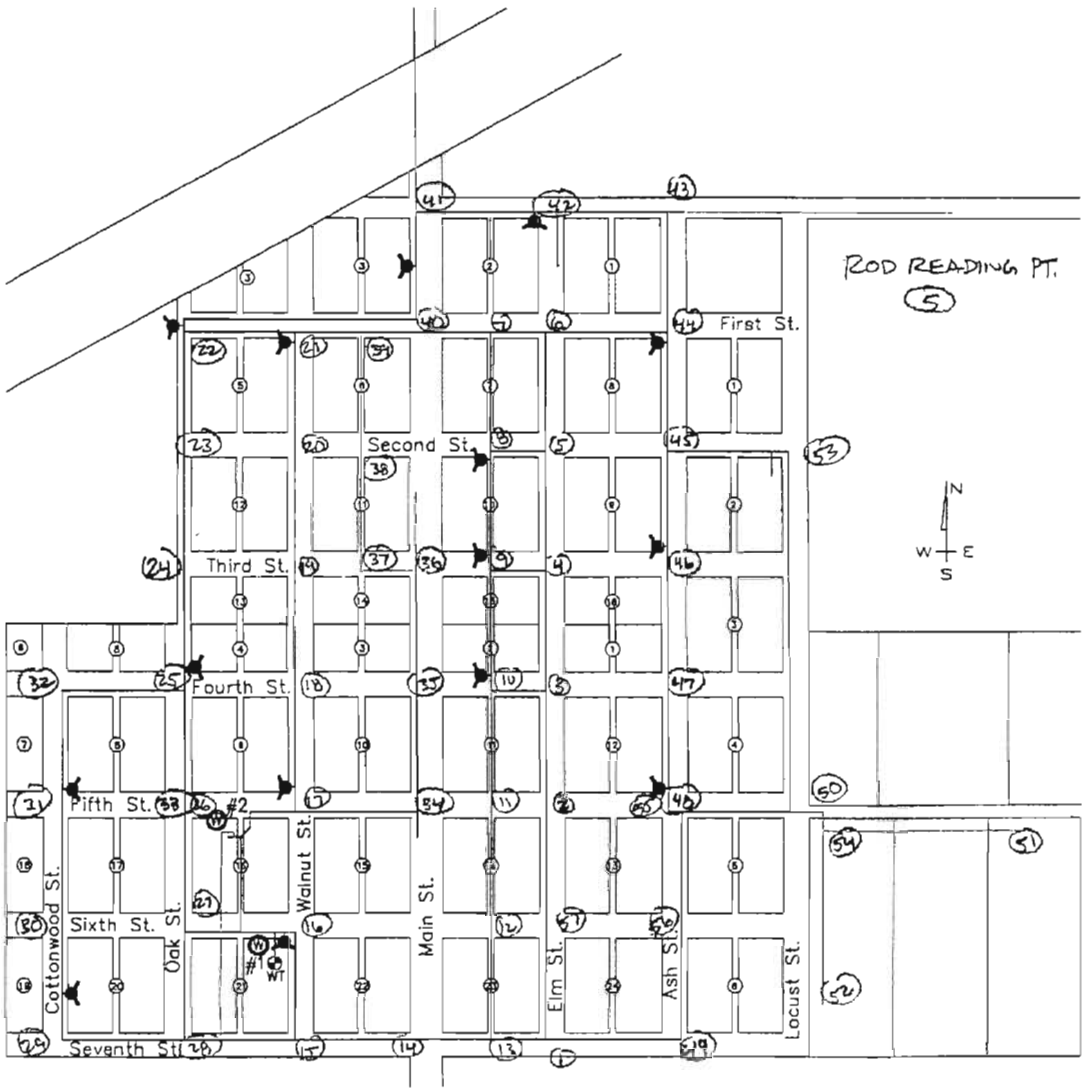
APPENDIX B

Elevation Survey

Fargo Elevation Survey 12-5-98
Assumed Elevation of 100.00 at point 1 Painted BM

Point No.	Elevation	HI	Rod
1	100	102.8	2.8
2	93.92		8.88
3	91.25		11.55
3		91.33	0.08
4	88.74		2.59
5	85.51		5.82
6	83.33		8
6		88.28	4.95
7	83.03		5.25
8	87		1.28
8		97.2	10.2
9	91.2		6
10	95.16		2.04
10		106.81	11.65
11	98.63		8.18
12	103.16		3.65
13	105.71		1.1
13		121.03	15.32
14	113.65		7.38
15	115.75		5.28
16	114.11		6.92
17	103.03		18
17		103.1	0.07
18	98.2		4.9
19	95.17		7.93
20	92.4		10.7
20		93.87	1.47
21	84.33		9.54
21		90.01	3.85
22	84.33		5.68
23	87.51		2.5
23		101.61	14.1
24	92.31		9.3
25	96.09		5.52
26	101.12		0.49
26		116.12	15
27	104.42		11.7
28	110.4		5.72
29	102.87		13.25
30	98.69		17.43
30		102.54	3.85
31	96.91		5.63
32	91.74		10.8
33	101.16		1.38
33		113.46	12.3
34	106.56		6.9
34		111.12	4.56
35	99.82		11.3
36	93.69		17.43
36		98.54	4.85
37	93.83		4.71
38	90.76		7.78
39	85.94		12.6
39		89.99	4.05
40	85.36		4.63
41	81.09		8.9
41		88.77	7.68
42	82.57		6.2
43	83.16		5.61
44	85.27		3.5
44		95.77	10.5
45	89.34		6.43
46	90.58		5.19
47	89.4		6.37
48	89.97		5.8
48		95.22	5.25
49	92.57		2.65
50	85.52		9.7
51	83.52		11.7
50		90.22	4.7
52	88.28		1.94
53	84.6		5.62
54	85.5		4.72
55	89.26		0.96
55		96.6	7.34
56	91		5.6
57	95.04	.	1.56
57		102.28	7.24
1	99.98		2.3

ELEVATION SURVEY PTS



APPENDIX C

Pressure Measurements

HYDRANT RECORD

...ion ______	Hydrant No. ______
...sition ______	Make ______
...stalled ______ Type ______	Turns To Open ______ R. ______ L. ______
...ze of Lead ______	Size of Main ______
...alve in Lead ______ Ft. ______	Turns To Open ______ R. ______ L. ______
...ench Mark ______	Elev. ______

4-12-99

PRESSURE TESTS

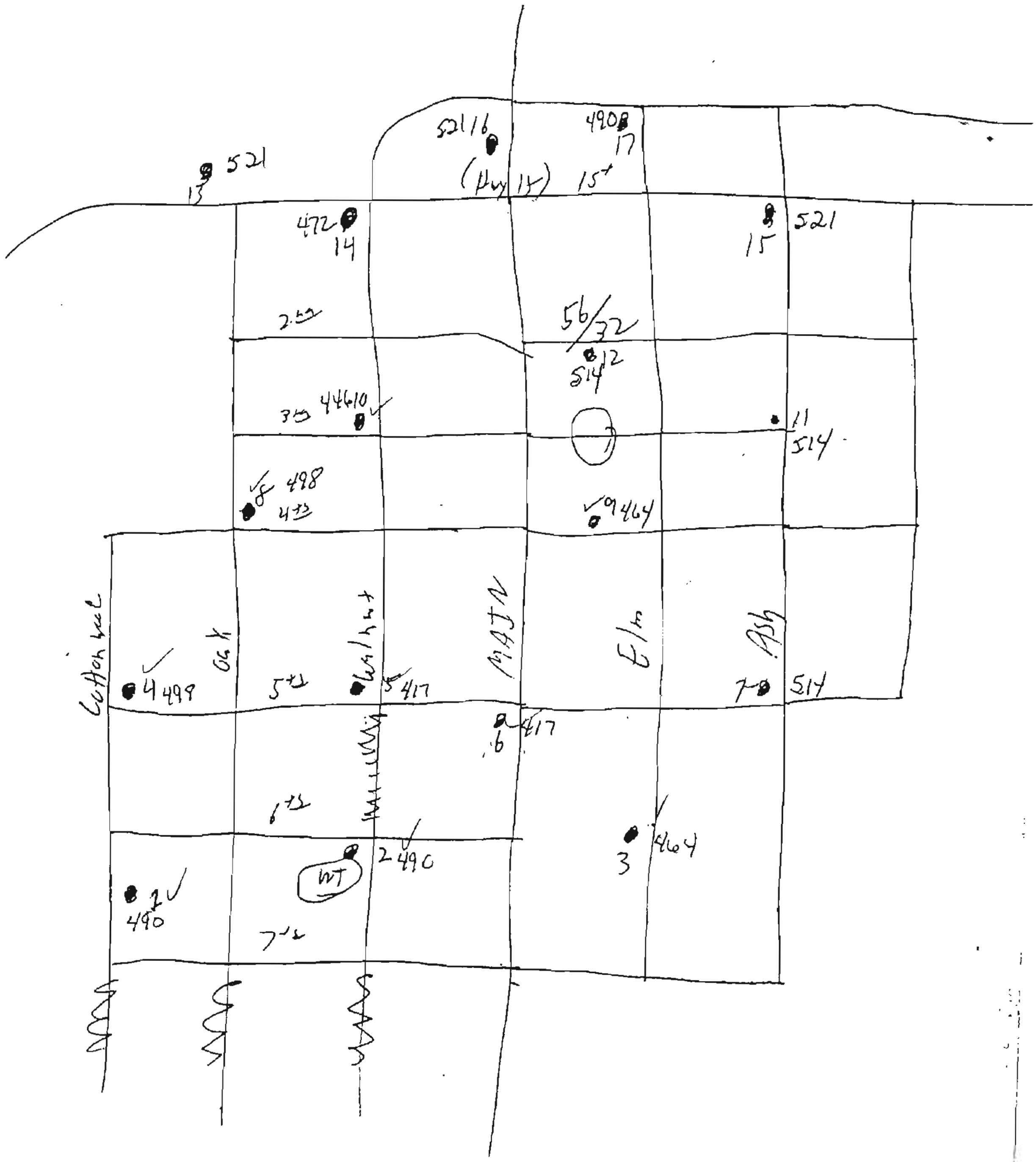
DATE	STATIC PRESSURE	FLOW PRESSURE	GPM	DATE	STATIC PRESSURE	FLOW PRESSURE	GPM
1 .10	51 (J-2)	25	490	11 .48	(J-25) 55	32	514
2	46 (J-59)	29	490	12	(J-48) 56	32	514
3	52 N/A	26	464	13	(J-9) ~~55~~ 59	~~32~~ 33	521
4	53 (J-3)	30	498	14	(J-38) 57	27	472
5 .05	50 (J-39)	21	417	15	(J-23) 58	33	521
6 1.0	48 (J-43)	21	417	16	(J-13) 60	33	521
7	56 (J-26)	32	514	17	(J-20) 55	29	490
8	52 (J-8)	30	498				
9	52 (J-51)	26	464				
10	53 N/A	24	446				

All other Mueller - 1990 REMARKS #13 American Valve 1983
#16 Mueller 1970

RECORD OF MAINTENANCE

WORK PERFORMED ______ DATE ______

...lowed
...ubricated
...ap Gasket Replaced
...onnet Gasket Replaced
...alve Leather Replaced
...rain Valve Replaced
... Replaced
...Valve Operated
...ai...d
...aised
...oved

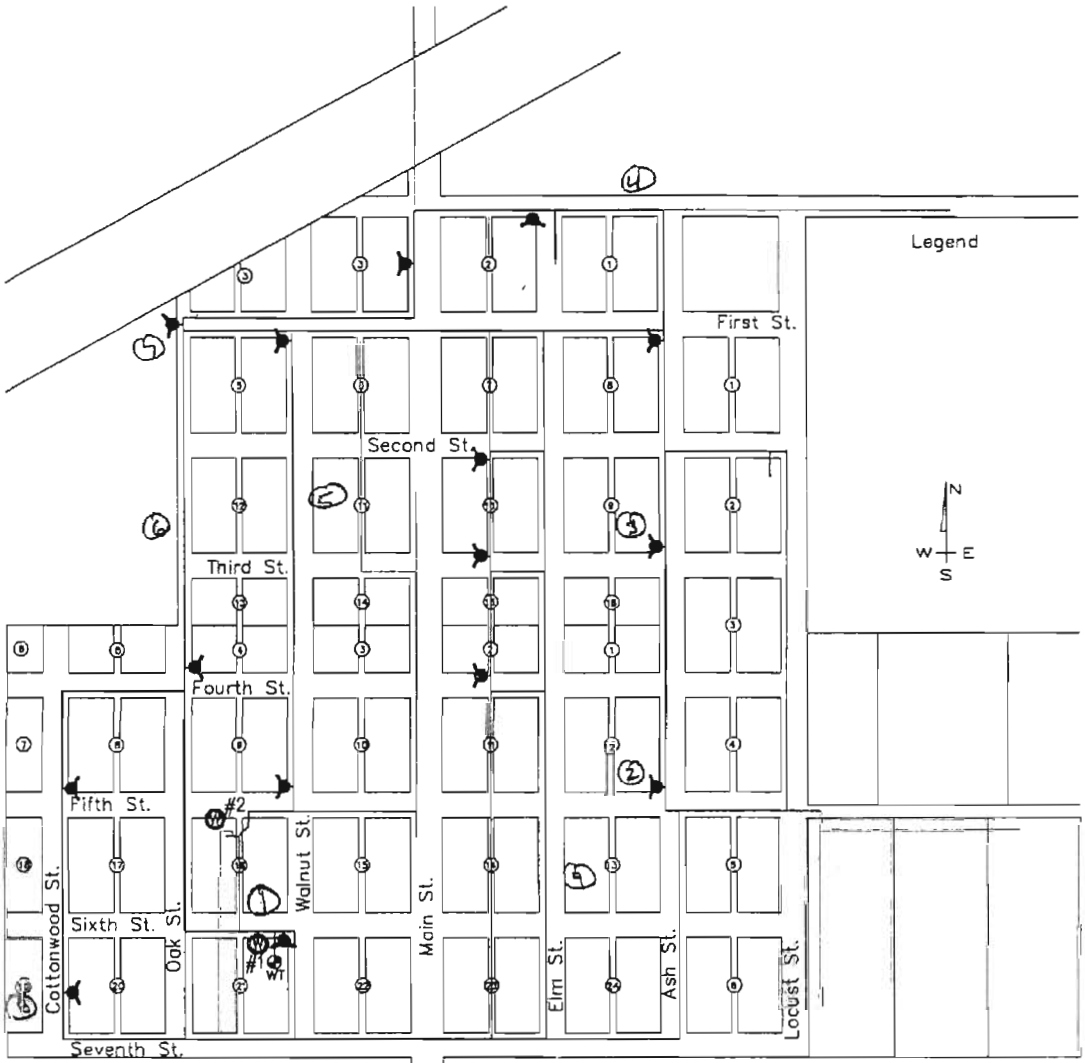


(Hwy 15)
MAIN
Elm
Ash
Walnut
Oak
Cottonwood
WT

APPENDIX D

Measured Chlorine Concentrations

CHLORINE CONCENTRATION (1/8/08)



PT #	Mg/L
(1)	1.7 (wellhead)
(2)	1.3
(3)	1.2
(4)	1.2
(5)	1.2

PT #	Mg/L
(6)	1.3
(7)	1.4
(8)	1.3
(9)	1.2

APPENDIX E

Cybernet Model Results

Base Scenario – Steady State

Analysis Results
Scenario: Base
Steady State Analysis

Note:
The input data may have been modified since the last calculation was performed.
The calculated results may be outdated.

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	Base
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	87	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,766.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-1	N/A	220.31	50.78	0.00	117.44
J-2	N/A	220.31	51.39	0.17	118.83
J-3	N/A	220.31	53.36	0.18	123.40
J-4	N/A	220.31	55.60	0.66	128.57
J-5	N/A	220.31	53.72	0.29	124.22
J-6	N/A	220.31	47.53	0.00	109.91

Analysis Results
Scenario: Base
Steady State Analysis

Junctions @ 0.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-7	N/A	220.31	50.12	3.75	115.89
J-8	N/A	220.31	53.72	0.00	124.22
J-10	N/A	220.31	58.80	0.00	135.98
J-11	N/A	220.31	58.80	0.00	135.98
J-12	N/A	220.31	58.35	0.13	134.95
J-13	N/A	220.30	59.28	0.00	137.07
J-14	N/A	220.30	60.20	2.38	139.21
J-15	N/A	220.30	59.88	0.13	138.47
J-16	N/A	220.30	59.56	0.15	137.73
J-17	N/A	220.30	59.31	0.27	137.14
J-19	N/A	220.30	59.59	0.00	137.80
J-20	N/A	220.30	59.56	0.00	137.73
J-21	N/A	220.30	59.48	0.27	137.55
J-22	N/A	220.30	58.39	0.46	135.03
J-23	N/A	220.30	58.39	0.00	135.03
J-24	N/A	220.30	56.63	0.23	130.96
J-25	N/A	220.30	56.10	0.39	129.72
J-26	N/A	220.30	56.36	0.00	130.33
J-27	N/A	220.30	56.36	0.17	130.33
J-28	N/A	220.30	56.36	0.00	130.33
J-29	N/A	220.30	55.24	0.11	127.73
J-30	N/A	220.31	52.02	0.00	120.31
J-31	N/A	220.30	55.81	0.66	129.05
J-32	N/A	220.30	56.89	0.33	131.56
J-33	N/A	220.30	58.29	0.39	134.79
J-34	N/A	220.30	59.02	0.06	136.47
J-35	N/A	220.31	59.34	0.11	137.23
J-36	N/A	220.31	58.10	0.04	134.37
J-37	N/A	220.31	58.80	0.21	135.98
J-38	N/A	220.31	58.80	0.00	135.98
J-39	N/A	220.31	50.72	0.00	117.28
J-40	N/A	220.31	50.72	0.21	117.28
J-41	N/A	220.31	49.19	0.25	113.75
J-42	N/A	220.31	49.19	0.00	113.75
J-43	N/A	220.31	49.19	0.00	113.75
J-44	N/A	220.31	54.75	0.17	126.62
J-45	N/A	220.31	55.05	0.00	127.31
J-46	N/A	220.31	54.69	0.16	126.48
J-47	N/A	220.30	57.65	0.08	133.30
J-48	N/A	220.30	57.65	0.00	133.30
J-49	N/A	220.30	55.83	0.00	129.10
J-50	N/A	220.30	55.83	0.03	129.10
J-51	N/A	220.30	54.12	0.00	125.14
J-52	N/A	220.30	54.12	0.06	125.14
J-53	N/A	220.30	52.62	0.89	121.67
J-54	N/A	220.31	49.55	0.28	114.60
J-55	N/A	220.31	45.22	0.00	104.56
J-56	N/A	220.31	45.92	0.00	106.20

Analysis Results
Scenario: Base
Steady State Analysis

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-57	N/A	220.31	45.93	0.75	106.20
J-58	N/A	220.31	45.93	0.00	106.20
J-59	N/A	220.31	45.93	0.00	106.20
J-61	N/A	220.31	47.70	0.00	110.31
J-63	N/A	220.30	58.68	0.00	135.70
J-64	N/A	220.30	58.68	0.18	135.70
J-66	N/A	220.30	58.29	0.03	134.80
J-67	N/A	220.30	58.29	0.00	134.80
J-68	N/A	220.30	58.29	0.06	134.80
J-69	N/A	220.30	59.15	0.24	136.78
J-70	N/A	220.30	57.09	0.09	132.02
J-72	N/A	220.31	47.70	0.24	110.31
J-73	N/A	220.31	57.43	0.19	132.80
J-74	N/A	220.31	55.35	0.32	128.00
J-75	N/A	220.31	55.31	0.25	127.91
J-76	N/A	220.31	54.11	0.91	126.14
J-77	N/A	220.31	52.80	0.55	122.11
J-78	N/A	220.31	51.52	1.01	119.15
J-79	N/A	220.31	52.10	0.05	120.49
J-80	N/A	220.31	56.02	0.24	129.55
J-81	N/A	220.30	50.66	0.06	117.14
J-82	N/A	220.30	54.19	0.53	125.30
J-83	N/A	220.30	54.65	0.39	126.36
J-84	N/A	220.30	56.61	0.23	130.90
J-85	N/A	220.30	55.92	0.28	129.30
J-86	N/A	220.30	60.24	0.10	139.30
J-87	N/A	220.31	58.80	0.03	135.98
J-88	N/A	220.31	51.16	0.00	118.31
J-89	N/A	220.31	51.16	0.00	118.31

Tanks @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Tank Level (ft)	Pressure (psi)	Percent Full (%)	Current Storage Volume (ft^3)	Tank Inflow (gpm)	Tank Outflow (gpm)	Status
T-1	N/A	220.32	106.21	45.93	86.8	15,808.50	N/A	20.37	Draining

