COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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| THE APPLICATION OF PULASKI COUNTY WATER DISTRICT NO 2, OF PULASKI, WAYNE, AND RUSSELL COUNTIES, KENTUCKY, FOR APPROVAL OF CONSTRUCTION AND FINANCING | ) ) ) ) | CASE NO. 9821 |

# O R D E R

IT IS ORDERED that Pulaski County Water District No. 2 ("District No. 2") 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 31, 1987. If the information cannot be provided by this date, District No. 2 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. District No. 2 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 a summary of any operational deficiencies of the existing water system that are indicated by the hydraulic analyses or that are known from experience.

2. The maps filed with the application do not show a layout of District No. 2's total distribution system as needed for a review by the Commission of both the existing system and the additions proposed to be added. District No. 2 should provide a

map of suitable scale that clearly shows the layout of the existing water mains with pipe sizes clearly shown and the layout of the proposed additions with pipe sizes clearly shown.

3. A complete evaluation of District No. 2's proposed construction requires the filing of more comprehensive hydraulic information. The additional hydraulic information for existing facilities should depict the operation of existing pumps, the "empty-fill" cycles of existing tanks, etc. District No. 2 should 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 those 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 usage records. Any assumptions used in the analyses are to be fully justified.

4. The results of hydraulic analyses based on the proposed facilities being fully operational with existing facilities is essential to a demonstration that the new facilities can be adequately supported by the existing facilities. The information

filed should depict pump operations, the "empty-fill" cycles of the water storage tanks, etc. 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. 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 those 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).

5. 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 very high demand periods.

6. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on District No. 2'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. The discharge side of the master meter connected to the City of Somerset's water system.

b. At or near the end of the existing water main on Hideway Drive.

c. At the intake side of pump station No. 1.

d. At the discharge side of pump station No. 1.

e. At or near the KY 235/KY 761 road junction.

f. At or near the KY 235/Pole Bridge School Road junction.

g. At or near the KY 1664/Piney Woods Road junction.

h. At or near the KY 1664/ARD Ridge Road junction.

i. At Tank No. 1.

j. At Tank No. 2.

k. At the intake side of pump station No. 2.

l. At the discharge side of pump station No. 2.

m. At tank No. 3.

n. At or near the KY 196/Faubush-Norfleet Road junction.

o. At or near the KY 196/Richardson Road junction.

p. At or near the KY 196/Union Ridge Road junction at Jabez.

q. At or near the end of the existing water main on the Jabez-Cave Springs Road.

7. Provide a list of each of District No. 2's water storage tanks. Give the location, capacity, and overflow elevation of each tank. Explain how water is supplied to each tank.

8. Provide a list of each of District No. 2'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 District No. 2'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. Explain the actual and proposed operations of the three pumps shown in pump station No. 1.

9. Provide a copy of the pump manufacturer's characteristics (head/capacity) curves on which the designs of District No. 2's pump stations were based.

10. 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.

11. On the basis of measurements taken from the topographic maps supplied with the application, approximately 36,000 feet of 6-inch main connects the master meter at Somerset to pump station No. 1. The elevation head available at the master meter is given as 1228. The topographic map shows the ground elevation at pump station No. 1 as approximately 1,050 feet. Since 69.2 feet of elevation head is required to maintain 30 psig at the intake side of the pump station, the "working" elevation differential is approximately 109 feet. Provide calculations to show the maximum flowage volume capacity of the 36,000 feet of 6-inch main within the permissible friction head loss of 109 feet. If your evaluation shows that more than 109 feet is available, provide information to substantiate the different elevation head.

12. The application shows that 814 customers are served by the existing system. What is the average and the maximum demand imposed on the system by these 814 customers?

13. The application shows that 930 customers are to be added by the new construction. What will be the average and maximum demand imposed on the system by these 930 customers? What will be the average and maximum demand imposed on the system at the time both existing and new customers (1,744 total customers) are being served after completion of construction?

14. Provide a listing of the names and addresses of the 930 new customers to be added by the proposed construction.

Done at Frankfort, Kentucky, this 16th day of March, 1987.

PUBLIC SERVICE COMMISSION

For the Commission

ATTEST:

Executive Director