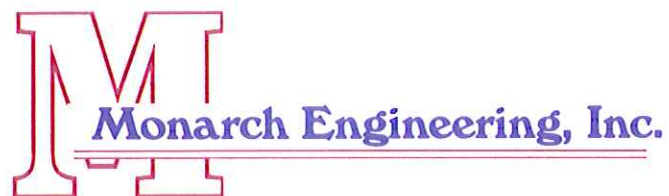


**PRELIMINARY ENGINEERING REPORT  
FOR THE  
WESTERN PULASKI COUNTY WATER DISTRICT  
BIG CLIFTY CREEK AREA WATER TRANSMISSION MAIN  
&  
IMPROVEMENTS**

**NOVEMBER 2013  
REVISED MARCH 2018**



# **PRELIMINARY ENGINEERING REPORT**

## **BIG CLIFTY CREEK AREA WATER TRANSMISSION MAIN & IMPROVEMENTS**

### **WESTERN PULASKI COUNTY WATER DISTRICT PULASKI COUNTY, KENTUCKY**

#### **I. GENERAL**

This Preliminary Engineering Report is intended to analyze the proposed water system extension that is being planned by the Western Pulaski County Water District to serve existing residential customers in Western Pulaski County with potable drinking water. The Western Pulaski County Water District (WPCWD) desires to provide more reliable water service to the Northwest and Southwest pressure zones of the service area. A new 800 GPM water booster pump station will be located near the 500,000 gallon Denham Knob tank and a new 400 GPM water booster pump station will be installed along the new transmission main route that is to be installed in the northwestern part of the water system known as the Big Clifty Creek Area. In addition, a new water line across the KY 80 Fishing Creek Bridge will replace an existing water line. The project will also include three new master meters located at KY Highway 80, Oak Hill Road, and the northern master meter located along north US 127. The project will also consist of a piping and meter replacement at the existing Lees Ford Pump Station. This part of the project is related to capacity and reliability which has an indirect effect on the health and safety of the customer base.

Project consists of approximately 45,500 LF of 8-inch water transmission main along Ringgold Road (KY 3263), Hickory Nut Road, across Coldweather Creek/Lake Cumberland, and then along Piney Grove Ridge Road to the north side of Cumberland Parkway (KY 9008). The project also includes the installation of one (1) 800 GPM water booster pump station near an existing 500,000 gallon water storage tank located on Denham Knob, one (1) 400 GPM water booster pump station along the transmission main route located at the intersection of Lewis Road and Piney Grove Ridge Road. The water transmission main will serve to eliminate several undersized water lines that currently serve the northwest portion of the water distribution system and will provide an adequate amount of water that will allow an existing booster pump station to operate which has been out of service due to lack of water volume. In addition, the new 8-inch transmission main will serve the southwestern portion of the distribution system along with a water line replacement across the KY 80 Fishing Creek Bridge.

This project will provide two major improvements to the District's water distribution system. One it will eliminate a maintenance problem that the District has dealt with for years with an existing 10-inch water line across the KY 80 Fishing Creek Bridge; and two

it will allow the distribution system to utilize a 500,000 gallon water storage tank and an existing water booster pump station which have been out of service to operate under normal and demanding conditions to serve the northwest portion of the distribution system. The new 8-inch water line will also improve the quantity of flow from the Somerset side of Fishing Creek to the Hickory Nut area (northwest) and Nancy area (southwest).

## II. PROJECT PLANNING AREA

The WPCWD service area is in Northwestern and Southwestern Pulaski County, and covers area that is generally north and south of the Louie B. Nunn Parkway. This project area begins at North Hart Road and Hacker Road, then following along Ringgold Road (KY 3263) and across Coldweather Creek/Lake Cumberland then along Piney Grove Ridge Road back to West Highway 80 by following along Piney Grove Ridge Road (KY 2993), then across Happy Ridge Road, Molden Lane, Waterloo Road, and then eventually to the north side of the Cumberland Parkway (KY 9008). A portion of the transmission main exists and will be utilized across Clifty Creek and Fishing Creek/Lake Cumberland. The project serves an area that covers the northwestern and southwestern most portions of the service area. The topography of these areas is relatively flat and varies to gently rolling hills to steep cliffs. The land use in this area is mainly agricultural with some light timber harvesting. Within the proposed service area there are no major commercial or industrial businesses expected. The entire service area is broken into pressure zones as shown on the attached system map. System schematics were developed from information received from the Lake Cumberland Area Development District (LCADD) and further refined from discussions with the WPCWD staff.