Reservoirs @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Reservoir Inflow (gpm)	Reservoir Outflow (gpm)
R-1	N/A	114.00	0.48e-3	N/A

Analysis Results
Scenario: Base
Steady State Analysis

Pipes @ 0.00 hr

Label	Status	Constituent (mg/l)	Flow (gpm)	Velocity (ft/s)	From Grade (ft)	To Grade (ft)	Friction Loss (ft)	Minor Loss (ft)	Total Headloss (ft)	Headloss Gradient (ft/1000ft)
P-1	Open	N/A	1.62	0.04	220.31	220.31	0.5e-3	0.00	0.5e-3	0.34e-2
P-2	Open	N/A	1.45	0.02	220.31	220.31	0.24e-3	0.00	0.24e-3	0.38e-3
P-3	Open	N/A	1.27	0.01	220.31	220.31	0.92e-4	0.00	0.92e-4	0.3e-3
P-4	Open	N/A	0.61	0.01	220.31	220.31	0.31e-4	0.00	0.31e-4	0.8e-4
P-5	Open	N/A	-1.62	0.04	220.31	220.31	0.13e-2	0.00	0.13e-2	0.35e-2
P-6	Open	N/A	0.45	0.01	220.31	220.31	0.11e-3	0.00	0.11e-3	0.31e-3
P-8	Open	N/A	3.93	0.04	220.31	220.31	0.2e-3	0.00	0.2e-3	0.26e-2
P-13	Open	N/A	2.76	0.03	220.31	220.31	0.31e-4	0.00	0.31e-4	0.15e-2
P-14	Open	N/A	2.76	0.03	220.31	220.31	0.92e-3	0.00	0.92e-3	0.13e-2
P-15	Open	N/A	2.63	0.03	220.31	220.30	0.2e-3	0.00	0.2e-3	0.12e-2
P-16	Open	N/A	2.63	0.03	220.30	220.30	0.21e-3	0.00	0.21e-3	0.13e-2
P-17	Open	N/A	0.15	0.18e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-19	Open	N/A	-0.39	0.45e-2	220.30	220.30	0.15e-4	0.00	0.15e-4	0.45e-4
P-21	Open	N/A	0.00	0.00	220.30	220.30	0.00	0.00	0.00	0.00
P-22	Open	N/A	0.03	0.3e-3	220.30	220.30	0.00	0.00	0.00	0.00
P-23	Open	N/A	0.03	0.3e-3	220.30	220.30	0.00	0.00	0.00	0.00
P-24	Open	N/A	-0.27	0.01	220.30	220.30	0.15e-4	0.00	0.15e-4	0.9e-4
P-25	Open	N/A	-0.67	0.01	220.30	220.30	0.31e-4	0.00	0.31e-4	0.8e-4
P-26	Open	N/A	0.48	0.01	220.30	220.30	0.00	0.00	0.00	0.00
P-27	Open	N/A	0.48	0.01	220.30	220.30	0.15e-4	0.00	0.15e-4	0.44e-4
P-28	Open	N/A	-0.16e-2	0.18e-4	220.30	220.30	0.00	0.00	0.00	0.00
P-30	Open	N/A	-0.62	0.01	220.30	220.30	0.00	0.00	0.00	0.00
P-31	Open	N/A	-0.79	0.01	220.30	220.30	0.15e-4	0.00	0.15e-4	0.38e-3
P-33	Open	N/A	-1.53	0.02	220.30	220.31	0.18e-3	0.00	0.18e-3	0.44e-3
P-35	Open	N/A	-0.31	0.35e-2	220.30	220.30	0.15e-4	0.00	0.15e-4	0.4e-4
P-36	Open	N/A	-0.60	0.01	220.30	220.30	0.31e-4	0.00	0.31e-4	0.8e-4
P-37	Open	N/A	-0.70	0.01	220.30	220.30	0.31e-4	0.00	0.31e-4	0.8e-4
P-38	Open	N/A	-1.61	0.02	220.30	220.30	0.18e-3	0.00	0.18e-3	0.48e-3
P-39	Open	N/A	-2.37	0.03	220.30	220.31	0.17e-3	0.00	0.17e-3	0.99e-3
P-40	Open	N/A	-3.07	0.03	220.31	220.31	0.63e-3	0.00	0.63e-3	0.16e-2
P-41	Open	N/A	-3.08	0.03	220.31	220.31	0.34e-3	0.00	0.34e-3	0.16e-2
P-43	Open	N/A	-2.66	0.03	220.31	220.31	0.31e-4	0.00	0.31e-4	0.95e-3
P-45	Open	N/A	-4.36	0.05	220.31	220.31	0.23e-3	0.00	0.23e-3	0.3e-2
P-46	Open	N/A	0.89	0.01	220.31	220.31	0.61e-4	0.00	0.61e-4	0.16e-3
P-47	Open	N/A	0.64	0.01	220.31	220.31	0.00	0.00	0.00	0.00
P-48	Open	N/A	0.00	0.00	220.31	220.31	0.00	0.00	0.00	0.00
P-50	Open	N/A	0.00	0.00	220.31	220.31	0.00	0.00	0.00	0.00
P-51	Open	N/A	0.43	0.04	220.31	220.31	0.14e-2	0.00	0.14e-2	0.01
P-53	Open	N/A	0.59	0.01	220.31	220.30	0.2e-3	0.00	0.2e-3	0.52e-3
P-54	Open	N/A	0.22	0.01	220.30	220.30	0.00	0.00	0.00	0.00
P-55	Open	N/A	0.22	0.01	220.30	220.30	0.31e-4	0.00	0.31e-4	1.0e-4
P-56	Open	N/A	0.22	0.01	220.30	220.30	0.00	0.00	0.00	0.00
P-57	Open	N/A	0.15	0.38e-2	220.30	220.30	0.15e-4	0.00	0.15e-4	0.46e-4
P-58	Open	N/A	0.15	0.38e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-59	Open	N/A	0.52	0.01	220.30	220.30	0.17e-3	0.00	0.17e-3	0.44e-3
P-61	Open	N/A	3.23	0.04	220.31	220.31	0.29e-3	0.00	0.29e-3	0.17e-2
P-62	Open	N/A	-2.07	0.05	220.31	220.31	0.18e-2	0.00	0.18e-2	0.01
P-63	Open	N/A	3.93	0.10	220.31	220.31	0.01	0.00	0.01	0.02

Analysis Results
Scenario: Base
Steady State Analysis

Pipes @ 0.00 hr

Label	Status	Constituent (mg/l)	Flow (gpm)	Velocity (ft/s)	From Grade (ft)	To Grade (ft)	Friction Loss (ft)	Minor Loss (ft)	Total Headloss (ft)	Headloss Gradient (ft/1000ft)
P-64	Open	N/A	3.93	0.04	220.31	220.31	0.58e-3	0.00	0.58e-3	0.25e-2
P-65	Open	N/A	-5.99	0.07	220.31	220.31	0.18e-2	0.00	0.18e-2	0.01
P-66	Open	N/A	-6.74	0.08	220.31	220.31	0.21e-3	0.00	0.21e-3	0.01
P-67	Open	N/A	-6.74	0.08	220.31	220.31	0.2e-3	0.00	0.2e-3	0.01
P-68	Open	N/A	-20.37	0.23	220.31	220.32	0.01	0.00	0.01	0.05
P-69	Open	N/A	13.63	0.15	220.31	220.31	0.27e-2	0.00	0.27e-2	0.02
P-70	Open	N/A	7.92	0.09	220.31	220.31	0.15e-2	0.00	0.15e-2	0.01
P-78	Open	N/A	-0.43	0.49e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-79	Open	N/A	0.04	0.46e-3	220.30	220.30	0.00	0.00	0.00	0.00
P-80	Open	N/A	0.29	0.33e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-81	Open	N/A	0.25	0.28e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-82	Open	N/A	0.25	0.28e-2	220.30	220.30	0.00	0.00	0.00	0.00
P-84	Open	N/A	0.07	0.17e-2	220.30	220.30	0.15e-4	0.00	0.15e-4	0.13e-4
P-85	Open	N/A	-0.35	0.01	220.30	220.30	0.76e-4	0.00	0.76e-4	0.22e-3
P-86	Open	N/A	0.39	0.01	220.30	220.30	0.15e-4	0.00	0.15e-4	0.15e-3
P-87	Open	N/A	0.39	0.04	220.30	220.30	0.44e-3	0.00	0.44e-3	0.01
P-88	Open	N/A	0.24	0.02	220.30	220.30	0.18e-2	0.00	0.18e-2	0.29e-2
P-89	Open	N/A	0.09	0.01	220.30	220.30	0.26e-3	0.00	0.26e-3	0.46e-3
P-97	Open	N/A	-3.61	0.04	220.31	220.31	0.78e-3	0.00	0.78e-3	0.21e-2
P-98	Open	N/A	-3.93	0.04	220.31	220.31	0.81e-3	0.00	0.81e-3	0.25e-2
P-99	Open	N/A	-2.66	0.03	220.31	220.31	0.4e-3	0.00	0.4e-3	0.12e-2
P-101	Open	N/A	-2.90	0.03	220.31	220.31	0.53e-3	0.00	0.53e-3	0.14e-2
P-103	Open	N/A	-3.82	0.04	220.31	220.31	0.89e-3	0.00	0.89e-3	0.24e-2
P-104	Open	N/A	-4.36	0.05	220.31	220.31	0.98e-3	0.00	0.98e-3	0.3e-2
P-105	Open	N/A	4.62	0.05	220.31	220.31	0.13e-2	0.00	0.13e-2	0.33e-2
P-106	Open	N/A	3.61	0.04	220.31	220.31	0.75e-3	0.00	0.75e-3	0.21e-2
P-107	Open	N/A	0.64	0.02	220.31	220.31	0.2e-3	0.00	0.2e-3	0.63e-3
P-108	Open	N/A	0.59	0.02	220.31	220.31	0.2e-3	0.00	0.2e-3	0.55e-3
P-109	Open	N/A	0.27	0.03	220.31	220.31	0.14e-2	0.00	0.14e-2	0.38e-2
P-110	Open	N/A	0.02	0.24e-2	220.31	220.31	0.15e-4	0.00	0.15e-4	0.43e-4
P-111	Open	N/A	-0.38	0.02	220.30	220.30	0.34e-3	0.00	0.34e-3	0.95e-3
P-112	Open	N/A	-0.44	0.02	220.30	220.31	0.46e-3	0.00	0.46e-3	0.12e-2
P-113	Open	N/A	1.70	0.02	220.31	220.30	0.18e-3	0.00	0.18e-3	0.5e-3
P-114	Open	N/A	5.70	0.06	220.31	220.31	0.19e-2	0.00	0.19e-2	0.01
P-115	Open	N/A	1.17	0.01	220.30	220.30	0.11e-3	0.00	0.11e-3	0.29e-3
P-116	Open	N/A	0.78	0.01	220.30	220.30	0.48e-4	0.00	0.48e-4	0.12e-3
P-117	Open	N/A	-0.39	0.44e-2	220.30	220.30	0.15e-4	0.00	0.15e-4	0.35e-4
P-118	Open	N/A	-0.62	0.01	220.30	220.30	0.31e-4	0.00	0.31e-4	0.95e-4
P-119	Open	N/A	-1.14	0.01	220.30	220.30	0.76e-4	0.00	0.76e-4	0.22e-3
P-120	Open	N/A	-1.42	0.02	220.30	220.30	0.14e-3	0.00	0.14e-3	0.37e-3
P-121	Open	N/A	0.10	0.01	220.30	220.30	0.27e-3	0.00	0.27e-3	0.53e-3
P-122	Open	N/A	3.42	0.04	220.31	220.31	0.9e-3	0.00	0.9e-3	0.25e-2
P-123	Open	N/A	0.64	0.01	220.31	220.31	0.31e-4	0.00	0.31e-4	0.9e-4
P-124	Open	N/A	2.76	0.03	220.31	220.31	0.31e-4	0.00	0.31e-4	0.15e-2
P-125	Open	N/A	-0.24	0.27e-2	220.31	220.31	0.00	0.00	0.00	0.00
P-126	Open	N/A	5.47	0.06	220.31	220.31	0.14e-2	0.00	0.14e-2	0.01
P-127	Open	N/A	0.24	0.02	220.31	220.31	0.28e-2	0.00	0.26e-2	0.38e-2
P-129	Open	N/A	-0.48e-3	0.64e-5	114.00	114.00	0.00	0.00	0.00	0.00

Analysis Results
Scenario: Base
Steady State Analysis

Pipes @ 0.00 hr

Label	Status	Constituent (mg/l)	Flow (gpm)	Velocity (ft/s)	From Grade (ft)	To Grade (ft)	Friction Loss (ft)	Minor Loss (ft)	Total Headloss (ft)	Headloss Gradient (ft/1000ft)
P-130	Open	N/A	-0.48e-3	0.54e-5	220.32	220.32	0.00	0.00	0.00	0.00

Pumps @ 0.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	N/A	114.00	220.32	0.00	0.00	0.00	0.00

APPENDIX F

Cybernet Model Results

Constituent Analysis

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	221 Ext. Kb=(0.5), Kw=0
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(0.05), Kw=0
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,766.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.63
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.35	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 0.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	220.32	0.00	0.00	0.00	0.00

Junctions @ 1.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	219.79	51.16	0.17	118.31
J-17	0.0	219.78	59.08	0.27	136.62
J-25	0.0	219.78	55.87	0.39	129.20
J-26	0.0	219.78	56.14	0.00	129.81
J-74	0.0	219.79	55.13	0.32	127.48
J-75	0.0	219.79	55.09	0.25	127.39
J-81	0.0	219.78	50.43	0.06	116.62
J-85	0.0	219.78	55.69	0.28	128.78

Pumps @ 1.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	219.80	0.00	0.00	0.00	0.00

Junctions @ 2.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	219.27	50.94	0.17	117.79
J-17	0.0	219.26	58.86	0.27	136.10
J-25	0.0	219.26	55.65	0.39	128.68
J-26	0.0	219.26	55.91	0.00	129.29
J-74	0.0	219.27	54.90	0.32	126.96
J-75	0.0	219.27	54.86	0.25	126.87
J-81	0.0	219.26	50.21	0.06	116.10
J-85	0.0	219.26	55.47	0.28	128.26

Pumps @ 2.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	219.28	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 3.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	218.75	50.71	0.17	117.27
J-17	0.0	218.74	58.63	0.27	135.58
J-25	0.0	218.74	55.42	0.39	128.16
J-26	0.0	218.74	55.69	0.00	128.77
J-74	0.0	218.75	54.68	0.32	126.44
J-75	0.0	218.75	54.64	0.25	126.35
J-81	0.0	218.74	49.98	0.06	115.58
J-85	0.0	218.74	55.24	0.28	127.74

Pumps @ 3.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	218.76	0.00	0.00	0.00	0.00

Junctions @ 4.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	218.23	50.49	0.17	116.75
J-17	0.0	218.22	58.41	0.27	135.06
J-25	0.0	218.22	55.20	0.39	127.64
J-26	0.0	218.22	55.46	0.00	128.25
J-74	0.0	218.23	54.45	0.32	125.92
J-75	0.0	218.23	54.41	0.25	125.83
J-81	0.0	218.22	49.76	0.06	115.06
J-85	0.0	218.22	55.02	0.28	127.22

Pumps @ 4.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	218.24	0.00	0.00	0.00	0.00

Junctions @ 5.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	217.71	50.26	0.17	116.23
J-17	0.0	217.70	58.18	0.27	134.54
J-25	0.0	217.70	54.97	0.39	127.12
J-26	0.0	217.70	55.24	0.00	127.73
J-74	0.0	217.71	54.23	0.32	125.40
J-75	0.0	217.71	54.19	0.25	125.31

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 5.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.0	217.70	49.53	0.06	114.54
J-85	0.0	217.70	54.79	0.28	126.70

Pumps @ 5.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	217.72	0.00	0.00	0.00	0.00

Junctions @ 6.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	217.19	50.04	0.17	115.71
J-17	0.0	217.18	57.96	0.27	134.02
J-25	0.0	217.18	54.75	0.39	126.60
J-26	0.0	217.18	55.01	0.00	127.21
J-74	0.0	217.19	54.00	0.32	124.88
J-75	0.0	217.19	53.96	0.25	124.79
J-81	0.0	217.18	49.31	0.06	114.02
J-85	0.0	217.18	54.57	0.28	126.18

Pumps @ 6.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	217.20	0.00	0.00	0.00	0.00

Junctions @ 7.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	216.67	49.81	0.17	115.19
J-17	0.0	216.66	57.73	0.27	133.50
J-25	0.0	216.66	54.52	0.39	126.08
J-26	0.0	216.66	54.79	0.00	126.69
J-74	0.0	216.67	53.78	0.32	124.36
J-75	0.0	216.67	53.74	0.25	124.27
J-81	0.0	216.66	49.08	0.06	113.50
J-85	0.0	216.66	54.34	0.28	125.66

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 7.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	216.68	0.00	0.00	0.00	0.00

Junctions @ 8.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	216.15	49.59	0.17	114.67
J-17	0.0	216.14	57.51	0.27	132.98
J-25	0.0	216.14	54.30	0.39	125.56
J-26	0.0	216.14	54.56	0.00	126.17
J-74	0.0	216.15	53.55	0.32	123.84
J-75	0.0	216.15	53.51	0.25	123.75
J-81	0.0	216.14	48.86	0.06	112.98
J-85	0.0	216.14	54.12	0.28	125.14

Pumps @ 8.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	216.16	0.00	0.00	0.00	0.00

Junctions @ 8.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	215.63	49.36	0.17	114.15
J-17	0.0	215.62	57.28	0.27	132.46
J-25	0.0	215.62	54.07	0.39	125.04
J-26	0.0	215.62	54.34	0.00	125.65
J-74	0.0	215.63	53.33	0.32	123.32
J-75	0.0	215.63	53.29	0.25	123.23
J-81	0.0	215.62	48.63	0.06	112.46
J-85	0.0	215.62	53.89	0.28	124.62

Pumps @ 9.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	215.64	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 10.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	215.11	49.14	0.17	113.63
J-17	0.0	215.10	57.06	0.27	131.94
J-25	0.0	215.10	53.85	0.39	124.52
J-26	0.0	215.10	54.11	0.00	125.13
J-74	0.0	215.11	53.10	0.32	122.80
J-75	0.0	215.11	53.06	0.25	122.71
J-81	0.0	215.10	48.41	0.06	111.94
J-85	0.0	215.10	53.67	0.28	124.10

Pumps @ 10.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	215.12	0.00	0.00	0.00	0.00

Junctions @ 11.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	214.59	48.91	0.17	113.11
J-17	0.0	214.58	56.83	0.27	131.42
J-25	0.0	214.58	53.62	0.39	124.00
J-26	0.0	214.58	53.89	0.00	124.61
J-74	0.0	214.59	52.88	0.32	122.28
J-75	0.0	214.59	52.84	0.25	122.19
J-81	0.0	214.58	48.18	0.06	111.42
J-85	0.0	214.58	53.44	0.28	123.58

Pumps @ 11.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	214.60	0.00	0.00	0.00	0.00

Junctions @ 12.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	214.07	48.69	0.17	112.59
J-17	0.0	214.06	56.61	0.27	130.90
J-25	0.0	214.06	53.40	0.39	123.48
J-26	0.0	214.06	53.66	0.00	124.09
J-74	0.0	214.07	52.65	0.32	121.76
J-75	0.0	214.07	52.61	0.25	121.67

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 12.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.0	214.06	47.96	0.06	110.90
J-85	0.0	214.06	53.22	0.28	123.06

Pumps @ 12.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	214.08	0.00	0.00	0.00	0.00

Junctions @ 13.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	213.55	48.46	0.17	112.07
J-17	0.0	213.54	56.38	0.27	130.38
J-25	0.0	213.54	53.17	0.39	122.96
J-26	0.0	213.54	53.44	0.00	123.57
J-74	0.0	213.55	52.43	0.32	121.24
J-75	0.0	213.55	52.39	0.25	121.15
J-81	0.0	213.54	47.73	0.06	110.38
J-85	0.0	213.54	52.99	0.28	122.54

Pumps @ 13.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	213.56	0.00	0.00	0.00	0.00

Junctions @ 14.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	213.03	48.24	0.17	111.55
J-17	0.0	213.02	56.16	0.27	129.86
J-25	0.0	213.02	52.95	0.39	122.44
J-26	0.0	213.02	53.21	0.00	123.05
J-74	0.0	213.03	52.20	0.32	120.72
J-75	0.0	213.03	52.16	0.25	120.63
J-81	0.0	213.02	47.51	0.06	109.86
J-85	0.0	213.02	52.77	0.28	122.02

