COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

A JOINT APPLICATION OF PENDLETON COUNTY FISCAL COURT, EAST PENDLETON WATER DISTRICT AND PENDLETON COUNTY WATER DISTRICT FOR A CERTIFICATE OF CONVENIENCE AND NECESSITY	CASE NO. 94-172

O R D E R

IT IS ORDERED that Pendleton County Fiscal Court, East Pendleton Water District and Pendleton County Water District ("East Pendleton and Pendleton") shall file an original and 10 copies (two copies of engineering-related materials) of the following information with the Commission, with a copy to all parties of record within 14 days from the date of this Order. East Pendleton and Pendleton shall furnish with each response the name of the witness who will be available at the public hearing, if one is held, for responding to questions concerning each item of information requested.

1. If the hydraulic analyses which are provided in response to this information request are computer-generated, provide a copy of the input data on an IBM compatible 5 1/4-inch or 3 1/2-inch floppy disk.

2. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the existing water distribution systems as presently configured and operated. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all

water storage tanks. Computations are to be documented by a labeled schematic map of the systems that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. State whether flows used in the analyses are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - if the proposed construction is in an area of the water distribution system which can be hydraulically isolated or separated from the rest of the water systems of both East Pendleton and Pendleton, only hydraulic analyses for the isolated portion of the systems in question need be filed.)

3. Provide a summary of any operational deficiencies of the existing water systems that are indicated by the hydraulic analyses or that are known from experience.

4. In order to obtain realistic results when utilizing computer hydraulic analyses to predict a water distribution system's performance, engineering references stress the importance of calibrating the results predicted to actual hydraulic conditions. This calibration process should include matching field measurements to the results predicted by the computer over a wide range of actual operating conditions. At a minimum this should

include average and maximum water consumption periods, as well as "fire flow" situations and very high demand periods.

Based on the above, explain the procedures used to verify the computer hydraulic analyses filed in this case. This explanation should be documented by field measurements, hydraulic calculations, etc.

5. Most engineering references state that instantaneous customer demands can peak at 3 to 15 times the 24-hour average demand. In addition, most engineering references also state that a water distribution system should be designed to meet at least the maximum hourly demand of its customers.

a. State exactly what measurements were made of the maximum hourly usage of both East Pendleton and Pendleton. If the maximum hourly usage was not measured directly, state why it was not.

b. State exactly how the diurnal pattern for the water systems of both East Pendleton and Pendleton was determined. Also detail how the diurnal demand multipliers for any hydraulic analyses were determined. This response should be documented by appropriate field measurements.

6. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on the water systems of both East Pendleton and Pendleton. Identify the 24-hour period recorded, the exact location of the pressure recorder, and the sea level elevation of

the recorder. Also state the schematic junction number nearest the location of the pressure recorder:

a. In the vicinity of all existing water storage tanks.

b. In the vicinity of the proposed connection points of the proposed water line extensions to the existing water mains.

c. On the suction and discharge side of all existing pump stations.

d. In the vicinity of the proposed water storage tank locations.

e. Any other locations necessary to provide a complete understanding of the existing system's operation in the proposed construction area.

7. Describe the proposed daily operational sequences of the water systems. Documentation should include the methods and mechanisms proposed to provide positive control of all storage tank water levels. The description should also include an hourly summary of how all tanks (existing and proposed) will "work" (expected inflow or outflow of water) and how all pumps will function. The description should be fully supported by appropriate field measurements and hydraulic calculations.

8. Provide a highway map at a scale of at least one inch equals two miles marked to show the water distribution systems of both East Pendleton and Pendleton. The map of the systems shall show pipeline sizes, location, and connections as well as pumps, water storage tanks, and sea level elevations of key points.

9. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the water distribution systems with the improvements proposed in this case in place. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks. Computations are to be documented by a labeled schematic map of the systems that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. Flows used in the analyses shall be identified as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - these analyses should use the same schematic as the analyses of the existing water distribution systems to facilitate comparison.)

10. Describe the proposed construction project and include its purpose, cost estimate, funding arrangements, etc. This is commonly referred to as the Preliminary Engineering Report.

11. Provide a copy of the Bid Tabulation when the bids are received.

12. Provide a copy of the final summation of the total cost of construction and funding arrangements referred to as the Final Engineering Report.

13. Provide a list of the water storage tanks of both East Pendleton and Pendleton. Give the location, capacity, and overflow elevation of each tank. Explain how water is supplied to each tank. Also state whether each tank is in use, and whether it will remain in use, be abandoned or replaced.

14. Provide a list of the existing pump stations of both East Pendleton and Pendleton. Give the location, number of pumps and their rated capacities, and the purpose of each pump station. Explain how the operation of each pump station is controlled. Provide a copy of the pump manufacturer's characteristics (head/capacity) curve for each of the existing pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state whether the pump is in use, and whether it will remain in use, be abandoned or replaced.

15. Provide a copy of the pump manufacturer's characteristic (head/capacity) curve on which the design of the proposed pump station is based.

16. Engineering information filed in this case indicates that the pressure on the suction side of existing pump station No. 2 is going to be reduced by a pressure reducing valve. Reducing pressure only to increase it again would generally not be considered good engineering practice and would be considered inefficient. Explain the engineering rationale for this kind of operation. This explanation should be documented by field measurements, hydraulic calculations, etc.

17. Engineering information indicates that East Pendleton and Pendleton are proposing to install eleven fire hydrants as part of this project. 807 KAR 5:066, Section 10(2)(b), states in part "[f]ire hydrants may be installed by a utility only if: a. A professional engineer with a Kentucky registration has certified that the system can provide a minimum fire flow of 250 gallons per minute; and b. The system supporting this flow has the capability of providing this flow for a period of now less than two (2) hours plus consumption at the maximum daily rate."

Document that the systems meet the requirements of 807 KAR 5:066, Section 10(2)(b).

Done at Frankfort, Kentucky, this 18th day of May, 1994.

PUBLIC SERVICE COMMISSION

For the Commission

ATTEST:

Executive Director