## III. EXISTING FACILITIES

The WPCWD service area is comprised of approximately 350 miles of water lines consisting of 155 miles of 3-inch, 53 miles of 4-inch, 121 miles of 6-inch, 18 miles of 8-inch, and less than 1 mile of 10-inch water lines. The WPCWD has five pump stations and six water storage tanks. The system is served from the City of Somerset through four master meters supplied from both the Somerset high and low level pressure zones. The system provides water service to approximately 8,500 customers.

The distribution system with water line sizes is shown on attached system map. The WPCWD is generally in good repair; however, some components were installed when the system was much smaller and in need of upgrading and others are showing signs of wear because of many years of use.

The WPCWD is currently in compliance with all Federal and State Regulations regarding the sanitary features of the distribution system. In addition the WPCWD is governed by the Public Service Commission, and they have no current violations of PSC regulations.

#### IV. NEED FOR THE PROJECT

This project will eliminate a maintenance problem and/or threat of a breakage that the District has dealt with for years with the existing 10-inch water line across the Fishing Creek Bridge (West KY Highway 80). Should the 10-inch along the bridge break or leak it takes several days to get repaired, allowing the central and southwest portions of the water system to have a shortage of water should the tanks not be at full capacity. The newly 12-inch ductile iron ball and socket type water line replacement line across the KY Fishing Creek Bridge will provide for easier access to repair and provide for a less maintenance type water line across the bridge. The new 8-inch water transmission main across the Big Clifty area will improve the capacity of flow from the Somerset side of Fishing Creek to the Nancy side of Fishing Creek to serve the majority of the District's water system serving the Northwestern and Southwestern Zones of Pulaski County. For years the Fishing Creek bridge crossing has created a bottle neck in the District's distribution system with an existing 6-inch water line to feed a 10-inch water line across the bridge. The new 8-inch water transmission main and new water booster pump stations will serve to alleviate the restriction the 6-inch has put on the system. In addition, the project will allow the distribution system to utilize a 500,000 gallon water storage tank and an existing water booster pump station which have been out of service to operate under normal and demanding conditions to serve the northwest portion of the distribution system. The new 8-inch water line will also improve the quantity of flow from the Somerset side of Fishing Creek to the Hickory Nut area (northwest) and Nancy area (southwest). The new transmission main will consist of approximately 5,400 LF of 8-inch ductile iron pipe, 40,100 of 8-inch PVC SDR 21 water line, and a new 400 GPM water booster pump station, a new 800 GPM water booster pump station, and associated appurtenances. This part of the project will improve water service to approximately 3,000 existing customers in the Northwestern and Southwestern Zones of the WPCWD service area. The location of the new water booster pump stations and transmission main are shown on the attached system maps.

#### V. ALTERNATIVES CONSIDERED

Alternate No. 1: Install new 8-inch water transmission at proposed alternate route and install a new 400 GPM water booster pump station, a new 800 GPM water booster pump station, utilize an existing 500,000 gallon water storage tank and existing pump station, and replace an existing water line across Fishing Creek Bridge.

Alternate No. 2: 1: Install new 12-inch water transmission at an alternate route and relocate existing 400 GPM water booster pump station, eliminating existing water line across Fishing Creek Bridge.

Alternate No. 3: Purchase more water from Russell County to feed District's system west of Fishing Creek Bridge and disconnect the Fishing Creek bridge crossing. This alternate would involve water line size increases, new tanks, and booster pump stations.

## VI. PROPOSED PROJECT

Project consists of approximately 45,500 LF of 8-inch water transmission main along Ringgold Road (KY 3263), Hickory Nut Road, across Coldweather Creek/Lake Cumberland, and then along Piney Grove Ridge Road to the north side of Cumberland Parkway (KY 9008). The project also includes the installation of one (1) 800 GPM water booster pump station near an existing 500,000 gallon water storage tank located on Denham Knob, one (1) 400 GPM water booster pump station along the transmission main route located at the intersection of Lewis Road and Piney Grove Ridge Road. The water transmission main will serve to replace an existing 10-inch water line that currently crosses along the Fishing Creek Bridge (West KY Highway 80). The project will also include three new master meters located at KY Highway 80, Oak Hill Road, and the northern master meter located along north US 127. The project will also consist of a piping and meter replacement at the existing Lees Ford Pump Station.