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 14.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	213.04	0.00	0.00	0.00	0.00

Junctions @ 15.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	212.51	48.01	0.17	111.03
J-17	0.0	212.50	55.93	0.27	129.34
J-25	0.0	212.50	52.72	0.39	121.92
J-26	0.0	212.50	52.99	0.00	122.53
J-74	0.0	212.51	51.98	0.32	120.20
J-75	0.0	212.51	51.94	0.25	120.11
J-81	0.0	212.50	47.28	0.06	109.34
J-85	0.0	212.50	52.54	0.28	121.50

Pumps @ 16.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	212.52	0.00	0.00	0.00	0.00

Junctions @ 16.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	211.99	47.79	0.17	110.51
J-17	0.0	211.98	55.71	0.27	128.82
J-25	0.0	211.98	52.50	0.39	121.40
J-26	0.0	211.98	52.76	0.00	122.01
J-74	0.0	211.99	51.75	0.32	119.68
J-75	0.0	211.99	51.71	0.25	119.59
J-81	0.0	211.98	47.06	0.06	108.82
J-85	0.0	211.98	52.32	0.28	120.98

Pumps @ 16.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	212.00	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 17.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	211.47	47.56	0.17	109.99
J-17	0.0	211.46	55.48	0.27	128.30
J-25	0.0	211.46	52.27	0.39	120.88
J-26	0.0	211.46	52.54	0.00	121.49
J-74	0.0	211.47	51.53	0.32	119.16
J-75	0.0	211.47	51.49	0.25	119.07
J-81	0.0	211.46	46.83	0.06	108.30
J-85	0.0	211.46	52.09	0.28	120.46

Pumps @ 17.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.0	114.00	211.48	0.00	0.00	0.00	0.00

Junctions @ 18.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	210.95	47.34	0.17	109.47
J-17	0.0	210.94	55.26	0.27	127.78
J-25	0.0	210.94	52.05	0.39	120.36
J-26	0.0	210.94	52.31	0.00	120.97
J-74	0.0	210.95	51.30	0.32	118.64
J-75	0.0	210.95	51.26	0.25	118.55
J-81	0.0	210.94	46.61	0.06	107.78
J-85	0.0	210.94	51.87	0.28	119.94

Pumps @ 18.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.0	113.95	211.03	92.10	97.09	1.00	2.26

Junctions @ 19.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	212.78	48.13	0.17	111.30
J-17	0.0	212.78	56.05	0.27	129.62
J-25	0.0	212.78	52.84	0.39	122.20
J-26	0.0	212.78	53.11	0.00	122.81
J-74	0.0	212.78	52.09	0.32	120.47
J-75	0.0	212.78	52.06	0.25	120.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 19.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.0	212.78	47.40	0.06	109.62
J-85	0.0	212.78	52.66	0.28	121.78

Pumps @ 19.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	212.86	90.87	98.91	1.00	2.27

Junctions @ 20.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	214.58	48.91	0.17	113.10
J-17	0.0	214.58	56.83	0.27	131.42
J-25	0.0	214.58	53.62	0.39	124.00
J-26	0.0	214.58	53.88	0.00	124.61
J-74	0.0	214.58	52.87	0.32	122.27
J-75	0.0	214.58	52.83	0.25	122.18
J-81	0.0	214.58	48.18	0.06	111.42
J-85	0.0	214.58	53.44	0.28	123.58

Pumps @ 20.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.66	89.35	100.71	1.00	2.27

Junctions @ 21.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	216.34	49.67	0.17	114.86
J-17	0.0	216.34	57.59	0.27	133.18
J-25	0.0	216.34	54.38	0.39	125.76
J-26	0.0	216.34	54.65	0.00	126.37
J-74	0.0	216.34	53.63	0.32	124.03
J-75	0.0	216.34	53.60	0.25	123.94
J-81	0.0	216.34	48.94	0.06	113.18
J-85	0.0	216.34	54.20	0.28	125.34

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 21.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.42	87.30	102.47	1.00	2.26

Junctions @ 22.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	218.05	50.41	0.17	116.57
J-17	0.0	218.05	58.33	0.27	134.89
J-25	0.0	218.05	55.12	0.39	127.47
J-26	0.0	218.05	55.38	0.00	128.08
J-74	0.0	218.05	54.37	0.32	125.74
J-75	0.0	218.05	54.33	0.25	125.65
J-81	0.0	218.05	49.68	0.06	114.89
J-85	0.0	218.05	54.94	0.28	127.05

Pumps @ 22.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.12	84.15	104.17	1.00	2.21

Junctions @ 23.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	219.68	51.11	0.17	118.20
J-17	0.0	219.67	59.03	0.27	136.51
J-25	0.0	219.67	55.82	0.39	129.09
J-26	0.0	219.67	56.09	0.00	129.70
J-74	0.0	219.68	55.08	0.32	127.37
J-75	0.0	219.68	55.04	0.25	127.28
J-81	0.0	219.67	50.38	0.06	116.51
J-85	0.0	219.67	55.64	0.28	128.67

Pumps @ 23.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.74	76.26	105.78	1.00	2.04

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 24.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	221.11	51.73	0.17	119.63
J-17	0.0	221.10	59.65	0.27	137.94
J-25	0.0	221.10	56.44	0.39	130.52
J-26	0.0	221.10	56.71	0.00	131.13
J-74	0.0	221.10	55.69	0.32	128.78
J-75	0.0	221.10	55.66	0.25	128.70
J-81	0.0	221.10	51.00	0.06	117.94
J-85	0.0	221.10	56.26	0.28	130.10

Pumps @ 24.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.12	0.00	0.00	0.00	0.00

Junctions @ 26.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4e-3	220.59	51.51	0.17	119.11
J-17	0.0	220.58	59.43	0.27	137.42
J-25	0.0	220.58	56.22	0.39	130.00
J-26	0.0	220.58	56.48	0.00	130.61
J-74	0.0	220.58	55.47	0.32	128.27
J-75	0.0	220.58	55.43	0.25	128.18
J-81	0.0	220.58	50.78	0.06	117.42
J-85	0.0	220.58	56.04	0.28	129.58

Pumps @ 26.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.60	0.00	0.00	0.00	0.00

Junctions @ 26.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.1	220.07	51.28	0.17	118.59
J-17	0.0	220.06	59.20	0.27	136.90
J-25	0.0	220.06	55.99	0.39	129.48
J-26	0.0	220.06	56.26	0.00	130.09
J-74	0.1e-1	220.06	55.25	0.32	127.75
J-75	0.0	220.06	55.21	0.25	127.66

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 26.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.0	220.06	50.55	0.06	116.90
J-85	0.0	220.06	55.81	0.28	129.06

Pumps @ 26.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.08	0.00	0.00	0.00	0.00

Junctions @ 27.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.2	219.55	51.06	0.17	118.07
J-17	0.0	219.54	58.98	0.27	136.38
J-25	0.0	219.54	55.77	0.39	128.96
J-26	0.0	219.54	56.03	0.00	129.57
J-74	0.1	219.54	55.02	0.32	127.23
J-75	0.0	219.54	54.98	0.25	127.14
J-81	0.0	219.54	50.33	0.06	116.38
J-85	0.0	219.54	55.59	0.28	128.54

Pumps @ 27.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.56	0.00	0.00	0.00	0.00

Junctions @ 28.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.2	219.03	50.83	0.17	117.55
J-17	0.0	219.02	58.75	0.27	135.86
J-25	0.0	219.02	55.54	0.39	128.44
J-26	0.0	219.02	55.81	0.00	129.05
J-74	0.1	219.02	54.80	0.32	126.71
J-75	0.0	219.02	54.76	0.25	126.62
J-81	0.1	219.02	50.10	0.06	115.86
J-85	0.0	219.02	55.36	0.28	128.02

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 28.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.04	0.00	0.00	0.00	0.00

Junctions @ 28.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.3	218.51	50.61	0.17	117.03
J-17	0.0	218.50	58.53	0.27	135.34
J-25	0.0	218.50	55.32	0.39	127.92
J-26	0.0	218.50	55.58	0.00	128.53
J-74	0.2	218.50	54.57	0.32	126.19
J-75	0.1	218.50	54.53	0.25	126.10
J-81	0.1	218.50	49.88	0.06	115.34
J-85	0.0	218.50	55.14	0.28	127.50

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Pumps @ 29.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.52	0.00	0.00	0.00	0.00

Junctions @ 30.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	217.99	50.38	0.17	116.51
J-17	0.0	217.98	58.30	0.27	134.82
J-25	0.0	217.98	55.09	0.39	127.40
J-26	0.0	217.98	55.36	0.00	128.01
J-74	0.3	217.98	54.35	0.32	125.67
J-75	0.1	217.98	54.31	0.25	125.58
J-81	0.2	217.98	49.65	0.06	114.82
J-85	0.0	217.98	54.91	0.28	126.98

Pumps @ 30.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.00	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 31.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	217.47	50.16	0.17	115.99
J-17	0.0	217.46	58.08	0.27	134.30
J-25	0.0	217.46	54.87	0.39	126.88
J-26	0.0	217.46	55.13	0.00	127.49
J-74	0.3	217.46	54.12	0.32	125.15
J-75	0.2	217.46	54.08	0.25	125.06
J-81	0.3	217.46	49.43	0.06	114.30
J-85	0.0	217.46	54.69	0.28	126.46

Pumps @ 31.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.48	0.00	0.00	0.00	0.00

Junctions @ 32.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	216.95	49.93	0.17	115.47
J-17	0.0	216.94	57.85	0.27	133.78
J-25	0.0	216.94	54.64	0.39	126.36
J-26	0.0	216.94	54.91	0.00	126.97
J-74	0.3	216.94	53.90	0.32	124.63
J-75	0.3	216.94	53.86	0.25	124.54
J-81	0.4	216.94	49.20	0.06	113.78
J-85	0.0	216.94	54.46	0.28	125.94

Pumps @ 32.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.96	0.00	0.00	0.00	0.00

Junctions @ 33.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	216.43	49.71	0.17	114.95
J-17	0.0	216.42	57.63	0.27	133.26
J-25	0.0	216.42	54.42	0.39	125.84
J-26	0.0	216.42	54.68	0.00	126.45
J-74	0.3	216.42	53.67	0.32	124.11
J-75	0.3	216.42	53.63	0.25	124.02

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 33.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.4	216.42	48.98	0.06	113.26
J-85	0.0	216.42	54.24	0.28	125.42

Pumps @ 33.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.44	0.00	0.00	0.00	0.00

Junctions @ 34.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	215.91	49.48	0.17	114.43
J-17	0.0	215.90	57.40	0.27	132.74
J-25	0.0	215.90	54.19	0.39	125.32
J-26	0.0	215.90	54.46	0.00	125.93
J-74	0.3	215.90	53.45	0.32	123.59
J-75	0.4	215.90	53.41	0.25	123.50
J-81	0.4	215.90	48.75	0.06	112.74
J-85	0.0	215.90	54.01	0.28	124.90

Pumps @ 34.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.92	0.00	0.00	0.00	0.00

Junctions @ 35.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	215.39	49.26	0.17	113.91
J-17	0.0	215.38	57.18	0.27	132.22
J-25	0.0	215.38	53.97	0.39	124.80
J-26	0.0	215.38	54.23	0.00	125.41
J-74	0.3	215.38	53.22	0.32	123.07
J-75	0.4	215.38	53.18	0.25	122.98
J-81	0.4	215.38	48.53	0.06	112.22
J-85	0.0	215.38	53.79	0.28	124.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 36.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.40	0.00	0.00	0.00	0.00

Junctions @ 36.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	214.87	49.03	0.17	113.39
J-17	0.0	214.86	56.95	0.27	131.70
J-25	0.0	214.86	53.74	0.39	124.28
J-26	0.0	214.86	54.01	0.00	124.89
J-74	0.3	214.86	53.00	0.32	122.55
J-75	0.4	214.86	52.96	0.25	122.46
J-81	0.4	214.86	48.30	0.06	111.70
J-85	0.3e-5	214.86	53.56	0.28	123.86

Pumps @ 36.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.88	0.00	0.00	0.00	0.00

Junctions @ 37.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	214.35	48.81	0.17	112.67
J-17	0.0	214.34	56.73	0.27	131.18
J-25	0.0	214.34	53.52	0.39	123.76
J-26	0.0	214.34	53.78	0.00	124.37
J-74	0.3	214.34	52.77	0.32	122.03
J-75	0.4	214.34	52.73	0.25	121.94
J-81	0.4	214.34	48.08	0.06	111.18
J-85	0.4e-1	214.34	53.34	0.28	123.34

Pumps @ 37.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.36	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 38.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	213.83	48.58	0.17	112.35
J-17	0.0	213.82	56.50	0.27	130.66
J-25	0.0	213.82	53.29	0.39	123.24
J-26	0.0	213.82	53.56	0.00	123.85
J-74	0.3	213.82	52.55	0.32	121.51
J-75	0.4	213.82	52.51	0.25	121.42
J-81	0.4	213.82	47.85	0.06	110.66
J-85	0.1	213.82	53.11	0.28	122.82

Pumps @ 38.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.84	0.00	0.00	0.00	0.00

Junctions @ 39.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	213.31	48.36	0.17	111.83
J-17	0.0	213.30	56.28	0.27	130.14
J-25	0.0	213.30	53.07	0.39	122.72
J-26	0.0	213.30	53.33	0.00	123.33
J-74	0.3	213.30	52.32	0.32	120.99
J-75	0.4	213.30	52.28	0.25	120.90
J-81	0.4	213.30	47.63	0.06	110.14
J-85	0.2	213.30	52.89	0.28	122.30

Pumps @ 39.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.32	0.00	0.00	0.00	0.00

Junctions @ 40.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	212.79	48.13	0.17	111.31
J-17	0.0	212.78	56.05	0.27	129.62
J-25	0.0	212.78	52.84	0.39	122.20
J-26	0.0	212.78	53.11	0.00	122.81
J-74	0.3	212.78	52.10	0.32	120.47
J-75	0.4	212.78	52.06	0.25	120.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 40.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.4	212.78	47.40	0.06	109.62
J-85	0.3	212.78	52.66	0.28	121.78

Pumps @ 40.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.60	0.00	0.00	0.00	0.00

Junctions @ 41.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	212.27	47.91	0.17	110.79
J-17	0.0	212.26	55.83	0.27	129.10
J-25	0.0	212.26	52.62	0.39	121.68
J-26	0.0	212.26	52.88	0.00	122.29
J-74	0.3	212.26	51.87	0.32	119.95
J-75	0.4	212.26	51.83	0.25	119.86
J-81	0.4	212.26	47.18	0.06	109.10
J-85	0.3	212.26	52.44	0.28	121.26

Pumps @ 41.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.28	0.00	0.00	0.00	0.00

Junctions @ 42.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	211.75	47.68	0.17	110.27
J-17	0.0	211.74	55.60	0.27	128.58
J-25	0.0	211.74	52.39	0.39	121.16
J-26	0.0	211.74	52.66	0.00	121.77
J-74	0.3	211.74	51.65	0.32	119.43
J-75	0.4	211.74	51.61	0.25	119.34
J-81	0.4	211.74	46.95	0.06	108.58
J-85	0.4	211.74	52.21	0.28	120.74

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 42.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.76	0.00	0.00	0.00	0.00

Junctions @ 43.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	211.23	47.46	0.17	109.75
J-17	0.0	211.22	55.38	0.27	128.06
J-25	0.0	211.22	52.17	0.39	120.64
J-26	0.0	211.22	52.43	0.00	121.25
J-74	0.3	211.22	51.42	0.32	118.91
J-75	0.4	211.22	51.38	0.25	118.82
J-81	0.4	211.22	46.73	0.06	108.06
J-85	0.4	211.22	51.99	0.28	120.22

Pumps @ 43.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	211.31	91.93	97.36	1.00	2.26

Junctions @ 44.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	213.05	48.25	0.17	111.57
J-17	0.0	213.05	56.17	0.27	129.89
J-25	0.0	213.05	52.96	0.39	122.47
J-26	0.0	213.05	53.22	0.00	123.08
J-74	0.3	213.05	52.21	0.32	120.74
J-75	0.4	213.05	52.17	0.25	120.65
J-81	0.4	213.05	47.52	0.06	109.89
J-85	0.4	213.05	52.78	0.28	122.05

Pumps @ 44.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	213.13	90.67	99.19	1.00	2.27

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 45.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	214.85	49.02	0.17	113.37
J-17	0.0	214.84	56.94	0.27	131.68
J-25	0.0	214.84	53.74	0.39	124.26
J-26	0.0	214.84	54.00	0.00	124.87
J-74	0.3	214.85	52.99	0.32	122.54
J-75	0.4	214.84	52.95	0.25	122.44
J-81	0.4	214.84	48.30	0.06	111.68
J-85	0.4	214.84	53.55	0.28	123.84

Pumps @ 45.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.83	89.08	100.98	1.00	2.27

Junctions @ 46.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	216.60	49.78	0.17	115.12
J-17	0.0	216.60	57.70	0.27	133.44
J-25	0.0	216.60	54.49	0.39	126.02
J-26	0.0	216.60	54.76	0.00	126.63
J-74	0.3	216.60	53.75	0.32	124.29
J-75	0.4	216.60	53.71	0.25	124.20
J-81	0.4	216.60	49.05	0.06	113.44
J-85	0.4	216.60	54.31	0.28	125.60

Pumps @ 46.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.68	86.92	102.73	1.00	2.25

Junctions @ 47.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	218.30	50.52	0.17	116.82
J-17	0.0	218.30	58.44	0.27	135.14
J-25	0.0	218.30	55.23	0.39	127.72
J-26	0.0	218.30	55.49	0.00	128.33
J-74	0.3	218.30	54.48	0.32	125.99
J-75	0.4	218.30	54.44	0.25	125.90

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 47.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.4	218.30	49.79	0.06	115.14
J-85	0.4	218.30	55.05	0.28	127.30

Pumps @ 47.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.37	83.48	104.42	1.00	2.20

Junctions @ 48.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	219.91	51.21	0.17	118.43
J-17	0.0	219.91	59.13	0.27	136.75
J-25	0.0	219.91	55.93	0.39	129.33
J-26	0.4e-2	219.91	56.19	0.00	129.94
J-74	0.3	219.91	55.18	0.32	127.60
J-75	0.4	219.91	55.14	0.25	127.51
J-81	0.4	219.91	50.49	0.06	116.75
J-85	0.4	219.91	55.74	0.28	128.91

Pumps @ 48.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.97	219.97	72.31	106.00	1.00	1.94

Junctions @ 49.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	221.24	51.79	0.17	119.76
J-17	0.0	221.23	59.71	0.27	138.07
J-25	0.0	221.23	56.50	0.39	130.65
J-26	0.1	221.23	56.76	0.00	131.26
J-74	0.3	221.24	55.75	0.32	128.93
J-75	0.4	221.24	55.71	0.25	128.84
J-81	0.4	221.23	51.06	0.06	118.07
J-85	0.4	221.23	56.32	0.28	130.23

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 49.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.25	0.00	0.00	0.00	0.00

Junctions @ 50.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.4	220.72	51.56	0.17	119.24
J-17	0.0	220.71	59.48	0.27	137.55
J-25	0.0	220.71	56.27	0.39	130.13
J-26	0.2	220.71	56.54	0.00	130.74
J-74	0.3	220.72	55.53	0.32	128.41
J-75	0.4	220.72	55.49	0.25	128.32
J-81	0.4	220.71	50.83	0.06	117.55
J-85	0.4	220.71	56.09	0.28	129.71

Pumps @ 50.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.73	0.00	0.00	0.00	0.00

Junctions @ 51.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.5	220.20	51.34	0.17	118.72
J-17	0.0	220.19	59.26	0.27	137.03
J-25	0.0	220.19	56.05	0.39	129.61
J-26	0.2	220.19	56.31	0.00	130.22
J-74	0.4	220.20	55.30	0.32	127.89
J-75	0.4	220.20	55.26	0.25	127.80
J-81	0.4	220.19	50.61	0.06	117.03
J-85	0.4	220.19	55.87	0.28	129.19

Pumps @ 51.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.21	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 52.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.5	219.68	51.11	0.17	118.20
J-17	0.0	219.67	59.03	0.27	136.51
J-25	0.0	219.67	55.82	0.39	129.09
J-26	0.3	219.67	56.09	0.00	129.70
J-74	0.4	219.68	55.08	0.32	127.37
J-75	0.4	219.68	55.04	0.25	127.28
J-81	0.4	219.67	50.38	0.06	116.51
J-85	0.4	219.67	55.64	0.28	128.67

Pumps @ 52.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.69	0.00	0.00	0.00	0.00

