

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF THE SOUTH ANDERSON)
WATER DISTRICT ORGANIZED PURSUANT TO)
CHAPTER 74 OF THE KENTUCKY REVISED)
STATUTES, FOR (1) A CERTIFICATE OF)
PUBLIC CONVENIENCE AND NECESSITY)
AUTHORIZING AND PERMITTING SAID WATER)
DISTRICT TO CONSTRUCT A WATER WORKS)
CONSTRUCTION PROJECT, CONSISTING OF)
EXTENSIONS TO THE EXISTING WATER WORKS)
SYSTEM; (2) APPROVAL OF THE PROPOSED)
PLAN OF FINANCING AND THE APPROVAL OF)
THE ISSUANCE OF CERTAIN SECURITIES; AND)
(3) APPROVAL OF THE INCREASED WATER)
RATES PROPOSED TO BE CHARGED BY THE)
DISTRICT TO CUSTOMERS OF THE DISTRICT)

CASE NO.
10135

O R D E R

IT IS ORDERED that South Anderson Water District ("South Anderson") shall file an original and seven copies of the following information with the Commission with a copy to all parties of record no later than March 18, 1988. If the information cannot be provided by this date, South Anderson should submit a motion for an extension of time stating the reason a delay is necessary and include a date by which it will be furnished. Such motion will be considered by the Commission. South Anderson shall furnish with each response the name of the witness who will be available at the public hearing for responding to questions concerning each item of information requested.

1. South Anderson filed hydraulic design data in response to the Commission's deficiency letter. However, no hydraulic

analyses to indicate the actual operation of the existing water distribution system were filed. The information that was filed does not depict the "on-off" operation of the existing pumps, the "empty-fill" cycles of the existing tanks and the pressures available to its customers. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the existing water distribution system. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks as well as residual pressures at representative points throughout the system. Computations are to be documented by a labeled schematic map of the system 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 proposed water distribution system to facilitate comparison).

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

3. South Anderson also did not file any hydraulic analyses to indicate the operation of the proposed water distribution system. Without hydraulic analyses, no determination can be made as to the appropriateness of the proposed construction. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the proposed water distribution system. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks as well as residual pressures at representative points throughout the system. Computations are to be documented by a labeled schematic map of the system 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 system to facilitate comparison).

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 measure-

ments to the results predicted by the computer over a wide range of actual operating conditions. As a minimum this should include average and maximum water consumption periods, as well as "fire flow" or very high demand periods.

Based on the above, if computer hydraulic analyses are filed in response to Items 1 and 2, 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.

Based on the above information state exactly what measurements were made of South Anderson's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

In addition, state how the demands and any demand multipliers which were utilized in the hydraulic analyses filed in response to Items 1 and 2 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 South Anderson's system. Identify the 24-hour period recorded, the exact location of the pressure recorder and the sea level elevation of the recorder. If computer hydraulic

analyses are filed in response to Items 1 and 2 state the schematic junction number nearest the location of the pressure recorder. If any of the previously filed pressure recording charts satisfy any of the requested pressure charts provide clarification as to location, elevation, etc.

- a. At existing water storage tanks.
- b. At all proposed connection points.
- c. On the suction and discharge sides of all existing pump stations.

7. Provide a list of each of South Anderson's existing pump stations. 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 characteristic (head/capacity) curve for each of South Anderson's existing pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state if pump is in use and if pump will remain in use, will be abandoned or will be replaced.

8. Provide the criteria used in determining the location, size, overflow elevation and head range for the proposed water storage tanks. In addition, state what other sites were considered and why they were not selected.

9. Provide a narrative description of the proposed daily operational sequences of the water system. 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 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.

10. Provide a copy of each of the county court orders establishing South Anderson and defining its boundaries. (Note - it is not necessary to refile any court orders that have previously been filed in this case).

11. Provide a highway map at a scale of at least one inch equals two miles marked to show South Anderson's existing and proposed systems. 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. The map shall also be marked to show the location of the water district's boundaries and labeled to indicate the appropriate court order from which each boundary was determined.

12. The engineering information submitted with the application indicates that South Anderson is proposing to install one fire hydrant as part of this project. KRS 227, the "Recommended Standards For Water Works" by the Great Lakes - Upper Mississippi River Board of State Sanitary Engineers ("Ten States Standards") and the Insurance Services Office ("ISO") all have requirements for providing fire protection. All of these references require fire hydrant installation on a minimum of six-inch diameter water lines. For residential construction, the ISO requires the capability to deliver between 500 to 1500 gallons per minute at a residual pressure of 20 pounds per square inch for a minimum of 2

hours from any fire hydrant. The Ten States Standards allow a fire hydrant on dead-end mains for flushing only if flow and pressure are sufficient. Otherwise an approved flushing hydrant or blow-off valve should be used. Based on the above, provide information as to the purpose of the proposed fire hydrant. If the purpose of the proposed fire hydrant is to provide fire protection, provide hydraulic analyses demonstrating the capability of South Anderson's system to comply with the requirements of KRS 227, the ISO and the Ten States Standards. If the fire hydrant is proposed for reasons other than fire protection state why other equipment was not considered (e.g., blow-off valves, drain valves, etc.).

Done at Frankfort, Kentucky, this 24th day of February, 1988.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:

Executive Director