

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF THE BIG SANDY WATER )  
DISTRICT, OF BOYD AND CARTER COUNTIES, )  
KENTUCKY, FOR APPROVAL OF CONSTRUCTION ) CASE NO. 9861  
AND FINANCING )

O R D E R

IT IS ORDERED that Big Sandy Water District ("Big Sandy") 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 April 29, 1987. If the information cannot be provided by this date, Big Sandy 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. Big Sandy 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. 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. 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. Big Sandy filed computer hydraulic analyses for the proposed water distribution system with its application. Unfortunately these analyses did not depict the "on-off" operation of the existing pump, the "empty-fill" cycles of the existing tanks, etc. 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. 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 measurements 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, 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. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Big Sandy's system. 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. Water line on the Big Sandy's water system at or near the connection point to the Kenova water system.

b. The water storage tank in the vicinity of junction 16 (U.S. 23 - Tank No. 1).

c. The water storage tank in the vicinity of junction 150 (Bowling Drive - Tank No. 2).

d. The water storage tank in the vicinity of junctions 105 and 108 (Rush Hill - Tank No. 3).

e. On the suction and discharge sides of the pump in line 39.

f. Water lines in the vicinity at or near the connection points of all proposed water line extensions. This should include but is not limited to junctions 18, 62, 63, 73, 81, 88, 100, 110, 127 and 128.

6. Provide a list of each of Big Sandy'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 characteristics (head/capacity) curve for each of Big Sandy'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.

7. 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.

8. The computer hydraulic analyses filed in this case for the proposed water distribution system indicates that the potential exists for the system to experience low pressure (less than 30 psig) at Nodes 16, 35, 44, 150 and 131. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6 (1). Provide details on any preventive measures or additional construction Big Sandy intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements.

9. The computer hydraulic analyses filed in this case for the proposed water distribution system indicate that the potential exists for the system to experience high pressure (more than 150 psig) at Nodes 39, 56, 57, 61, 62, 65, 73, 80, 83, 88, 100, 104, 106, 108, 110 and 120. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6 (1). The plans and the schematic indicate PRV's, both existing and proposed, installed to reduce some of these high pressure areas, however the PRV's were apparently not included in the computer hydraulic analyses. Provide details of any preventive measures or additional construction Big Sandy intends to perform to protect against this type of occurrence system wide. Details should be documented by hydraulic analyses and field measurements.

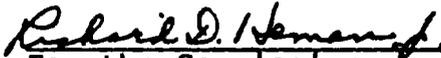
10. PSC regulation 807 KAR 5:066, Section 11 (2)(a) prohibits 2-inch non-circulating lines in excess of 250 feet in length. Several plan sheets (e.g. G-9 and G-13) propose 2-inch water lines which appear to be in violation of this regulation. It appears that 3-inch or larger lines should be installed. Provide comments concerning this matter.

11. Provide a list of all 2-inch water lines proposed for the project. This list shall include the location, length and possibility for future extension of each line.

12. There are several locations on the computer hydraulic analyses schematic which do not depict the proposed water lines exactly as shown on the construction plans (i.e. Jacks Fork Pike, Trace Road, Wilson Creek Road, etc.). Provide additional information to clarify this difference and to show that all appropriate demands have been included on the analyses.

Done at Frankfort, Kentucky, this 2nd day of April, 1987.

PUBLIC SERVICE COMMISSION

  
For the Commission

ATTEST:

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Executive Director