Junctions @ 53.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.6	219.16	50.89	0.17	117.68
J-17	0.0	219.15	58.81	0.27	135.99
J-25	0.0	219.15	55.60	0.39	128.57
J-26	0.3	219.15	55.86	0.00	129.18
J-74	0.5	219.16	54.85	0.32	126.85
J-75	0.4	219.16	54.81	0.25	126.76
J-81	0.4	219.15	50.16	0.06	115.99
J-85	0.4	219.15	55.42	0.28	128.15

Pumps @ 53.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.17	0.00	0.00	0.00	0.00

Junctions @ 54.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.6	218.64	50.66	0.17	117.16
J-17	0.0	218.63	58.58	0.27	135.47
J-25	0.0	218.63	55.37	0.39	128.05
J-26	0.4	218.63	55.64	0.00	128.66
J-74	0.5	218.64	54.63	0.32	126.33
J-75	0.4	218.64	54.59	0.25	126.24

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 54.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.5	218.63	49.93	0.06	115.47
J-85	0.4	218.63	55.19	0.28	127.63

Pumps @ 54.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.65	0.00	0.00	0.00	0.00

Junctions @ 55.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	218.12	50.44	0.17	116.64
J-17	0.0	218.11	58.36	0.27	134.95
J-25	0.0	218.11	55.15	0.39	127.53
J-26	0.4	218.11	55.41	0.00	128.14
J-74	0.5	218.12	54.40	0.32	125.81
J-75	0.5	218.12	54.36	0.25	125.72
J-81	0.6	218.11	49.71	0.06	114.95
J-85	0.4	218.11	54.97	0.28	127.11

Pumps @ 55.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.13	0.00	0.00	0.00	0.00

Junctions @ 56.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	217.60	50.21	0.17	116.12
J-17	0.0	217.59	58.13	0.27	134.43
J-25	0.0	217.59	54.92	0.39	127.01
J-26	0.4	217.59	55.19	0.00	127.62
J-74	0.6	217.60	54.18	0.32	125.29
J-75	0.6	217.60	54.14	0.25	125.20
J-81	0.6	217.59	49.49	0.06	114.43
J-85	0.4	217.59	54.74	0.28	126.59

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 66.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.61	0.00	0.00	0.00	0.00

Junctions @ 67.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	217.08	49.99	0.17	115.60
J-17	0.1e-3	217.07	57.91	0.27	133.91
J-25	0.0	217.07	54.70	0.39	126.49
J-26	0.4	217.07	54.96	0.00	127.10
J-74	0.6	217.08	53.95	0.32	124.77
J-75	0.6	217.08	53.91	0.25	124.68
J-81	0.7	217.07	49.26	0.06	113.91
J-85	0.4	217.07	54.52	0.28	126.07

Pumps @ 67.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.09	0.00	0.00	0.00	0.00

Junctions @ 68.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	216.56	49.76	0.17	115.08
J-17	0.3e-1	216.55	57.68	0.27	133.39
J-25	0.0	216.55	54.48	0.39	125.97
J-26	0.4	216.55	54.74	0.00	126.58
J-74	0.6	216.56	53.73	0.32	124.25
J-75	0.7	216.56	53.69	0.25	124.16
J-81	0.7	216.55	49.04	0.06	113.39
J-85	0.4	216.55	54.29	0.28	125.55

Pumps @ 68.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.57	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 59.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	216.04	49.54	0.17	114.56
J-17	0.1	216.03	57.46	0.27	132.87
J-25	0.0	216.03	54.25	0.39	125.45
J-26	0.4	216.03	54.51	0.00	126.06
J-74	0.6	216.04	53.50	0.32	123.73
J-75	0.7	216.04	53.46	0.25	123.64
J-81	0.7	216.03	48.81	0.05	112.87
J-85	0.4	216.03	54.07	0.28	125.03

Pumps @ 59.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.05	0.00	0.00	0.00	0.00

Junctions @ 60.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	215.52	49.31	0.17	114.04
J-17	0.2	215.51	57.23	0.27	132.35
J-25	0.0	215.51	54.03	0.39	124.93
J-26	0.4	215.51	54.29	0.00	125.54
J-74	0.6	215.52	53.28	0.32	123.21
J-75	0.7	215.52	53.24	0.25	123.12
J-81	0.7	215.51	48.59	0.06	112.35
J-85	0.4	215.51	53.84	0.28	124.51

Pumps @ 60.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.53	0.00	0.00	0.00	0.00

Junctions @ 61.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	215.00	49.09	0.17	113.52
J-17	0.2	214.99	57.01	0.27	131.83
J-25	0.0	214.99	53.80	0.39	124.41
J-26	0.4	214.99	54.06	0.00	125.02
J-74	0.6	215.00	53.05	0.32	122.69
J-75	0.7	215.00	53.01	0.25	122.60

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 61.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.7	214.99	48.36	0.06	111.83
J-85	0.4	214.99	53.62	0.28	123.99

Pumps @ 61.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.01	0.00	0.00	0.00	0.00

Junctions @ 62.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	214.48	48.86	0.17	113.00
J-17	0.2	214.47	56.78	0.27	131.31
J-25	0.0	214.47	53.58	0.39	123.89
J-26	0.4	214.47	53.84	0.00	124.50
J-74	0.6	214.48	52.83	0.32	122.17
J-75	0.7	214.48	52.79	0.25	122.08
J-81	0.7	214.47	48.14	0.06	111.31
J-85	0.4	214.47	53.39	0.28	123.47

Pumps @ 62.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.49	0.00	0.00	0.00	0.00

Junctions @ 63.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	213.96	48.64	0.17	112.48
J-17	0.3	213.95	56.56	0.27	130.79
J-25	0.0	213.95	53.35	0.39	123.37
J-26	0.4	213.95	53.61	0.00	123.98
J-74	0.6	213.96	52.60	0.32	121.65
J-75	0.7	213.96	52.56	0.25	121.56
J-81	0.7	213.95	47.91	0.06	110.79
J-85	0.5	213.95	53.17	0.28	122.95

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 63.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.97	0.00	0.00	0.00	0.00

Junctions @ 64.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	213.44	48.41	0.17	111.96
J-17	0.3	213.43	56.33	0.27	130.27
J-25	0.0	213.43	53.13	0.39	122.85
J-26	0.4	213.43	53.39	0.00	123.46
J-74	0.6	213.44	52.38	0.32	121.13
J-75	0.7	213.44	52.34	0.25	121.04
J-81	0.7	213.43	47.69	0.06	110.27
J-85	0.5	213.43	52.94	0.28	122.43

Pumps @ 64.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.45	0.00	0.00	0.00	0.00

Junctions @ 65.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	212.92	48.19	0.17	111.44
J-17	0.3	212.91	56.11	0.27	129.75
J-25	0.0	212.91	52.90	0.39	122.33
J-26	0.4	212.91	53.16	0.00	122.94
J-74	0.6	212.92	52.15	0.32	120.61
J-75	0.7	212.92	52.11	0.25	120.52
J-81	0.7	212.91	47.46	0.06	109.75
J-85	0.6	212.91	52.72	0.28	121.91

Pumps @ 65.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.93	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 66.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	212.40	47.96	0.17	110.92
J-17	0.3	212.39	55.88	0.27	129.23
J-25	0.0	212.39	52.68	0.39	121.81
J-26	0.4	212.39	52.94	0.00	122.42
J-74	0.6	212.40	51.93	0.32	120.09
J-75	0.7	212.40	51.89	0.25	120.00
J-81	0.7	212.39	47.24	0.06	109.23
J-85	0.6	212.39	52.49	0.28	121.39

Pumps @ 66.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.41	0.00	0.00	0.00	0.00

Junctions @ 67.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	211.88	47.74	0.17	110.40
J-17	0.3	211.87	55.66	0.27	128.71
J-25	0.0	211.87	52.45	0.39	121.29
J-26	0.4	211.87	52.72	0.00	121.90
J-74	0.6	211.88	51.70	0.32	119.57
J-75	0.7	211.88	51.67	0.25	119.48
J-81	0.7	211.87	47.01	0.06	108.71
J-85	0.7	211.87	52.27	0.28	120.87

Pumps @ 67.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.89	0.00	0.00	0.00	0.00

Junctions @ 68.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	211.36	47.51	0.17	109.88
J-17	0.3	211.35	55.44	0.27	128.19
J-25	0.0	211.35	52.23	0.39	120.77
J-26	0.4	211.35	52.49	0.00	121.38
J-74	0.6	211.36	51.48	0.32	119.05
J-75	0.7	211.36	51.44	0.25	118.96

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 68.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.7	211.35	46.79	0.06	108.19
J-85	0.7	211.35	52.04	0.28	120.35

Pumps @ 68.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.37	0.00	0.00	0.00	0.00

Junctions @ 69.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	210.84	47.29	0.17	109.36
J-17	0.3	210.83	55.21	0.27	127.67
J-25	0.0	210.83	52.00	0.39	120.25
J-26	0.4	210.83	52.27	0.00	120.86
J-74	0.6	210.84	51.25	0.32	118.53
J-75	0.7	210.84	51.22	0.25	118.44
J-81	0.7	210.83	46.56	0.06	107.67
J-85	0.7	210.83	51.82	0.28	119.83

Pumps @ 69.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	210.92	92.17	96.98	1.00	2.26

Junctions @ 70.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	212.67	48.08	0.17	111.19
J-17	0.3	212.67	56.00	0.27	129.51
J-25	0.0	212.67	52.79	0.39	122.09
J-26	0.4	212.67	53.06	0.00	122.70
J-74	0.6	212.67	52.05	0.32	120.36
J-75	0.7	212.67	52.01	0.25	120.27
J-81	0.7	212.67	47.35	0.06	109.51
J-85	0.7	212.67	52.61	0.28	121.67

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 70.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	212.75	90.96	98.81	1.00	2.27

Junctions @ 71.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	214.47	48.86	0.17	112.99
J-17	0.3	214.47	56.78	0.27	131.31
J-25	0.0	214.47	53.57	0.39	123.89
J-26	0.4	214.47	53.84	0.00	124.50
J-74	0.6	214.47	52.83	0.32	122.16
J-75	0.7	214.47	52.79	0.25	122.07
J-81	0.7	214.47	48.13	0.06	111.31
J-85	0.7	214.47	53.39	0.28	123.47

Pumps @ 71.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.55	89.45	100.60	1.00	2.27

Junctions @ 72.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	216.24	49.62	0.17	114.76
J-17	0.3	216.23	57.54	0.27	133.07
J-25	0.0	216.23	54.34	0.39	125.65
J-26	0.4	216.23	54.60	0.00	126.26
J-74	0.6	216.24	53.59	0.32	123.93
J-75	0.7	216.23	53.55	0.25	123.83
J-81	0.7	216.23	48.90	0.06	113.07
J-85	0.7	216.23	54.15	0.28	125.23

Pumps @ 72.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.31	87.44	102.36	1.00	2.26

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 73.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	217.95	50.37	0.17	116.47
J-17	0.3	217.95	58.29	0.27	134.79
J-25	0.0	217.95	55.08	0.39	127.37
J-26	0.4	217.95	55.34	0.00	127.98
J-74	0.6	217.95	54.33	0.32	125.64
J-75	0.7	217.95	54.29	0.25	125.55
J-81	0.7	217.95	49.64	0.06	114.79
J-85	0.7	217.95	54.90	0.28	126.95

Pumps @ 73.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.02	84.40	104.07	1.00	2.22

Junctions @ 74.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	219.58	51.07	0.17	118.10
J-17	0.3	219.58	58.99	0.27	136.42
J-25	0.0	219.58	55.78	0.39	129.00
J-26	0.4	219.58	56.05	0.00	129.61
J-74	0.6	219.58	55.04	0.32	127.27
J-75	0.7	219.58	55.00	0.25	127.18
J-81	0.7	219.58	50.34	0.06	116.42
J-85	0.7	219.58	55.60	0.28	128.58

Pumps @ 74.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.65	77.25	105.69	1.00	2.06

Junctions @ 75.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	221.04	51.70	0.17	119.56
J-17	0.3	221.03	59.62	0.27	137.87
J-25	0.0	221.03	56.41	0.39	130.45
J-26	0.5	221.03	56.68	0.00	131.06
J-74	0.6	221.04	55.67	0.32	128.73
J-75	0.7	221.03	55.63	0.25	128.63

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 75.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.7	221.03	50.97	0.06	117.87
J-85	0.7	221.03	56.23	0.28	130.03

Pumps @ 75.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.05	0.00	0.00	0.00	0.00

Junctions @ 76.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	220.52	51.48	0.17	119.04
J-17	0.4	220.51	59.40	0.27	137.35
J-25	0.0	220.51	56.19	0.39	129.93
J-26	0.5	220.51	56.45	0.00	130.54
J-74	0.6	220.52	55.44	0.32	128.21
J-75	0.7	220.51	55.40	0.25	128.11
J-81	0.7	220.51	50.75	0.06	117.35
J-85	0.7	220.51	56.01	0.28	129.51

Pumps @ 76.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.53	0.00	0.00	0.00	0.00

Junctions @ 77.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	220.00	51.25	0.17	118.52
J-17	0.4	219.99	59.17	0.27	136.83
J-25	0.0	219.99	55.96	0.39	129.41
J-26	0.6	219.99	56.23	0.00	130.02
J-74	0.6	220.00	55.22	0.32	127.69
J-75	0.7	219.99	55.18	0.25	127.59
J-81	0.7	219.99	50.52	0.06	116.83
J-85	0.7	219.99	55.78	0.28	128.99

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 77.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.01	0.00	0.00	0.00	0.00

Junctions @ 78.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	219.48	51.03	0.17	118.00
J-17	0.4	219.47	58.95	0.27	136.31
J-25	0.0	219.47	55.74	0.39	128.89
J-26	0.6	219.47	56.00	0.00	129.50
J-74	0.7	219.48	54.99	0.32	127.17
J-75	0.7	219.47	54.95	0.25	127.07
J-81	0.7	219.47	50.30	0.06	116.31
J-85	0.7	219.47	55.56	0.28	128.47

Pumps @ 78.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.49	0.00	0.00	0.00	0.00

Junctions @ 79.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	218.96	50.80	0.17	117.48
J-17	0.3	218.95	58.72	0.27	135.79
J-25	0.0	218.95	55.51	0.39	128.37
J-26	0.7	218.95	55.78	0.00	128.98
J-74	0.7	218.95	54.77	0.32	126.64
J-75	0.7	218.95	54.73	0.25	126.55
J-81	0.7	218.95	50.07	0.06	115.79
J-85	0.7	218.95	55.33	0.28	127.95

Pumps @ 79.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.97	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 80.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	218.44	50.58	0.17	116.96
J-17	0.3	218.43	58.50	0.27	135.27
J-25	0.0	218.43	55.29	0.39	127.85
J-26	0.7	218.43	55.55	0.00	128.46
J-74	0.8	218.43	54.54	0.32	126.12
J-75	0.7	218.43	54.50	0.25	126.03
J-81	0.8	218.43	49.85	0.06	115.27
J-85	0.7	218.43	55.11	0.28	127.43

Pumps @ 80.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.45	0.00	0.00	0.00	0.00

Junctions @ 81.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	217.92	50.35	0.17	116.44
J-17	0.3	217.91	58.27	0.27	134.75
J-25	0.0	217.91	55.06	0.39	127.33
J-26	0.7	217.91	55.33	0.00	127.94
J-74	0.8	217.91	54.32	0.32	125.60
J-75	0.8	217.91	54.28	0.25	125.51
J-81	0.8	217.91	49.62	0.06	114.75
J-85	0.7	217.91	54.88	0.28	126.91

Pumps @ 81.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.93	0.00	0.00	0.00	0.00

Junctions @ 82.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	217.40	50.13	0.17	115.92
J-17	0.3	217.39	58.05	0.27	134.23
J-25	0.0	217.39	54.84	0.39	126.81
J-26	0.7	217.39	55.10	0.00	127.42
J-74	0.8	217.39	54.09	0.32	125.08
J-75	0.8	217.39	54.05	0.25	124.99

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 82.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.8	217.39	49.40	0.06	114.23
J-85	0.7	217.39	54.66	0.28	126.39

Pumps @ 82.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.41	0.00	0.00	0.00	0.00

Junctions @ 83.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	216.88	49.90	0.17	115.40
J-17	0.4	216.87	57.82	0.27	133.71
J-25	0.0	216.87	54.61	0.39	126.29
J-26	0.7	216.87	54.88	0.00	126.90
J-74	0.8	216.87	53.87	0.32	124.56
J-75	0.8	216.87	53.83	0.25	124.47
J-81	0.9	216.87	49.17	0.06	113.71
J-85	0.7	216.87	54.43	0.28	125.87

Pumps @ 83.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.89	0.00	0.00	0.00	0.00

Junctions @ 84.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	216.36	49.68	0.17	114.88
J-17	0.4	216.35	57.60	0.27	133.19
J-25	0.0	216.35	54.39	0.39	125.77
J-26	0.7	216.35	54.65	0.00	126.38
J-74	0.8	216.35	53.64	0.32	124.04
J-75	0.9	216.35	53.60	0.25	123.95
J-81	0.9	216.35	48.95	0.06	113.19
J-85	0.7	216.35	54.21	0.28	125.35

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 84.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.37	0.00	0.00	0.00	0.00

Junctions @ 85.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	215.84	49.45	0.17	114.36
J-17	0.5	215.83	57.37	0.27	132.67
J-25	0.0	215.83	54.16	0.39	125.25
J-26	0.7	215.83	54.43	0.00	125.86
J-74	0.8	215.83	53.42	0.32	123.52
J-75	0.9	215.83	53.38	0.25	123.43
J-81	0.9	215.83	48.72	0.06	112.67
J-85	0.7	215.83	53.98	0.28	124.83

Pumps @ 85.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.85	0.00	0.00	0.00	0.00

Junctions @ 86.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	215.32	49.23	0.17	113.84
J-17	0.5	215.31	57.15	0.27	132.15
J-25	0.4e-12	215.31	53.94	0.39	124.73
J-26	0.7	215.31	54.20	0.00	125.34
J-74	0.8	215.31	53.19	0.32	123.00
J-75	0.9	215.31	53.15	0.25	122.91
J-81	0.9	215.31	48.50	0.06	112.15
J-85	0.7	215.31	53.76	0.28	124.31

Pumps @ 86.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.33	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 87.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	214.80	49.00	0.17	113.32
J-17	0.5	214.79	56.92	0.27	131.63
J-25	0.6e-5	214.79	53.71	0.39	124.21
J-26	0.7	214.79	53.98	0.00	124.82
J-74	0.8	214.79	52.97	0.32	122.48
J-75	0.9	214.79	52.93	0.25	122.39
J-81	0.9	214.79	48.27	0.06	111.63
J-85	0.7	214.79	53.53	0.28	123.79

Pumps @ 87.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.81	0.00	0.00	0.00	0.00

Junctions @ 88.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	214.28	48.78	0.17	112.60
J-17	0.6	214.27	56.70	0.27	131.11
J-25	0.6e-2	214.27	53.49	0.39	123.69
J-26	0.7	214.27	53.75	0.00	124.30
J-74	0.8	214.27	52.74	0.32	121.96
J-75	0.9	214.27	52.70	0.25	121.87
J-81	0.9	214.27	48.05	0.06	111.11
J-85	0.7	214.27	53.31	0.28	123.27

Pumps @ 88.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.29	0.00	0.00	0.00	0.00

Junctions @ 89.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	213.76	48.55	0.17	112.28
J-17	0.6	213.75	56.47	0.27	130.59
J-25	0.1	213.75	53.26	0.39	123.17
J-26	0.7	213.75	53.53	0.00	123.78
J-74	0.9	213.75	52.52	0.32	121.44
J-75	0.9	213.75	52.48	0.25	121.35

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 89.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.9	213.75	47.82	0.08	110.59
J-85	0.7	213.75	53.08	0.28	122.75

Pumps @ 89.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.77	0.00	0.00	0.00	0.00

Junctions @ 90.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	213.24	48.33	0.17	111.76
J-17	0.6	213.23	56.25	0.27	130.07
J-25	0.1	213.23	53.04	0.39	122.65
J-26	0.7	213.23	53.30	0.00	123.26
J-74	0.9	213.23	52.29	0.32	120.92
J-75	0.9	213.23	52.25	0.25	120.83
J-81	0.9	213.23	47.60	0.06	110.07
J-85	0.8	213.23	52.86	0.28	122.23

Pumps @ 90.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.25	0.00	0.00	0.00	0.00

Junctions @ 91.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	212.72	48.10	0.17	111.24
J-17	0.6	212.71	56.02	0.27	129.55
J-25	0.2	212.71	52.81	0.39	122.13
J-26	0.7	212.71	53.08	0.00	122.74
J-74	0.9	212.71	52.07	0.32	120.40
J-75	0.9	212.71	52.03	0.25	120.31
J-81	0.9	212.71	47.37	0.06	109.55
J-85	0.8	212.71	52.63	0.28	121.71

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 91.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.73	0.00	0.00	0.00	0.00

Junctions @ 92.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	212.20	47.88	0.17	110.72
J-17	0.6	212.19	55.80	0.27	129.03
J-25	0.3	212.19	52.59	0.39	121.61
J-26	0.6	212.19	52.85	0.00	122.22
J-74	0.9	212.19	51.84	0.32	119.88
J-75	0.9	212.19	51.80	0.25	119.79
J-81	0.9	212.19	47.15	0.06	109.03
J-85	0.9	212.19	52.41	0.28	121.19

Pumps @ 92.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.21	0.00	0.00	0.00	0.00

Junctions @ 93.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	211.68	47.65	0.17	110.20
J-17	0.6	211.67	55.57	0.27	128.51
J-25	0.3	211.67	52.36	0.39	121.09
J-26	0.6	211.67	52.63	0.00	121.70
J-74	0.9	211.67	51.62	0.32	119.36
J-75	0.9	211.67	51.58	0.25	119.27
J-81	0.9	211.67	46.92	0.06	108.51
J-85	0.9	211.67	52.18	0.28	120.67

Pumps @ 93.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.69	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 94.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	211.16	47.43	0.17	109.68
J-17	0.6	211.15	55.35	0.27	127.99
J-25	0.3	211.15	52.14	0.39	120.57
J-26	0.6	211.15	52.40	0.00	121.18
J-74	0.9	211.15	51.39	0.32	118.84
J-75	0.9	211.15	51.35	0.25	118.75
J-81	0.9	211.15	46.70	0.06	107.99
J-85	0.9	211.15	51.96	0.28	120.15

Pumps @ 94.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	211.24	91.97	97.29	1.00	2.26

Junctions @ 95.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	212.98	48.22	0.17	111.50
J-17	0.6	212.98	56.14	0.27	129.82
J-25	0.4	212.98	52.93	0.39	122.40
J-26	0.6	212.98	53.19	0.00	123.01
J-74	0.9	212.98	52.18	0.32	120.67
J-75	0.9	212.98	52.14	0.25	120.58
J-81	0.9	212.98	47.49	0.06	109.82
J-85	0.9	212.98	52.75	0.28	121.98

Pumps @ 95.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	213.07	90.72	99.12	1.00	2.27

Junctions @ 96.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	214.78	48.99	0.17	113.30
J-17	0.6	214.78	56.92	0.27	131.62
J-25	0.4	214.78	53.71	0.39	124.20
J-26	0.6	214.78	53.97	0.00	124.81
J-74	0.9	214.78	52.96	0.32	122.47
J-75	0.9	214.78	52.92	0.25	122.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 96.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.9	214.78	48.27	0.06	111.62
J-85	0.9	214.78	53.52	0.28	123.78

Pumps @ 96.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.86	89.15	100.91	1.00	2.27

Junctions @ 97.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	216.54	49.75	0.17	115.06
J-17	0.6	216.53	57.67	0.27	133.37
J-25	0.4	216.53	54.47	0.39	125.95
J-26	0.6	216.53	54.73	0.00	126.56
J-74	0.9	216.54	53.72	0.32	124.23
J-75	0.9	216.53	53.68	0.25	124.13
J-81	0.9	216.53	49.03	0.06	113.37
J-85	0.9	216.53	54.28	0.28	125.53

Pumps @ 97.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.61	87.02	102.66	1.00	2.26

Junctions @ 98.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	218.24	50.49	0.17	116.76
J-17	0.6	218.23	58.41	0.27	135.07
J-25	0.4	218.23	55.20	0.39	127.65
J-26	0.6	218.23	55.47	0.00	128.26
J-74	0.9	218.24	54.45	0.32	125.93
J-75	0.9	218.24	54.42	0.25	125.84
J-81	0.9	218.23	49.76	0.06	115.07
J-85	0.9	218.23	55.02	0.28	127.23

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 98.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.31	83.66	104.36	1.00	2.20

Junctions @ 99.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	219.85	51.19	0.17	118.37
J-17	0.6	219.85	59.11	0.27	136.69
J-25	0.4	219.85	55.90	0.39	129.27
J-26	0.6	219.85	56.16	0.00	129.88
J-74	0.8	219.85	55.15	0.32	127.54
J-75	0.9	219.85	55.11	0.25	127.45
J-81	0.9	219.85	50.46	0.06	116.69
J-85	0.9	219.85	55.72	0.28	128.85

Pumps @ 99.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.91	73.63	105.95	1.00	1.97

Junctions @ 100.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	221.21	51.78	0.17	119.73
J-17	0.6	221.21	59.70	0.27	138.05
J-25	0.3	221.21	56.49	0.39	130.63
J-26	0.7	221.21	56.75	0.00	131.24
J-74	0.8	221.21	55.74	0.32	128.90
J-75	0.9	221.21	55.70	0.25	128.81
J-81	0.9	221.21	51.05	0.06	118.05
J-85	0.9	221.21	56.31	0.28	130.21

Pumps @ 100.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.22	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 101.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	220.69	51.55	0.17	119.21
J-17	0.6	220.69	59.47	0.27	137.53
J-25	0.3	220.69	56.26	0.39	130.11
J-26	0.7	220.69	56.53	0.00	130.72
J-74	0.8	220.69	55.52	0.32	128.38
J-75	0.9	220.69	55.48	0.25	128.29
J-81	0.9	220.69	50.82	0.06	117.53
J-85	0.9	220.69	56.08	0.28	129.69

Pumps @ 101.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.70	0.00	0.00	0.00	0.00

Junctions @ 102.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	220.17	51.33	0.17	118.69
J-17	0.6	220.17	59.25	0.27	137.01
J-25	0.3	220.17	56.04	0.39	129.59
J-26	0.8	220.17	56.30	0.00	130.20
J-74	0.9	220.17	55.29	0.32	127.86
J-75	0.9	220.17	55.25	0.25	127.77
J-81	0.9	220.17	50.60	0.06	117.01
J-85	0.9	220.17	55.86	0.28	129.17

Pumps @ 102.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.18	0.00	0.00	0.00	0.00

Junctions @ 103.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	219.65	51.10	0.17	118.17
J-17	0.6	219.65	59.02	0.27	136.49
J-25	0.3	219.65	55.81	0.39	129.07
J-26	0.8	219.65	56.08	0.00	129.68
J-74	0.9	219.65	55.07	0.32	127.34
J-75	0.9	219.65	55.03	0.25	127.25

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 103.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	0.9	219.65	50.37	0.06	116.49
J-85	0.9	219.65	55.63	0.28	128.65

Pumps @ 103.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.66	0.00	0.00	0.00	0.00

Junctions @ 104.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	219.13	50.88	0.17	117.65
J-17	0.6	219.13	58.80	0.27	135.97
J-25	0.3	219.13	55.59	0.39	128.55
J-26	0.8	219.13	55.85	0.00	129.16
J-74	0.9	219.13	54.84	0.32	126.82
J-75	0.9	219.13	54.80	0.25	126.73
J-81	0.9	219.13	50.15	0.06	115.97
J-85	0.9	219.13	55.41	0.28	128.13

Pumps @ 104.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.14	0.00	0.00	0.00	0.00

Junctions @ 105.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	218.61	50.65	0.17	117.13
J-17	0.6	218.61	58.57	0.27	135.45
J-25	0.3	218.61	55.36	0.39	128.03
J-26	0.9	218.61	55.63	0.00	128.64
J-74	0.9	218.61	54.62	0.32	126.30
J-75	0.9	218.61	54.58	0.25	126.21
J-81	0.9	218.61	49.92	0.06	115.45
J-85	0.9	218.61	55.18	0.28	127.61

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 105.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.62	0.00	0.00	0.00	0.00

Junctions @ 106.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	218.09	50.43	0.17	116.61
J-17	0.6	218.09	58.35	0.27	134.93
J-25	0.3	218.09	55.14	0.39	127.51
J-26	0.9	218.09	55.40	0.00	128.12
J-74	1.0	218.09	54.39	0.32	125.78
J-75	0.9	218.09	54.35	0.25	125.69
J-81	1.0	218.09	49.70	0.06	114.93
J-85	0.9	218.09	54.96	0.28	127.09

Pumps @ 106.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.10	0.00	0.00	0.00	0.00

Junctions @ 107.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	217.57	50.20	0.17	116.09
J-17	0.6	217.57	58.12	0.27	134.41
J-25	0.3	217.57	54.91	0.39	126.99
J-26	0.9	217.57	55.18	0.00	127.60
J-74	1.0	217.57	54.17	0.32	125.26
J-75	1.0	217.57	54.13	0.25	125.17
J-81	1.0	217.57	49.47	0.06	114.41
J-85	0.9	217.57	54.73	0.28	126.57

Pumps @ 107.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.58	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 108.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	217.05	49.98	0.17	115.57
J-17	0.6	217.05	57.90	0.27	133.89
J-25	0.3	217.05	54.69	0.39	126.47
J-26	0.9	217.05	54.95	0.00	127.08
J-74	1.0	217.05	53.94	0.32	124.74
J-75	1.0	217.05	53.90	0.25	124.65
J-81	1.0	217.05	49.25	0.06	113.89
J-85	0.9	217.05	54.51	0.28	126.05

Pumps @ 108.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.06	0.00	0.00	0.00	0.00

Junctions @ 109.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	216.53	49.75	0.17	115.05
J-17	0.6	216.53	57.67	0.27	133.37
J-25	0.3	216.53	54.46	0.39	125.95
J-26	0.9	216.53	54.73	0.00	126.56
J-74	1.0	216.53	53.72	0.32	124.22
J-75	1.0	216.53	53.68	0.25	124.13
J-81	1.1	216.53	49.02	0.06	113.37
J-85	0.9	216.53	54.28	0.28	125.53

Pumps @ 109.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.54	0.00	0.00	0.00	0.00

Junctions @ 110.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	216.01	49.53	0.17	114.53
J-17	0.7	216.01	57.45	0.27	132.85
J-25	0.3	216.01	54.24	0.39	125.43
J-26	0.9	216.01	54.50	0.00	126.04
J-74	1.0	216.01	53.49	0.32	123.70
J-75	1.1	216.01	53.45	0.25	123.61

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 110.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.1	216.01	48.80	0.06	112.85
J-85	0.9	216.01	54.06	0.28	125.01

Pumps @ 110.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.02	0.00	0.00	0.00	0.00

Junctions @ 111.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	215.49	49.30	0.17	114.01
J-17	0.7	215.49	57.22	0.27	132.33
J-25	0.3	215.49	54.01	0.39	124.91
J-26	0.9	215.49	54.28	0.00	125.52
J-74	1.0	215.49	53.27	0.32	123.18
J-75	1.1	215.49	53.23	0.25	123.09
J-81	1.1	215.49	48.58	0.06	112.33
J-85	0.9	215.49	53.83	0.28	124.49

Pumps @ 111.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.50	0.00	0.00	0.00	0.00

Junctions @ 112.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	214.97	49.08	0.17	113.49
J-17	0.7	214.97	57.00	0.27	131.81
J-25	0.3	214.97	53.79	0.39	124.39
J-26	0.9	214.97	54.05	0.00	125.00
J-74	1.0	214.97	53.04	0.32	122.66
J-75	1.1	214.97	53.00	0.25	122.57
J-81	1.1	214.97	48.35	0.06	111.81
J-85	0.9	214.97	53.61	0.28	123.97

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 112.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.98	0.00	0.00	0.00	0.00

Junctions @ 113.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	214.45	48.85	0.17	112.97
J-17	0.8	214.45	56.77	0.27	131.29
J-25	0.3	214.45	53.57	0.39	123.87
J-26	0.9	214.45	53.83	0.00	124.48
J-74	1.0	214.45	52.82	0.32	122.14
J-75	1.1	214.45	52.78	0.25	122.05
J-81	1.1	214.45	48.13	0.06	111.29
J-85	0.9	214.45	53.38	0.28	123.45

Pumps @ 113.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.46	0.00	0.00	0.00	0.00

Junctions @ 114.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	213.93	48.63	0.17	112.45
J-17	0.8	213.93	56.55	0.27	130.77
J-25	0.4	213.93	53.34	0.39	123.35
J-26	0.9	213.93	53.60	0.00	123.96
J-74	1.0	213.93	52.59	0.32	121.62
J-75	1.1	213.93	52.55	0.25	121.53
J-81	1.1	213.93	47.90	0.06	110.77
J-85	0.9	213.93	53.16	0.28	122.93

Pumps @ 114.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.94	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 116.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	213.41	48.40	0.17	111.93
J-17	0.8	213.41	56.32	0.27	130.25
J-25	0.5	213.41	53.12	0.39	122.83
J-26	0.9	213.41	53.38	0.00	123.44
J-74	1.0	213.41	52.37	0.32	121.10
J-75	1.0	213.41	52.33	0.25	121.01
J-81	1.0	213.41	47.68	0.06	110.25
J-85	1.0	213.41	52.93	0.28	122.41

Pumps @ 116.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.42	0.00	0.00	0.00	0.00

Junctions @ 116.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	212.89	48.18	0.17	111.41
J-17	0.8	212.89	56.10	0.27	129.73
J-25	0.5	212.89	52.89	0.39	122.31
J-26	0.9	212.89	53.15	0.00	122.92
J-74	1.0	212.89	52.14	0.32	120.58
J-75	1.0	212.89	52.10	0.25	120.49
J-81	1.0	212.89	47.45	0.06	109.73
J-85	1.0	212.89	52.71	0.28	121.89

Pumps @ 116.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.90	0.00	0.00	0.00	0.00

Junctions @ 117.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	212.37	47.95	0.17	110.89
J-17	0.8	212.37	55.87	0.27	129.21
J-25	0.5	212.37	52.67	0.39	121.79
J-26	0.9	212.37	52.93	0.00	122.40
J-74	1.0	212.37	51.92	0.32	120.06
J-75	1.0	212.37	51.88	0.25	119.97

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 117.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.0	212.37	47.23	0.06	109.21
J-85	1.0	212.37	52.48	0.28	121.37

Pumps @ 117.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.38	0.00	0.00	0.00	0.00

Junctions @ 118.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	211.85	47.73	0.17	110.37
J-17	0.8	211.85	55.65	0.27	128.69
J-25	0.6	211.85	52.44	0.39	121.27
J-26	0.8	211.85	52.70	0.00	121.88
J-74	1.0	211.85	51.69	0.32	119.54
J-75	1.0	211.85	51.65	0.25	119.45
J-81	1.0	211.85	47.00	0.06	108.69
J-85	1.0	211.85	52.26	0.28	120.85

Pumps @ 118.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.86	0.00	0.00	0.00	0.00

Junctions @ 119.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	211.33	47.50	0.17	109.85
J-17	0.8	211.33	55.42	0.27	128.17
J-25	0.6	211.33	52.22	0.39	120.75
J-26	0.8	211.33	52.48	0.00	121.36
J-74	1.0	211.33	51.47	0.32	119.02
J-75	1.0	211.33	51.43	0.25	118.93
J-81	1.0	211.33	46.78	0.06	108.17
J-85	1.0	211.33	52.03	0.28	120.33

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 119.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.34	0.00	0.00	0.00	0.00

Junctions @ 120.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	210.81	47.28	0.17	109.33
J-17	0.8	210.81	55.20	0.27	127.65
J-25	0.6	210.81	51.99	0.39	120.23
J-26	0.8	210.81	52.25	0.00	120.84
J-74	1.0	210.81	51.24	0.32	118.50
J-75	1.0	210.81	51.20	0.25	118.41
J-81	1.0	210.81	46.55	0.06	107.65
J-85	1.0	210.81	51.81	0.28	119.81

Pumps @ 120.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	210.90	92.18	96.95	1.00	2.26

Junctions @ 121.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	212.65	48.07	0.17	111.17
J-17	0.8	212.64	55.99	0.27	129.48
J-25	0.6	212.64	52.78	0.39	122.06
J-26	0.8	212.64	53.05	0.00	122.67
J-74	1.0	212.65	52.04	0.32	120.34
J-75	1.0	212.64	52.00	0.25	120.24
J-81	1.0	212.64	47.34	0.06	109.48
J-85	1.0	212.64	52.60	0.28	121.64

Pumps @ 121.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	212.73	90.97	98.78	1.00	2.27

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 122.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	214.45	48.85	0.17	112.97
J-17	0.8	214.45	56.77	0.27	131.29
J-25	0.6	214.45	53.56	0.39	123.87
J-26	0.8	214.45	53.83	0.00	124.48
J-74	1.0	214.45	52.82	0.32	122.14
J-75	1.0	214.45	52.78	0.25	122.05
J-81	1.0	214.45	48.12	0.06	111.29
J-85	1.0	214.45	53.38	0.28	123.45

Pumps @ 122.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.53	89.47	100.58	1.00	2.27

Junctions @ 123.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	216.21	49.61	0.17	114.73
J-17	0.8	216.21	57.54	0.27	133.05
J-25	0.6	216.21	54.33	0.39	125.63
J-26	0.8	216.21	54.59	0.00	126.24
J-74	1.0	216.21	53.58	0.32	123.90
J-75	1.0	216.21	53.54	0.25	123.81
J-81	1.0	216.21	48.89	0.06	113.05
J-85	1.0	216.21	54.14	0.28	125.21

Pumps @ 123.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.29	87.48	102.34	1.00	2.26

Junctions @ 124.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	217.93	50.36	0.17	116.45
J-17	0.8	217.92	58.28	0.27	134.76
J-25	0.6	217.92	55.07	0.39	127.34
J-26	0.8	217.92	55.33	0.00	127.95
J-74	1.0	217.93	54.32	0.32	125.62
J-75	1.0	217.92	54.28	0.25	125.52

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 124.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.0	217.92	49.63	0.06	114.76
J-85	1.0	217.92	54.89	0.28	126.92

Pumps @ 124.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.00	84.45	104.05	1.00	2.22

Junctions @ 125.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	219.56	51.06	0.17	118.08
J-17	0.8	219.56	58.98	0.27	136.40
J-25	0.6	219.56	55.77	0.39	128.98
J-26	0.9	219.56	56.04	0.00	129.59
J-74	1.0	219.56	55.03	0.32	127.25
J-75	1.0	219.56	54.99	0.25	127.16
J-81	1.0	219.56	50.33	0.06	116.40
J-85	1.0	219.56	55.59	0.28	128.56

Pumps @ 126.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.63	77.45	105.67	1.00	2.07

Junctions @ 126.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	221.02	51.69	0.17	119.54
J-17	0.8	221.02	59.61	0.27	137.86
J-25	0.6	221.02	56.40	0.39	130.44
J-26	0.9	221.02	56.67	0.00	131.05
J-74	1.0	221.02	55.66	0.32	128.71
J-75	1.0	221.02	55.62	0.25	128.62
J-81	1.0	221.02	50.97	0.06	117.86
J-85	1.0	221.02	56.22	0.28	130.02

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 126.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.03	0.00	0.00	0.00	0.00

Junctions @ 127.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	220.50	51.47	0.17	119.02
J-17	0.8	220.50	59.39	0.27	137.34
J-25	0.6	220.50	56.18	0.39	129.92
J-26	0.9	220.50	56.44	0.00	130.53
J-74	1.0	220.50	55.43	0.32	128.19
J-75	1.0	220.50	55.39	0.25	128.10
J-81	1.0	220.50	50.74	0.06	117.34
J-85	1.0	220.50	56.00	0.28	129.50

Pumps @ 127.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.51	0.00	0.00	0.00	0.00

Junctions @ 128.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	219.98	51.24	0.17	118.50
J-17	0.8	219.98	59.16	0.27	136.82
J-25	0.6	219.98	55.96	0.39	129.40
J-26	1.0	219.98	56.22	0.00	130.01
J-74	1.0	219.98	55.21	0.32	127.67
J-75	1.0	219.98	55.17	0.25	127.58
J-81	1.0	219.98	50.52	0.06	116.82
J-85	1.0	219.98	55.77	0.28	128.98

Pumps @ 128.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.99	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 129.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	219.46	51.02	0.17	117.98
J-17	0.8	219.46	58.94	0.27	136.30
J-25	0.6	219.46	55.73	0.39	128.88
J-26	1.0	219.46	55.99	0.00	129.49
J-74	1.0	219.46	54.98	0.32	127.15
J-75	1.0	219.46	54.94	0.25	127.06
J-81	1.0	219.46	50.29	0.06	116.30
J-85	1.0	219.46	55.55	0.28	128.46

Pumps @ 129.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.47	0.00	0.00	0.00	0.00

Junctions @ 130.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	218.94	50.79	0.17	117.46
J-17	0.8	218.94	58.71	0.27	135.78
J-25	0.6	218.94	55.51	0.39	128.36
J-26	1.0	218.94	55.77	0.00	128.97
J-74	1.1	218.94	54.76	0.32	126.63
J-75	1.0	218.94	54.72	0.25	126.54
J-81	1.0	218.94	50.07	0.06	115.78
J-85	1.0	218.94	55.32	0.28	127.94

Pumps @ 130.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.95	0.00	0.00	0.00	0.00

Junctions @ 131.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	218.42	50.57	0.17	116.94
J-17	0.8	218.42	58.49	0.27	135.26
J-25	0.6	218.42	55.28	0.39	127.84
J-26	1.0	218.42	55.54	0.00	128.45
J-74	1.1	218.42	54.53	0.32	126.11
J-75	1.0	218.42	54.49	0.25	126.02

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 131.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.1	218.42	49.84	0.06	115.26
J-85	1.0	218.42	55.10	0.28	127.42

Pumps @ 131.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.43	0.00	0.00	0.00	0.00

Junctions @ 132.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	217.90	50.34	0.17	116.42
J-17	0.8	217.90	58.26	0.27	134.74
J-25	0.6	217.90	55.06	0.39	127.32
J-26	1.0	217.90	55.32	0.00	127.93
J-74	1.1	217.90	54.31	0.32	125.59
J-75	1.1	217.90	54.27	0.25	125.50
J-81	1.1	217.90	49.62	0.06	114.74
J-85	1.0	217.90	54.87	0.28	126.90

Pumps @ 132.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.91	0.00	0.00	0.00	0.00

Junctions @ 133.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	217.38	50.12	0.17	115.90
J-17	0.8	217.38	58.04	0.27	134.22
J-25	0.6	217.38	54.83	0.39	126.80
J-26	1.0	217.38	55.09	0.00	127.41
J-74	1.1	217.38	54.08	0.32	125.07
J-75	1.1	217.38	54.04	0.25	124.98
J-81	1.1	217.38	49.39	0.06	114.22
J-85	1.0	217.38	54.65	0.28	126.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 133.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.39	0.00	0.00	0.00	0.00

Junctions @ 134.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.86	49.89	0.17	115.38
J-17	0.8	216.86	57.81	0.27	133.70
J-25	0.6	216.86	54.61	0.39	126.28
J-26	1.0	216.86	54.87	0.00	126.89
J-74	1.1	216.86	53.86	0.32	124.55
J-75	1.1	216.86	53.82	0.25	124.46
J-81	1.2	216.86	49.17	0.06	113.70
J-85	1.0	216.86	54.42	0.28	125.86

Pumps @ 134.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.87	0.00	0.00	0.00	0.00

Junctions @ 135.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.34	49.67	0.17	114.86
J-17	0.9	216.34	57.59	0.27	133.18
J-25	0.6	216.34	54.38	0.39	125.76
J-26	1.0	216.34	54.64	0.00	126.37
J-74	1.1	216.34	53.63	0.32	124.03
J-75	1.1	216.34	53.59	0.25	123.94
J-81	1.2	216.34	48.94	0.06	113.18
J-85	1.0	216.34	54.20	0.28	125.34

Pumps @ 136.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.35	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 136.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	215.82	49.44	0.17	114.34
J-17	0.9	215.82	57.36	0.27	132.66
J-25	0.6	215.82	54.16	0.39	125.24
J-26	1.0	215.82	54.42	0.00	125.85
J-74	1.1	215.82	53.41	0.32	123.51
J-75	1.2	215.82	53.37	0.25	123.42
J-81	1.2	215.82	48.72	0.06	112.66
J-85	1.0	215.82	53.97	0.28	124.82

Pumps @ 136.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.83	0.00	0.00	0.00	0.00

Junctions @ 137.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	215.30	49.22	0.17	113.82
J-17	0.9	215.30	57.14	0.27	132.14
J-25	0.6	215.30	53.93	0.39	124.72
J-26	1.0	215.30	54.20	0.00	125.33
J-74	1.1	215.30	53.18	0.32	122.99
J-75	1.2	215.30	53.15	0.25	122.90
J-81	1.2	215.30	48.49	0.06	112.14
J-85	1.0	215.30	53.75	0.28	124.30

Pumps @ 137.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.31	0.00	0.00	0.00	0.00

Junctions @ 138.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	214.78	48.99	0.17	113.30
J-17	0.9	214.78	56.92	0.27	131.62
J-25	0.6	214.78	53.71	0.39	124.20
J-26	1.0	214.78	53.97	0.00	124.81
J-74	1.1	214.78	52.96	0.32	122.47
J-75	1.2	214.78	52.92	0.25	122.38

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 138.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.2	214.78	48.27	0.06	111.62
J-85	1.0	214.78	53.52	0.28	123.78

Pumps @ 138.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.79	0.00	0.00	0.00	0.00

Junctions @ 139.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	214.26	48.77	0.17	112.78
J-17	0.9	214.26	56.69	0.27	131.10
J-25	0.6	214.26	53.48	0.39	123.68
J-26	1.0	214.26	53.75	0.00	124.29
J-74	1.1	214.26	52.73	0.32	121.95
J-75	1.2	214.26	52.70	0.25	121.86
J-81	1.2	214.26	48.04	0.06	111.10
J-85	1.0	214.26	53.30	0.28	123.26

Pumps @ 139.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.27	0.00	0.00	0.00	0.00

Junctions @ 140.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	213.74	48.55	0.17	112.26
J-17	0.9	213.74	56.47	0.27	130.58
J-25	0.6	213.74	53.26	0.39	123.16
J-26	1.0	213.74	53.52	0.00	123.77
J-74	1.1	213.74	52.51	0.32	121.43
J-75	1.2	213.74	52.47	0.25	121.34
J-81	1.2	213.74	47.82	0.06	110.58
J-85	1.1	213.74	53.08	0.28	122.74

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 140.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.75	0.00	0.00	0.00	0.00

Junctions @ 141.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	213.22	48.32	0.17	111.74
J-17	0.9	213.22	56.24	0.27	130.06
J-25	0.7	213.22	53.03	0.39	122.64
J-26	1.0	213.22	53.30	0.00	123.25
J-74	1.1	213.22	52.29	0.32	120.91
J-75	1.2	213.22	52.25	0.25	120.82
J-81	1.2	213.22	47.59	0.06	110.06
J-85	1.1	213.22	52.85	0.28	122.22

Pumps @ 141.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.23	0.00	0.00	0.00	0.00

Junctions @ 142.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.70	48.10	0.17	111.22
J-17	0.9	212.70	56.02	0.27	129.54
J-25	0.7	212.70	52.81	0.39	122.12
J-26	1.0	212.70	53.07	0.00	122.73
J-74	1.1	212.70	52.06	0.32	120.39
J-75	1.2	212.70	52.02	0.25	120.30
J-81	1.2	212.70	47.37	0.06	109.54
J-85	1.1	212.70	52.63	0.28	121.70

Pumps @ 142.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.71	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 143.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.18	47.87	0.17	110.70
J-17	0.9	212.18	55.79	0.27	129.02
J-25	0.7	212.18	52.58	0.39	121.60
J-26	1.0	212.18	52.85	0.00	122.21
J-74	1.1	212.18	51.84	0.32	119.87
J-75	1.2	212.18	51.80	0.25	119.78
J-81	1.2	212.18	47.14	0.06	109.02
J-85	1.1	212.18	52.40	0.28	121.18

Pumps @ 143.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.19	0.00	0.00	0.00	0.00

Junctions @ 144.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	211.66	47.65	0.17	110.18
J-17	0.9	211.66	55.57	0.27	128.50
J-25	0.8	211.66	52.36	0.39	121.08
J-26	1.0	211.66	52.62	0.00	121.69
J-74	1.1	211.66	51.61	0.32	119.35
J-75	1.1	211.66	51.57	0.25	119.26
J-81	1.1	211.66	46.92	0.06	108.50
J-85	1.1	211.66	52.18	0.28	120.66

Pumps @ 144.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.67	0.00	0.00	0.00	0.00

Junctions @ 145.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	211.14	47.42	0.17	109.66
J-17	0.9	211.14	55.34	0.27	127.98
J-25	0.8	211.14	52.13	0.39	120.56
J-26	1.0	211.14	52.40	0.00	121.17
J-74	1.1	211.14	51.39	0.32	118.83
J-75	1.1	211.14	51.35	0.25	118.74

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 145.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.1	211.14	46.69	0.06	107.98
J-85	1.1	211.14	51.95	0.28	120.14

Pumps @ 145.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	211.22	91.98	97.28	1.00	2.26

Junctions @ 146.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	212.97	48.21	0.17	111.49
J-17	0.9	212.96	56.13	0.27	129.80
J-25	0.8	212.96	52.92	0.39	122.38
J-26	1.0	212.96	53.19	0.00	122.99
J-74	1.1	212.97	52.18	0.32	120.66
J-75	1.1	212.97	52.14	0.25	120.57
J-81	1.1	212.96	47.48	0.06	109.80
J-85	1.1	212.96	52.74	0.28	121.96

Pumps @ 146.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	213.05	90.73	99.10	1.00	2.27

Junctions @ 147.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	214.77	48.99	0.17	113.29
J-17	0.9	214.76	56.91	0.27	131.60
J-25	0.8	214.76	53.70	0.39	124.18
J-26	1.0	214.76	53.96	0.00	124.79
J-74	1.1	214.76	52.95	0.32	122.45
J-75	1.1	214.76	52.91	0.25	122.36
J-81	1.1	214.76	48.26	0.06	111.60
J-85	1.1	214.76	53.52	0.28	123.76

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 147.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.84	89.16	100.90	1.00	2.27

Junctions @ 148.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	216.52	49.75	0.17	115.04
J-17	0.9	216.52	57.67	0.27	133.36
J-25	0.8	216.52	54.46	0.39	125.94
J-26	1.0	216.52	54.72	0.00	126.55
J-74	1.1	216.52	53.71	0.32	124.21
J-75	1.1	216.52	53.67	0.25	124.12
J-81	1.1	216.52	49.02	0.06	113.36
J-85	1.1	216.52	54.28	0.28	125.52

Pumps @ 148.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.60	87.04	102.65	1.00	2.26

Junctions @ 149.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	218.22	50.48	0.17	116.74
J-17	1.0	218.22	58.40	0.27	135.06
J-25	0.8	218.22	55.20	0.39	127.64
J-26	1.0	218.22	55.46	0.00	128.25
J-74	1.1	218.22	54.45	0.32	125.91
J-75	1.1	218.22	54.41	0.25	125.82
J-81	1.1	218.22	49.76	0.06	115.06
J-85	1.1	218.22	55.01	0.28	127.22

Pumps @ 149.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.30	83.70	104.34	1.00	2.20

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 150.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	219.84	51.18	0.17	118.36
J-17	1.0	219.84	59.10	0.27	136.68
J-25	0.8	219.84	55.89	0.39	129.26
J-26	1.0	219.84	56.16	0.00	129.87
J-74	1.1	219.84	55.15	0.32	127.53
J-75	1.1	219.84	55.11	0.25	127.44
J-81	1.1	219.84	50.45	0.06	116.68
J-85	1.1	219.84	55.71	0.28	128.84

Pumps @ 150.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.90	73.89	105.94	1.00	1.98

Junctions @ 151.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	221.21	51.77	0.17	119.73
J-17	1.0	221.20	59.69	0.27	138.04
J-25	0.8	221.20	56.49	0.39	130.62
J-26	1.0	221.20	56.75	0.00	131.23
J-74	1.1	221.21	55.74	0.32	128.90
J-75	1.1	221.20	55.70	0.25	128.80
J-81	1.1	221.20	51.05	0.06	118.04
J-85	1.1	221.20	56.30	0.28	130.20

Pumps @ 151.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.22	0.00	0.00	0.00	0.00

Junctions @ 152.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.1	220.69	51.55	0.17	119.21
J-17	1.0	220.68	59.47	0.27	137.52
J-25	0.8	220.68	56.26	0.39	130.10
J-26	1.0	220.68	56.52	0.00	130.71
J-74	1.1	220.69	55.51	0.32	128.38
J-75	1.1	220.68	55.47	0.25	128.28

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 152.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.1	220.68	50.82	0.06	117.52
J-85	1.1	220.68	56.08	0.28	129.68

Pumps @ 152.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.70	0.00	0.00	0.00	0.00

Junctions @ 153.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	220.17	51.32	0.17	118.69
J-17	1.0	220.16	59.24	0.27	137.00
J-25	0.8	220.16	56.04	0.39	129.58
J-26	1.1	220.16	56.30	0.00	130.19
J-74	1.1	220.17	55.29	0.32	127.86
J-75	1.1	220.16	55.25	0.25	127.76
J-81	1.1	220.16	50.60	0.06	117.00
J-85	1.1	220.16	55.85	0.28	129.16

Pumps @ 153.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.18	0.00	0.00	0.00	0.00

Junctions @ 154.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	219.65	51.10	0.17	118.17
J-17	1.0	219.64	59.02	0.27	136.48
J-25	0.8	219.64	55.81	0.39	129.06
J-26	1.1	219.64	56.07	0.00	129.67
J-74	1.1	219.65	55.06	0.32	127.34
J-75	1.1	219.64	55.02	0.25	127.24
J-81	1.1	219.64	50.37	0.06	116.48
J-85	1.1	219.64	55.63	0.28	128.64

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 154.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.66	0.00	0.00	0.00	0.00

Junctions @ 155.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	219.13	50.87	0.17	117.65
J-17	1.0	219.12	58.79	0.27	135.96
J-25	0.8	219.12	55.59	0.39	128.54
J-26	1.1	219.12	55.85	0.00	129.15
J-74	1.2	219.13	54.84	0.32	126.82
J-75	1.1	219.12	54.80	0.25	126.72
J-81	1.1	219.12	50.15	0.06	115.96
J-85	1.1	219.12	55.40	0.28	128.12

Pumps @ 155.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.14	0.00	0.00	0.00	0.00

Junctions @ 156.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	218.61	50.65	0.17	117.13
J-17	0.9	218.60	58.57	0.27	135.44
J-25	0.8	218.60	55.36	0.39	128.02
J-26	1.1	218.60	55.63	0.00	128.63
J-74	1.2	218.61	54.61	0.32	126.30
J-75	1.1	218.60	54.57	0.25	126.20
J-81	1.2	218.60	49.92	0.06	115.44
J-85	1.1	218.60	55.18	0.28	127.60

Pumps @ 156.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.62	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 157.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	218.09	50.42	0.17	116.61
J-17	0.9	218.08	58.35	0.27	134.92
J-25	0.8	218.08	55.14	0.39	127.50
J-26	1.1	218.08	55.40	0.00	128.11
J-74	1.2	218.09	54.39	0.32	125.78
J-75	1.2	218.08	54.35	0.25	125.68
J-81	1.2	218.08	49.70	0.06	114.92
J-85	1.1	218.08	54.95	0.28	127.08

Pumps @ 157.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.10	0.00	0.00	0.00	0.00

Junctions @ 158.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	217.57	50.20	0.17	116.09
J-17	0.9	217.56	58.12	0.27	134.40
J-25	0.8	217.56	54.91	0.39	126.98
J-26	1.1	217.56	55.18	0.00	127.59
J-74	1.2	217.57	54.16	0.32	125.26
J-75	1.2	217.56	54.13	0.25	125.16
J-81	1.2	217.56	49.47	0.06	114.40
J-85	1.1	217.56	54.73	0.28	126.56

Pumps @ 158.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.58	0.00	0.00	0.00	0.00

Junctions @ 159.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	217.05	49.97	0.17	115.57
J-17	0.9	217.04	57.90	0.27	133.88
J-25	0.8	217.04	54.69	0.39	126.46
J-26	1.1	217.04	54.95	0.00	127.07
J-74	1.2	217.05	53.94	0.32	124.74
J-75	1.2	217.04	53.90	0.25	124.64

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 159.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.2	217.04	49.25	0.06	113.88
J-85	1.1	217.04	54.51	0.28	126.04

Pumps @ 159.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.06	0.00	0.00	0.00	0.00

Junctions @ 160.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.53	49.75	0.17	115.05
J-17	1.0	216.52	57.67	0.27	133.36
J-25	0.8	216.52	54.46	0.39	125.94
J-26	1.1	216.52	54.73	0.00	126.55
J-74	1.2	216.53	53.71	0.32	124.22
J-75	1.2	216.52	53.68	0.25	124.12
J-81	1.2	216.52	49.02	0.06	113.36
J-85	1.1	216.52	54.28	0.28	125.52

Pumps @ 160.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.54	0.00	0.00	0.00	0.00

Junctions @ 161.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.01	49.53	0.17	114.53
J-17	1.0	216.00	57.45	0.27	132.84
J-25	0.8	216.00	54.24	0.39	125.42
J-26	1.1	216.00	54.50	0.00	126.03
J-74	1.2	216.01	53.49	0.32	123.70
J-75	1.2	216.00	53.45	0.25	123.60
J-81	1.2	216.00	48.80	0.06	112.84
J-85	1.1	216.00	54.06	0.28	125.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 161.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.02	0.00	0.00	0.00	0.00

Junctions @ 162.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	215.49	49.30	0.17	114.01
J-17	1.0	215.48	57.22	0.27	132.32
J-25	0.8	215.48	54.01	0.39	124.90
J-26	1.1	215.48	54.28	0.00	125.51
J-74	1.2	215.49	53.27	0.32	123.18
J-75	1.2	215.48	53.23	0.25	123.08
J-81	1.2	215.48	48.57	0.06	112.32
J-85	1.1	215.48	53.83	0.28	124.48

Pumps @ 162.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.50	0.00	0.00	0.00	0.00

Junctions @ 163.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	214.97	49.08	0.17	113.49
J-17	1.0	214.96	57.00	0.27	131.80
J-25	0.8	214.96	53.79	0.39	124.38
J-26	1.1	214.96	54.05	0.00	124.99
J-74	1.2	214.97	53.04	0.32	122.66
J-75	1.2	214.96	53.00	0.25	122.56
J-81	1.2	214.96	48.35	0.06	111.80
J-85	1.1	214.96	53.61	0.28	123.96

Pumps @ 163.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.98	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 164.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	214.45	48.85	0.17	112.97
J-17	1.0	214.44	56.77	0.27	131.28
J-25	0.8	214.44	53.56	0.39	123.86
J-26	1.1	214.44	53.83	0.00	124.47
J-74	1.2	214.45	52.82	0.32	122.14
J-75	1.2	214.44	52.78	0.25	122.04
J-81	1.2	214.44	48.12	0.06	111.28
J-85	1.1	214.44	53.38	0.28	123.44

Pumps @ 164.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.46	0.00	0.00	0.00	0.00

Junctions @ 166.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	213.93	48.63	0.17	112.45
J-17	1.1	213.92	56.55	0.27	130.76
J-25	0.8	213.92	53.34	0.39	123.34
J-26	1.1	213.92	53.60	0.00	123.85
J-74	1.2	213.93	52.59	0.32	121.62
J-75	1.2	213.92	52.55	0.25	121.52
J-81	1.2	213.92	47.90	0.06	110.76
J-85	1.1	213.92	53.16	0.28	122.92

Pumps @ 166.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.94	0.00	0.00	0.00	0.00

Junctions @ 168.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	213.41	48.40	0.17	111.93
J-17	1.1	213.40	56.32	0.27	130.24
J-25	0.8	213.40	53.11	0.39	122.82
J-26	1.1	213.40	53.38	0.00	123.43
J-74	1.2	213.41	52.37	0.32	121.10
J-75	1.2	213.40	52.33	0.25	121.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 166.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.2	213.40	47.67	0.06	110.24
J-85	1.2	213.40	52.93	0.28	122.40

Pumps @ 166.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.42	0.00	0.00	0.00	0.00

Junctions @ 167.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.89	48.18	0.17	111.41
J-17	1.1	212.88	56.10	0.27	129.72
J-25	0.9	212.88	52.89	0.39	122.30
J-26	1.1	212.88	53.15	0.00	122.91
J-74	1.2	212.89	52.14	0.32	120.58
J-75	1.2	212.88	52.10	0.25	120.48
J-81	1.2	212.88	47.45	0.06	109.72
J-85	1.2	212.88	52.71	0.28	121.88

Pumps @ 167.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.90	0.00	0.00	0.00	0.00

Junctions @ 168.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.37	47.95	0.17	110.89
J-17	1.1	212.36	55.87	0.27	129.20
J-25	0.9	212.38	52.66	0.39	121.78
J-26	1.1	212.36	52.93	0.00	122.39
J-74	1.2	212.37	51.92	0.32	120.06
J-75	1.2	212.36	51.88	0.25	119.96
J-81	1.2	212.36	47.22	0.06	109.20
J-85	1.2	212.36	52.48	0.28	121.36

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 168.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.38	0.00	0.00	0.00	0.00

Junctions @ 169.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	211.85	47.73	0.17	110.37
J-17	1.1	211.84	55.65	0.27	128.68
J-25	0.9	211.84	52.44	0.39	121.26
J-26	1.1	211.84	52.70	0.00	121.87
J-74	1.2	211.85	51.69	0.32	119.54
J-75	1.2	211.84	51.65	0.25	119.44
J-81	1.2	211.84	47.00	0.06	108.68
J-85	1.2	211.84	52.26	0.28	120.84

Pumps @ 169.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.86	0.00	0.00	0.00	0.00

Junctions @ 170.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	211.33	47.50	0.17	109.85
J-17	1.1	211.32	55.42	0.27	128.16
J-25	0.9	211.32	52.21	0.39	120.74
J-26	1.1	211.32	52.48	0.00	121.35
J-74	1.2	211.33	51.47	0.32	119.02
J-75	1.2	211.32	51.43	0.25	118.92
J-81	1.2	211.32	46.77	0.06	108.16
J-85	1.2	211.32	52.03	0.28	120.32

Pumps @ 170.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.34	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 171.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	210.81	47.28	0.17	109.33
J-17	1.0	210.80	55.20	0.27	127.64
J-25	0.9	210.80	51.99	0.39	120.22
J-26	1.1	210.80	52.25	0.00	120.83
J-74	1.2	210.81	51.24	0.32	118.50
J-75	1.2	210.80	51.20	0.25	118.40
J-81	1.2	210.80	46.55	0.06	107.64
J-85	1.2	210.80	51.81	0.28	119.80

Pumps @ 171.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	210.89	92.18	96.94	1.00	2.26

Junctions @ 172.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.64	48.07	0.17	111.16
J-17	1.0	212.64	55.99	0.27	129.48
J-25	0.9	212.64	52.78	0.39	122.06
J-26	1.1	212.64	53.04	0.00	122.67
J-74	1.2	212.64	52.03	0.32	120.33
J-75	1.2	212.64	51.99	0.25	120.24
J-81	1.2	212.64	47.34	0.06	109.48
J-85	1.2	212.64	52.60	0.28	121.64

Pumps @ 172.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	212.72	90.98	98.78	1.00	2.27

Junctions @ 173.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	214.44	48.85	0.17	112.96
J-17	1.1	214.44	56.77	0.27	131.28
J-25	0.9	214.44	53.56	0.39	123.86
J-26	1.1	214.44	53.82	0.00	124.47
J-74	1.2	214.44	52.81	0.32	122.13
J-75	1.2	214.44	52.77	0.25	122.04

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 173.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.2	214.44	48.12	0.06	111.28
J-85	1.2	214.44	53.38	0.28	123.44

Pumps @ 173.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.52	89.48	100.57	1.00	2.27

Junctions @ 174.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.21	49.61	0.17	114.73
J-17	1.1	216.20	57.53	0.27	133.04
J-25	0.9	216.20	54.32	0.39	125.62
J-26	1.1	216.20	54.59	0.00	126.23
J-74	1.2	216.21	53.58	0.32	123.90
J-75	1.2	216.20	53.54	0.25	123.80
J-81	1.2	216.20	48.88	0.06	113.04
J-85	1.2	216.20	54.14	0.28	125.20

Pumps @ 174.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.28	87.48	102.33	1.00	2.26

Junctions @ 175.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	217.92	50.35	0.17	116.44
J-17	1.1	217.92	58.27	0.27	134.76
J-25	0.9	217.92	55.06	0.39	127.34
J-26	1.1	217.92	55.33	0.00	127.95
J-74	1.2	217.92	54.32	0.32	125.61
J-75	1.2	217.92	54.28	0.25	125.52
J-81	1.2	217.92	49.62	0.06	114.76
J-85	1.2	217.92	54.88	0.28	126.92

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 176.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	217.99	84.46	104.04	1.00	2.22

Junctions @ 176.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	219.56	51.06	0.17	118.08
J-17	1.1	219.55	58.98	0.27	136.39
J-25	0.9	219.55	55.77	0.39	128.97
J-26	1.1	219.55	56.04	0.00	129.58
J-74	1.2	219.56	55.03	0.32	127.25
J-75	1.2	219.55	54.99	0.25	127.15
J-81	1.2	219.55	50.33	0.06	116.39
J-85	1.2	219.55	55.59	0.28	128.55

Pumps @ 176.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.62	77.50	105.66	1.00	2.07

Junctions @ 177.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	221.02	51.69	0.17	119.54
J-17	1.1	221.01	59.61	0.27	137.85
J-25	0.9	221.01	56.40	0.39	130.43
J-26	1.1	221.01	56.67	0.00	131.04
J-74	1.2	221.01	55.66	0.32	128.70
J-75	1.2	221.01	55.62	0.25	128.61
J-81	1.2	221.01	50.96	0.06	117.85
J-85	1.2	221.01	56.22	0.28	130.01

Pumps @ 177.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.03	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 178.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	220.50	51.47	0.17	119.02
J-17	1.1	220.49	59.39	0.27	137.33
J-25	0.9	220.49	56.18	0.39	129.91
J-26	1.1	220.49	56.44	0.00	130.52
J-74	1.2	220.49	55.43	0.32	128.18
J-75	1.2	220.49	55.39	0.25	128.09
J-81	1.2	220.49	50.74	0.06	117.33
J-85	1.2	220.49	56.00	0.28	129.49

Pumps @ 178.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.51	0.00	0.00	0.00	0.00

Junctions @ 179.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	219.98	51.24	0.17	118.50
J-17	1.1	219.97	59.16	0.27	136.81
J-25	0.9	219.97	55.95	0.39	129.39
J-26	1.2	219.97	56.22	0.00	130.00
J-74	1.2	219.97	55.21	0.32	127.66
J-75	1.2	219.97	55.17	0.25	127.57
J-81	1.2	219.97	50.51	0.06	116.81
J-85	1.2	219.97	55.77	0.28	128.97

Pumps @ 179.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.99	0.00	0.00	0.00	0.00

Junctions @ 180.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	219.46	51.02	0.17	117.98
J-17	1.1	219.45	58.94	0.27	136.29
J-25	0.9	219.45	55.73	0.39	128.87
J-26	1.2	219.45	55.99	0.00	129.48
J-74	1.2	219.45	54.98	0.32	127.14
J-75	1.2	219.45	54.94	0.25	127.05

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 180.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.2	219.45	50.29	0.06	116.29
J-85	1.2	219.45	55.55	0.28	128.45

Pumps @ 180.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.47	0.00	0.00	0.00	0.00

Junctions @ 181.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	218.94	50.79	0.17	117.46
J-17	1.1	218.93	58.71	0.27	135.77
J-25	0.9	218.93	55.50	0.39	128.35
J-26	1.2	218.93	55.77	0.00	128.96
J-74	1.2	218.93	54.76	0.32	126.62
J-75	1.2	218.93	54.72	0.25	126.53
J-81	1.2	218.93	50.06	0.06	115.77
J-85	1.2	218.93	55.32	0.28	127.93

Pumps @ 181.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.95	0.00	0.00	0.00	0.00

Junctions @ 182.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	218.42	50.57	0.17	116.94
J-17	1.1	218.41	58.49	0.27	135.25
J-25	0.9	218.41	55.28	0.39	127.83
J-26	1.2	218.41	55.54	0.00	128.44
J-74	1.2	218.41	54.53	0.32	126.10
J-75	1.2	218.41	54.49	0.25	126.01
J-81	1.2	218.41	49.84	0.06	115.25
J-85	1.2	218.41	55.10	0.28	127.41

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 186.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	216.86	49.89	0.17	115.38
J-17	1.1	216.85	57.81	0.27	133.69
J-25	0.9	216.85	54.60	0.39	126.27
J-26	1.2	216.85	54.87	0.00	126.88
J-74	1.3	216.85	53.86	0.32	124.54
J-75	1.3	216.85	53.82	0.25	124.45
J-81	1.3	216.85	49.16	0.06	113.69
J-85	1.2	216.85	54.42	0.28	125.85

Pumps @ 186.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.87	0.00	0.00	0.00	0.00

Junctions @ 186.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	216.34	49.67	0.17	114.86
J-17	1.1	216.33	57.59	0.27	133.17
J-25	0.9	216.33	54.38	0.39	125.75
J-26	1.2	216.33	54.64	0.00	126.36
J-74	1.3	216.33	53.63	0.32	124.02
J-75	1.3	216.33	53.59	0.25	123.93
J-81	1.3	216.33	48.94	0.06	113.17
J-85	1.2	216.33	54.20	0.28	125.33

Pumps @ 186.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.35	0.00	0.00	0.00	0.00

Junctions @ 187.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	215.82	49.44	0.17	114.34
J-17	1.1	215.81	57.36	0.27	132.65
J-25	0.9	215.81	54.15	0.39	125.23
J-26	1.2	215.81	54.42	0.00	125.84
J-74	1.3	215.81	53.41	0.32	123.50
J-75	1.3	215.81	53.37	0.25	123.41

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 187.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.3	215.81	48.71	0.06	112.65
J-85	1.2	215.81	53.97	0.28	124.81

Pumps @ 187.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.83	0.00	0.00	0.00	0.00

Junctions @ 188.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	215.30	49.22	0.17	113.82
J-17	1.1	215.29	57.14	0.27	132.13
J-25	0.9	215.29	53.93	0.39	124.71
J-26	1.2	215.29	54.19	0.00	125.32
J-74	1.3	215.29	53.18	0.32	122.98
J-75	1.3	215.29	53.14	0.25	122.89
J-81	1.3	215.29	48.49	0.06	112.13
J-85	1.2	215.29	53.75	0.28	124.29

Pumps @ 188.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.31	0.00	0.00	0.00	0.00

Junctions @ 189.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	214.78	48.99	0.17	113.30
J-17	1.1	214.77	56.81	0.27	131.61
J-25	0.9	214.77	53.70	0.39	124.19
J-26	1.2	214.77	53.97	0.00	124.80
J-74	1.3	214.77	52.96	0.32	122.46
J-75	1.3	214.77	52.92	0.25	122.37
J-81	1.3	214.77	48.26	0.06	111.61
J-85	1.2	214.77	53.52	0.28	123.77

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 189.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.79	0.00	0.00	0.00	0.00

Junctions @ 190.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	214.26	48.77	0.17	112.78
J-17	1.1	214.25	56.69	0.27	131.09
J-25	0.9	214.25	53.48	0.39	123.67
J-26	1.2	214.25	53.74	0.00	124.28
J-74	1.3	214.25	52.73	0.32	121.94
J-75	1.3	214.25	52.69	0.25	121.85
J-81	1.3	214.25	48.04	0.06	111.09
J-85	1.2	214.25	53.30	0.28	123.25

Pumps @ 190.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.27	0.00	0.00	0.00	0.00

Junctions @ 191.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	213.74	48.54	0.17	112.26
J-17	1.1	213.73	56.46	0.27	130.57
J-25	0.9	213.73	53.25	0.39	123.15
J-26	1.2	213.73	53.52	0.00	123.76
J-74	1.3	213.73	52.51	0.32	121.42
J-75	1.3	213.73	52.47	0.25	121.33
J-81	1.3	213.73	47.81	0.06	110.57
J-85	1.2	213.73	53.07	0.28	122.73

Pumps @ 191.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.75	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 192.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	213.22	48.32	0.17	111.74
J-17	1.1	213.21	56.24	0.27	130.05
J-25	0.9	213.21	53.03	0.39	122.63
J-26	1.2	213.21	53.29	0.00	123.24
J-74	1.3	213.21	52.28	0.32	120.90
J-75	1.3	213.21	52.24	0.25	120.81
J-81	1.3	213.21	47.59	0.06	110.05
J-85	1.2	213.21	52.85	0.28	122.21

Pumps @ 192.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.23	0.00	0.00	0.00	0.00

Junctions @ 193.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	212.70	48.09	0.17	111.22
J-17	1.1	212.69	56.01	0.27	129.53
J-25	1.0	212.69	52.81	0.39	122.11
J-26	1.2	212.69	53.07	0.00	122.72
J-74	1.3	212.69	52.06	0.32	120.38
J-75	1.3	212.69	52.02	0.25	120.29
J-81	1.3	212.69	47.37	0.06	109.53
J-85	1.2	212.69	52.62	0.28	121.69

Pumps @ 193.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.71	0.00	0.00	0.00	0.00

Junctions @ 194.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	212.18	47.87	0.17	110.70
J-17	1.1	212.17	55.79	0.27	129.01
J-25	1.0	212.17	52.58	0.39	121.59
J-26	1.2	212.17	52.84	0.00	122.20
J-74	1.3	212.17	51.83	0.32	119.86
J-75	1.3	212.17	51.79	0.25	119.77

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 194.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.3	212.17	47.14	0.06	109.01
J-85	1.3	212.17	52.40	0.28	121.17

Pumps @ 194.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.19	0.00	0.00	0.00	0.00

Junctions @ 195.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	211.66	47.64	0.17	110.18
J-17	1.1	211.65	55.56	0.27	128.49
J-25	1.0	211.65	52.36	0.39	121.07
J-26	1.2	211.65	52.62	0.00	121.68
J-74	1.3	211.65	51.61	0.32	119.34
J-75	1.3	211.65	51.57	0.25	119.25
J-81	1.3	211.65	46.92	0.06	108.49
J-85	1.3	211.65	52.17	0.28	120.65

Pumps @ 195.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.67	0.00	0.00	0.00	0.00

Junctions @ 196.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	211.14	47.42	0.17	109.66
J-17	1.1	211.13	55.34	0.27	127.97
J-25	1.0	211.13	52.13	0.39	120.55
J-26	1.2	211.13	52.39	0.00	121.16
J-74	1.3	211.13	51.38	0.32	118.82
J-75	1.3	211.13	51.34	0.25	118.73
J-81	1.3	211.13	46.69	0.06	107.97
J-85	1.3	211.13	51.95	0.28	120.13

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 196.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	0.4	113.95	211.22	91.99	97.27	1.00	2.26

Junctions @ 197.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	212.96	48.21	0.17	111.48
J-17	1.1	212.96	56.13	0.27	129.80
J-25	1.0	212.96	52.92	0.39	122.38
J-26	1.2	212.96	53.18	0.00	122.99
J-74	1.3	212.96	52.17	0.32	120.65
J-75	1.3	212.96	52.13	0.25	120.56
J-81	1.3	212.96	47.48	0.06	109.80
J-85	1.3	212.96	52.74	0.28	121.96

Pumps @ 197.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	213.05	90.74	99.10	1.00	2.27

Junctions @ 198.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	214.76	48.99	0.17	113.28
J-17	1.1	214.76	56.91	0.27	131.60
J-25	1.0	214.76	53.70	0.39	124.18
J-26	1.2	214.76	53.96	0.00	124.79
J-74	1.3	214.76	52.95	0.32	122.45
J-75	1.3	214.76	52.91	0.25	122.36
J-81	1.3	214.76	48.26	0.06	111.60
J-85	1.3	214.76	53.52	0.28	123.76

Pumps @ 198.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	214.84	89.17	100.89	1.00	2.27

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 199.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	216.52	49.75	0.17	115.04
J-17	1.1	216.51	57.67	0.27	133.35
J-25	1.0	216.51	54.46	0.39	125.93
J-26	1.1	216.51	54.72	0.00	126.54
J-74	1.2	216.52	53.71	0.32	124.21
J-75	1.3	216.51	53.67	0.25	124.11
J-81	1.3	216.51	49.02	0.06	113.35
J-85	1.3	216.51	54.28	0.28	125.51

Pumps @ 199.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	216.59	87.05	102.64	1.00	2.26

Junctions @ 200.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	218.22	50.46	0.17	116.74
J-17	1.1	218.22	58.40	0.27	135.06
J-25	1.0	218.22	55.19	0.39	127.64
J-26	1.1	218.22	55.46	0.00	128.25
J-74	1.2	218.22	54.45	0.32	125.91
J-75	1.3	218.22	54.41	0.25	125.82
J-81	1.3	218.22	49.75	0.06	115.06
J-85	1.3	218.22	55.01	0.28	127.22

Pumps @ 200.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.95	218.29	83.71	104.34	1.00	2.21

Junctions @ 201.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	219.84	51.18	0.17	118.36
J-17	1.1	219.83	59.10	0.27	136.67
J-25	1.0	219.83	55.89	0.39	129.25
J-26	1.1	219.83	56.16	0.00	129.86
J-74	1.2	219.84	55.15	0.32	127.53
J-75	1.3	219.83	55.11	0.25	127.43

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 201.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.3	219.83	50.45	0.06	116.67
J-85	1.3	219.83	55.71	0.28	128.83

Pumps @ 201.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	On	1.7	113.96	219.90	73.96	105.93	1.00	1.98

Junctions @ 202.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	221.21	51.77	0.17	119.73
J-17	1.1	221.20	59.69	0.27	138.04
J-25	1.0	221.20	56.48	0.39	130.62
J-26	1.2	221.20	56.75	0.00	131.23
J-74	1.2	221.20	55.74	0.32	128.89
J-75	1.3	221.20	55.70	0.25	128.80
J-81	1.3	221.20	51.04	0.06	118.04
J-85	1.3	221.20	56.30	0.28	130.20

Pumps @ 202.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	1.7	114.00	221.22	0.00	0.00	0.00	0.00

Junctions @ 203.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	220.69	51.55	0.17	119.21
J-17	1.1	220.68	59.47	0.27	137.52
J-25	1.0	220.68	56.26	0.39	130.10
J-26	1.2	220.68	56.52	0.00	130.71
J-74	1.2	220.68	55.51	0.32	128.37
J-75	1.3	220.68	55.47	0.25	128.28
J-81	1.3	220.68	50.82	0.06	117.52
J-85	1.3	220.68	56.08	0.28	129.68

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 203.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.70	0.00	0.00	0.00	0.00

Junctions @ 204.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	220.17	51.32	0.17	118.69
J-17	1.1	220.16	59.24	0.27	137.00
J-25	1.0	220.16	56.04	0.39	129.58
J-26	1.2	220.16	56.30	0.00	130.19
J-74	1.2	220.16	55.29	0.32	127.85
J-75	1.3	220.16	55.25	0.25	127.76
J-81	1.3	220.16	50.60	0.06	117.00
J-85	1.3	220.16	55.85	0.28	129.16

Pumps @ 204.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	220.18	0.00	0.00	0.00	0.00

Junctions @ 205.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	219.65	51.10	0.17	118.17
J-17	1.1	219.64	59.02	0.27	136.48
J-25	1.0	219.64	55.81	0.39	129.06
J-26	1.2	219.64	56.07	0.00	129.67
J-74	1.3	219.64	55.06	0.32	127.33
J-75	1.2	219.64	55.02	0.25	127.24
J-81	1.3	219.64	50.37	0.06	116.48
J-85	1.2	219.64	55.63	0.28	128.64

Pumps @ 205.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.66	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 206.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	219.13	50.87	0.17	117.65
J-17	1.1	219.12	58.79	0.27	135.96
J-25	1.0	219.12	55.59	0.39	128.54
J-26	1.2	219.12	55.85	0.00	129.15
J-74	1.3	219.12	54.84	0.32	126.81
J-75	1.2	219.12	54.80	0.25	126.72
J-81	1.3	219.12	50.15	0.06	115.96
J-85	1.2	219.12	55.40	0.28	128.12

Pumps @ 206.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	219.14	0.00	0.00	0.00	0.00

Junctions @ 207.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	218.61	50.65	0.17	117.13
J-17	1.1	218.60	58.57	0.27	135.44
J-25	1.0	218.60	55.36	0.39	128.02
J-26	1.2	218.60	55.62	0.00	128.63
J-74	1.3	218.60	54.61	0.32	126.29
J-75	1.3	218.60	54.57	0.25	126.20
J-81	1.3	218.60	49.92	0.06	115.44
J-85	1.2	218.60	55.18	0.28	127.60

Pumps @ 207.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.62	0.00	0.00	0.00	0.00

Junctions @ 208.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	218.08	50.42	0.17	116.60
J-17	1.1	218.08	58.34	0.27	134.92
J-25	1.0	218.08	55.14	0.39	127.50
J-26	1.2	218.08	55.40	0.00	128.11
J-74	1.3	218.08	54.39	0.32	125.77
J-75	1.3	218.08	54.35	0.25	125.68

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 208.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.3	218.08	49.70	0.06	114.92
J-85	1.2	218.08	54.95	0.28	127.08

Pumps @ 208.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	218.10	0.00	0.00	0.00	0.00

Junctions @ 209.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	217.56	50.20	0.17	116.08
J-17	1.1	217.56	58.12	0.27	134.40
J-25	1.0	217.56	54.91	0.39	126.98
J-26	1.2	217.56	55.17	0.00	127.59
J-74	1.3	217.56	54.16	0.32	125.25
J-75	1.3	217.56	54.12	0.25	125.16
J-81	1.3	217.56	49.47	0.06	114.40
J-85	1.2	217.56	54.73	0.28	126.56

Pumps @ 209.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.58	0.00	0.00	0.00	0.00

Junctions @ 210.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	217.04	49.97	0.17	115.56
J-17	1.1	217.04	57.89	0.27	133.88
J-25	1.0	217.04	54.69	0.39	126.46
J-26	1.2	217.04	54.95	0.00	127.07
J-74	1.3	217.04	53.94	0.32	124.73
J-75	1.3	217.04	53.90	0.25	124.64
J-81	1.3	217.04	49.25	0.06	113.88
J-85	1.2	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 210.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	217.06	0.00	0.00	0.00	0.00

Junctions @ 211.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	216.52	49.75	0.17	115.04
J-17	1.1	216.52	57.67	0.27	133.36
J-25	1.0	216.52	54.46	0.39	125.94
J-26	1.2	216.52	54.72	0.00	126.55
J-74	1.3	216.52	53.71	0.32	124.21
J-75	1.3	216.52	53.67	0.25	124.12
J-81	1.3	216.52	49.02	0.06	113.36
J-85	1.2	216.52	54.28	0.28	125.52

Pumps @ 211.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.54	0.00	0.00	0.00	0.00

Junctions @ 212.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	216.00	49.52	0.17	114.52
J-17	1.1	216.00	57.44	0.27	132.84
J-25	1.0	216.00	54.24	0.39	125.42
J-26	1.2	216.00	54.50	0.00	126.03
J-74	1.3	216.00	53.49	0.32	123.69
J-75	1.3	216.00	53.45	0.25	123.60
J-81	1.3	216.00	48.80	0.06	112.84
J-85	1.2	216.00	54.05	0.28	125.00

Pumps @ 212.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	216.02	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 213.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	215.48	49.30	0.17	114.00
J-17	1.2	215.48	57.22	0.27	132.32
J-25	1.0	215.48	54.01	0.39	124.90
J-26	1.2	215.48	54.27	0.00	125.51
J-74	1.3	215.48	53.26	0.32	123.17
J-75	1.3	215.48	53.22	0.25	123.08
J-81	1.3	215.48	48.57	0.06	112.32
J-85	1.2	215.48	53.83	0.28	124.48

Pumps @ 213.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	215.50	0.00	0.00	0.00	0.00

Junctions @ 214.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	214.96	49.07	0.17	113.48
J-17	1.2	214.96	56.99	0.27	131.80
J-25	1.0	214.96	53.79	0.39	124.38
J-26	1.2	214.96	54.05	0.00	124.99
J-74	1.3	214.96	53.04	0.32	122.65
J-75	1.3	214.96	53.00	0.25	122.56
J-81	1.3	214.96	48.35	0.06	111.80
J-85	1.2	214.96	53.60	0.28	123.96

Pumps @ 214.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.98	0.00	0.00	0.00	0.00

Junctions @ 215.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	214.44	48.85	0.17	112.96
J-17	1.2	214.44	56.77	0.27	131.28
J-25	1.0	214.44	53.56	0.39	123.86
J-26	1.2	214.44	53.83	0.00	124.47
J-74	1.3	214.44	52.81	0.32	122.13
J-75	1.3	214.44	52.78	0.25	122.04

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 216.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-81	1.3	214.44	48.12	0.06	111.28
J-85	1.2	214.44	53.38	0.28	123.44

Pumps @ 216.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	214.46	0.00	0.00	0.00	0.00

Junctions @ 216.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	213.92	48.62	0.17	112.44
J-17	1.2	213.92	56.55	0.27	130.76
J-25	1.0	213.92	53.34	0.39	123.34
J-26	1.2	213.92	53.60	0.00	123.95
J-74	1.3	213.92	52.59	0.32	121.61
J-75	1.3	213.92	52.55	0.25	121.52
J-81	1.3	213.92	47.90	0.06	110.76
J-85	1.3	213.92	53.15	0.28	122.92

Pumps @ 216.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.94	0.00	0.00	0.00	0.00

Junctions @ 217.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	213.40	48.40	0.17	111.92
J-17	1.2	213.40	56.32	0.27	130.24
J-25	1.0	213.40	53.11	0.39	122.82
J-26	1.2	213.40	53.38	0.00	123.43
J-74	1.3	213.40	52.36	0.32	121.09
J-75	1.3	213.40	52.33	0.25	121.00
J-81	1.3	213.40	47.67	0.06	110.24
J-85	1.3	213.40	52.93	0.28	122.40

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Pumps @ 217.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	213.42	0.00	0.00	0.00	0.00

Junctions @ 218.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	212.88	48.18	0.17	111.40
J-17	1.2	212.88	56.10	0.27	129.72
J-25	1.1	212.88	52.89	0.39	122.30
J-26	1.2	212.88	53.15	0.00	122.91
J-74	1.3	212.88	52.14	0.32	120.57
J-75	1.3	212.88	52.10	0.25	120.48
J-81	1.3	212.88	47.45	0.06	109.72
J-85	1.3	212.88	52.71	0.28	121.88

Pumps @ 218.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.90	0.00	0.00	0.00	0.00

Junctions @ 219.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	212.36	47.95	0.17	110.88
J-17	1.2	212.36	55.87	0.27	129.20
J-25	1.1	212.36	52.66	0.39	121.78
J-26	1.2	212.36	52.93	0.00	122.39
J-74	1.3	212.36	51.92	0.32	120.05
J-75	1.3	212.36	51.88	0.25	119.96
J-81	1.3	212.36	47.22	0.06	109.20
J-85	1.3	212.36	52.48	0.28	121.36

Pumps @ 219.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	212.38	0.00	0.00	0.00	0.00

Analysis Results
Scenario: 221 Ext. Kb=(0.5), Kw=0
Constituent Analysis

Junctions @ 220.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	211.84	47.73	0.17	110.36
J-17	1.2	211.84	55.65	0.27	128.68
J-25	1.1	211.84	52.44	0.39	121.26
J-26	1.2	211.84	52.70	0.00	121.87
J-74	1.3	211.84	51.69	0.32	119.53
J-75	1.3	211.84	51.65	0.25	119.44
J-81	1.3	211.84	47.00	0.06	108.68
J-85	1.3	211.84	52.26	0.28	120.84

Pumps @ 220.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.86	0.00	0.00	0.00	0.00

Junctions @ 221.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	211.32	47.50	0.17	109.84
J-17	1.2	211.32	55.42	0.27	128.16
J-25	1.1	211.32	52.21	0.39	120.74
J-26	1.2	211.32	52.48	0.00	121.35
J-74	1.3	211.32	51.47	0.32	119.01
J-75	1.3	211.32	51.43	0.25	118.92
J-81	1.3	211.32	46.77	0.06	108.16
J-85	1.3	211.32	52.03	0.28	120.32

Pumps @ 221.00 hr

Label	Status	Constituent (mg/l)	From Grade (ft)	To Grade (ft)	Flow (gpm)	Head (ft)	Relative Speed	Useful Power (Hp)
PMP-1	Off	0.4	114.00	211.34	0.00	0.00	0.00	0.00

APPENDIX G

Cybernet Model Results

Other Model Runs

Analysis Results
Scenario: 720 Ext. Kb=(0.075), Kw=0
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext. Kb=(0.075), Kw=0
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(0.075), Kw=0
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,768.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.83
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.38	0.00	130.33
J-74	0.0	220.31	55.35	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext. Kb=(0.075), Kw=0
Constituent Analysis

Junctions @ 720.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	217.04	49.97	0.17	115.56
J-17	1.1	217.04	57.89	0.27	133.88
J-25	1.1	217.04	54.69	0.39	126.46
J-26	1.2	217.04	54.95	0.00	127.07
J-74	1.3	217.04	53.84	0.32	124.73
J-76	1.3	217.04	53.90	0.25	124.84
J-81	1.3	217.04	49.25	0.06	113.88
J-85	1.2	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 720 Ext. Kb=(0.05), Kw=0
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext. Kb=(0.05), Kw=0
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(0.05), Kw=0
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 In	3,766.00 ft	4 In	5,534.00 ft
3 In	720.00 ft	6 In	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.63
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.35	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext. Kb=(0.05), Kw=0
Constituent Analysis

Junctions @ 720.00 hr						
Label	Constituent (mg/l)		Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	1.4	217.04	48.97	0.17	115.56
J-17	1.2	1.3	217.04	57.88	0.27	133.88
J-25	1.3	1.2	217.04	54.69	0.39	126.46
J-26	1.3	1.4	217.04	54.95	0.00	127.07
J-74	1.3	1.4	217.04	53.94	0.32	124.73
J-75	1.2	1.4	217.04	53.90	0.25	124.64
J-81	1.4	1.4	217.04	49.25	0.06	113.88
J-85	1.0	1.4	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=0
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext. Kb=(0.1), Kw=0
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(0.1), Kw=0
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,766.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.83
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-28	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.36	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=0
Constituent Analysis

Junctions @ 144.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.0	211.66	47.65	0.17	110.18
J-17	0.8	211.66	55.57	0.27	128.50
J-25	0.6	211.66	52.38	0.39	121.08
J-26	0.8	211.66	52.62	0.00	121.69
J-74	1.0	211.66	51.61	0.32	119.35
J-75	1.0	211.66	51.57	0.25	119.26
J-81	1.0	211.66	46.92	0.06	108.50
J-85	1.0	211.66	52.18	0.28	120.66

Junctions @ 288.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	216.33	49.67	0.17	114.85
J-17	1.0	216.33	57.59	0.27	133.17
J-25	0.9	216.33	54.38	0.39	125.75
J-26	1.1	216.33	54.64	0.00	126.36
J-74	1.2	216.33	53.63	0.32	124.02
J-75	1.2	216.33	53.59	0.25	123.93
J-81	1.2	216.33	48.94	0.06	113.17
J-85	1.1	216.33	54.20	0.28	125.33

Junctions @ 432.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	221.01	51.69	0.17	119.53
J-17	1.0	221.01	59.61	0.27	137.85
J-25	0.9	221.01	56.40	0.39	130.43
J-26	1.1	221.01	56.67	0.00	131.04
J-74	1.1	221.01	55.66	0.32	128.70
J-75	1.2	221.01	55.62	0.25	128.61
J-81	1.2	221.01	50.96	0.06	117.85
J-85	1.2	221.01	56.22	0.28	130.01

Junctions @ 576.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.2	212.36	47.95	0.17	110.88
J-17	1.1	212.36	55.87	0.27	129.20
J-25	0.9	212.36	52.66	0.39	121.78
J-26	1.1	212.36	52.93	0.00	122.39
J-74	1.2	212.36	51.91	0.32	120.05

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=0
Constituent Analysis

Junctions @ 576.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-75	1.2	212.36	51.88	0.25	119.96
J-81	1.2	212.36	47.22	0.08	109.20
J-85	1.2	212.36	52.48	0.28	121.36

Junctions @ 720.00 hr

Label	Constituent (mg/l)		Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.3	1.2	217.04	49.97	0.17	115.56
J-17	1.2	1.0	217.04	57.89	0.27	133.88
J-25	1.3	0.9	217.04	54.69	0.39	126.46
J-26	1.3	1.1	217.04	54.95	0.00	127.07
J-74	1.3	1.2	217.04	53.94	0.32	124.73
J-75	1.2	1.2	217.04	53.90	0.25	124.64
J-81	1.4	1.2	217.04	49.25	0.08	113.88
J-85	1.0	1.1	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 720 Ext, Kb=0, Kw=0
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext, Kb=0, Kw=0
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Base-Constituent
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.1086-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,786.00 ft	4 in	5,634.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.83
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.36	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext, Kb=0, Kw=0
Constituent Analysis

Junctions @ 720.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	1.7	217.04	49.97	0.17	115.56
J-17	1.7	217.04	57.89	0.27	133.88
J-25	1.7	217.04	54.69	0.39	126.46
J-26	1.7	217.04	54.95	0.00	127.07
J-74	1.7	217.04	53.94	0.32	124.73
J-75	1.7	217.04	53.90	0.25	124.64
J-81	1.7	217.04	49.25	0.06	113.88
J-86	1.7	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=(-1.0)
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext. Kb=(0.1), Kw=(-1.0)
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(0.1), Kw=(-1.0)
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,766.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	8 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.83
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.35	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=(-1.0)
Constituent Analysis

Junctions @ 144.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	211.66	47.65	0.17	110.18
J-17	0.4	211.66	55.57	0.27	128.50
J-25	0.2	211.66	52.36	0.39	121.08
J-26	0.4	211.66	52.62	0.00	121.69
J-74	0.6	211.66	51.61	0.32	119.35
J-75	0.7	211.66	51.57	0.25	119.26
J-81	0.8	211.66	46.82	0.06	108.50
J-85	0.6	211.66	52.18	0.28	120.66

Junctions @ 288.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	216.33	49.67	0.17	114.85
J-17	0.5	216.33	57.59	0.27	133.17
J-25	0.3	216.33	54.38	0.39	125.75
J-26	0.5	216.33	54.64	0.00	126.36
J-74	0.8	216.33	53.63	0.32	124.02
J-75	0.8	216.33	53.59	0.25	123.93
J-81	0.7	216.33	48.94	0.06	113.17
J-85	0.6	216.33	54.20	0.28	125.33

Junctions @ 432.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	221.01	51.69	0.17	119.53
J-17	0.5	221.01	59.61	0.27	137.85
J-25	0.3	221.01	56.40	0.39	130.43
J-26	0.5	221.01	56.67	0.00	131.04
J-74	0.7	221.01	55.66	0.32	128.70
J-75	0.8	221.01	55.62	0.25	128.61
J-81	0.7	221.01	50.96	0.06	117.85
J-85	0.6	221.01	56.22	0.28	130.01

Junctions @ 576.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	212.36	47.95	0.17	110.88
J-17	0.5	212.36	55.87	0.27	129.20
J-25	0.3	212.36	52.66	0.39	121.78
J-26	0.5	212.36	52.93	0.00	122.39
J-74	0.8	212.36	51.91	0.32	120.05

Analysis Results
Scenario: 720 Ext. Kb=(0.1), Kw=(-1.0)
Constituent Analysis

Junctions @ 576.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-75	0.8	212.36	51.88	0.25	119.98
J-81	0.7	212.36	47.22	0.06	109.20
J-85	0.7	212.36	52.48	0.28	121.36

Junctions @ 720.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.9	217.04	49.97	0.17	115.56
J-17	0.5	217.04	57.89	0.27	133.88
J-25	0.3	217.04	54.89	0.39	126.46
J-26	0.5	217.04	54.95	0.00	127.07
J-74	0.8	217.04	53.94	0.32	124.73
J-75	0.8	217.04	53.90	0.25	124.64
J-81	0.7	217.04	49.25	0.06	113.88
J-85	0.6	217.04	54.50	0.28	126.04

Analysis Results
Scenario: 720 Ext. Kb=(.1), Kw(2.0)
Constituent Analysis

Title: Fargo Water System
Project Engineer: Tom Rowe
Project Date: 01/27/99
Comments:

Scenario Summary	
Label	720 Ext. Kb=(.1), Kw(2.0)
Demand Alternative	Base-Average Daily
Physical Alternative	Base-Physical
Initial Settings Alternative	Base-Initial Settings
Operational Alternative	Base-Operational
Age Alternative	Base-Age Alternative
Constituent Alternative	Constituent-720 Ext. Kb=(.1), Kw(2.0)
Trace Alternative	Base-Trace Alternative
Fire Flow Alternative	Base-Fire Flow

Liquid Characteristics			
Liquid	Water at 20C(68F)	Specific Gravity	1.00
Kinematic Viscosity	0.108e-4 ft²/s		

Network Inventory			
Number of Pipes	97	Number of Tanks	1
Number of Reservoirs	1	- Constant Area:	1
Number of Junctions	83	- Variable Area:	0
Number of Pumps	1	Number of Valves	0
- Constant Power:	0	- FCV's:	0
- One Point (Design Point):	0	- PBV's:	0
- Standard (3 Point):	1	- PRV's:	0
- Standard Extended:	0	- PSV's:	0
- Custom Extended:	0	- TCV's:	0
- Multiple Point:	0	Number of Spot Elevations	0

Pipe Inventory			
Total Length	26,778.00 ft		
2 in	3,766.00 ft	4 in	5,534.00 ft
3 in	720.00 ft	6 in	16,758.00 ft

Junctions @ 0.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.0	220.31	51.39	0.17	118.83
J-17	0.0	220.30	59.31	0.27	137.14
J-25	0.0	220.30	56.10	0.39	129.72
J-26	0.0	220.30	56.36	0.00	130.33
J-74	0.0	220.31	55.35	0.32	128.00
J-75	0.0	220.31	55.31	0.25	127.91
J-81	0.0	220.30	50.66	0.06	117.14
J-85	0.0	220.30	55.92	0.28	129.30

Analysis Results
Scenario: 720 Ext. Kb=(.1), Kw(2.0)
Constituent Analysis

Junctions @ 144.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	211.66	47.85	0.17	110.18
J-17	0.3	211.66	56.57	0.27	128.50
J-25	0.2	211.66	52.36	0.39	121.08
J-26	0.4	211.66	52.62	0.00	121.69
J-74	0.6	211.66	51.61	0.32	119.35
J-75	0.6	211.66	51.57	0.25	119.26
J-81	0.5	211.66	46.92	0.06	108.50
J-85	0.5	211.66	52.18	0.28	120.66

Junctions @ 288.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	216.33	49.67	0.17	114.85
J-17	0.4	216.33	57.59	0.27	133.17
J-25	0.3	216.33	54.38	0.39	125.75
J-26	0.5	216.33	54.64	0.00	126.36
J-74	0.7	216.33	53.63	0.32	124.02
J-75	0.7	216.33	53.59	0.25	123.93
J-81	0.6	216.33	48.94	0.06	113.17
J-85	0.6	216.33	54.20	0.28	125.33

Junctions @ 432.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.7	221.01	51.69	0.17	119.53
J-17	0.4	221.01	59.61	0.27	137.85
J-25	0.3	221.01	56.40	0.39	130.43
J-26	0.5	221.01	56.67	0.00	131.04
J-74	0.7	221.01	55.66	0.32	128.70
J-75	0.7	221.01	55.62	0.25	128.61
J-81	0.6	221.01	50.96	0.06	117.85
J-85	0.6	221.01	56.22	0.28	130.01

Junctions @ 576.00 hr

Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	212.36	47.95	0.17	110.88
J-17	0.4	212.36	55.87	0.27	129.20
J-25	0.3	212.36	52.66	0.39	121.78
J-26	0.5	212.36	52.93	0.00	122.39
J-74	0.7	212.36	51.91	0.32	120.05

Analysis Results
Scenario: 720 Ext. Kb=(.1), Kw(2.0)
Constituent Analysis

Junctions @ 576.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-75	0.7	212.36	51.88	0.25	119.96
J-81	0.6	212.36	47.22	0.06	109.20
J-85	0.6	212.36	52.48	0.28	121.36

Junctions @ 720.00 hr					
Label	Constituent (mg/l)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Demand (Calculated) (gpm)	Pressure Head (ft)
J-2	0.8	217.04	49.97	0.17	115.56
J-17	0.4	217.04	57.89	0.27	133.88
J-25	0.3	217.04	54.69	0.39	126.46
J-26	0.5	217.04	54.95	0.00	127.07
J-74	0.7	217.04	53.94	0.32	124.73
J-75	0.7	217.04	53.90	0.25	124.64
J-81	0.6	217.04	49.25	0.06	113.88
J-85	0.6	217.04	54.50	0.28	126.04

VITA

Thomas O. Rowe

Candidate for the Degree of

Master of Science

Thesis: MODELING OF PRESSURES AND QUALITY IN A WATER DISTRIBUTION SYSTEM

Major Field: Civil Engineering

Biographical:

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Education: Graduated from Dos Pueblos High School, Goleta, California in June 1985; received Associate of Science Degree in Computer Aided Design/Drafting from Santa Barbara City College, Santa Barbara, California, in August 1988; received Bachelor of Science degree in Civil Engineering from California Polytechnic State University, San Luis Obispo, California in December 1992. Completed the requirements for the Master of Science degree with a major in Civil Engineering at Oklahoma State University July, 2000.

Experience: Employed by Tom Pappas, Inc (Structural Engineers) 1986 to 1987, Industrial Structures, Inc. 1987 to 1988, Envirotech Services, Inc. 1992 to 1994, City of Enid, Oklahoma 1994 to 1998, Summit Environmental Services, LLC 1998 to 1999, and Rowe Porterfield, LLC, 1999 to present.

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