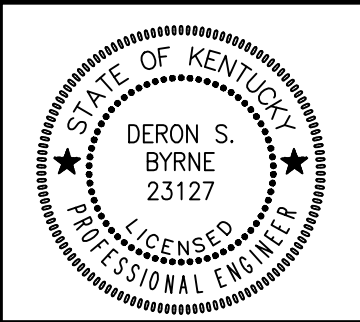
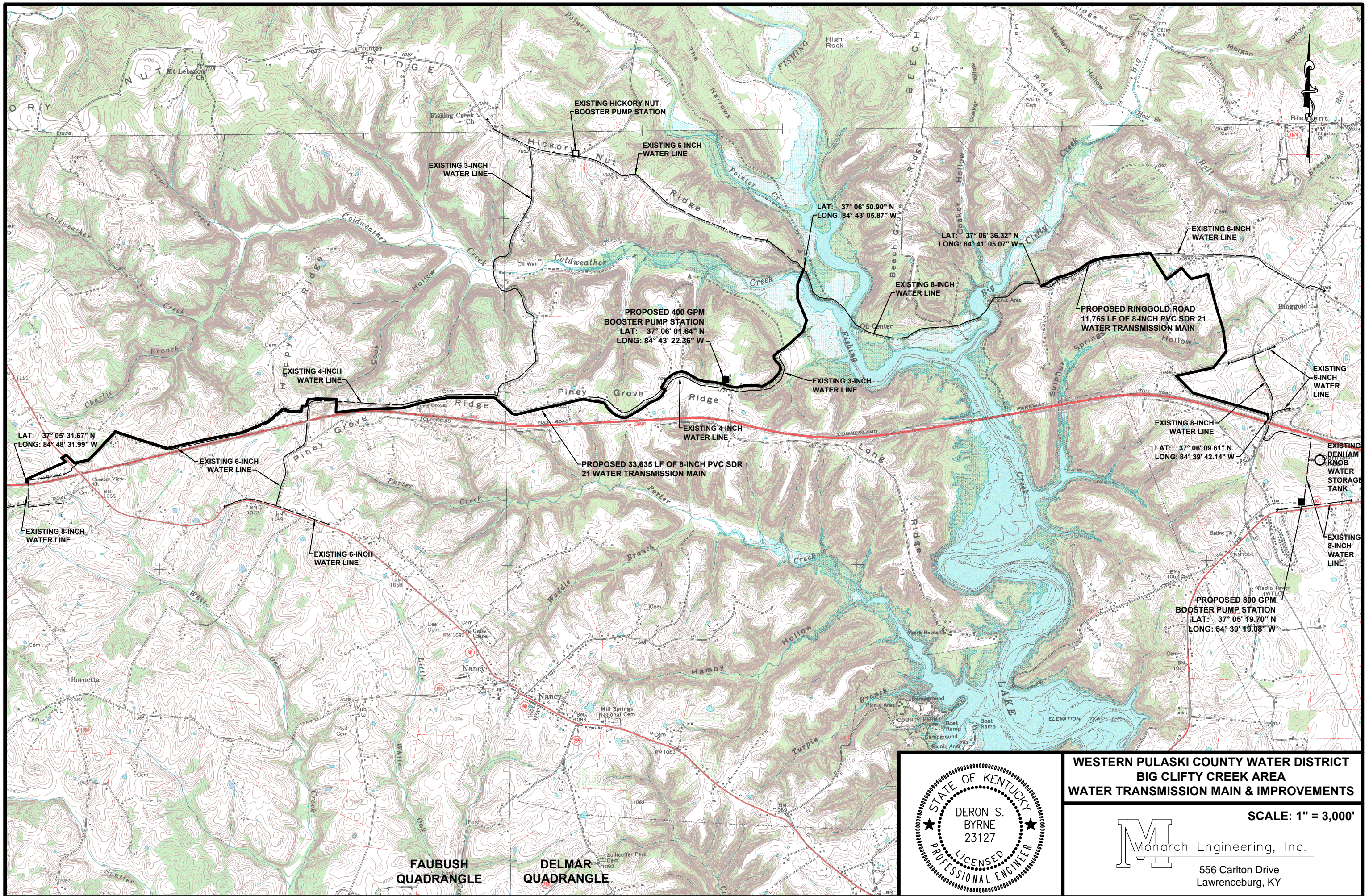
An itemized cost estimate is included in this report and it outlines all of the individual construction items along with their associated unit costs. A summary cost estimate summarizes all of the project costs and outlines the funding scheme for the project which is also included in this report.

The project cost has been estimated to be \$3,079,000 and it is to be financed by a grant from USDA Rural Development for \$854,000 and a loan from USDA Rural Development for \$2,225,000.

## VII. CONCLUSIONS AND RECOMMENDATIONS

Based on the need for the Water District to maintain the required level of service in providing a potable water supply combined with the responsibility to transport water throughout the Western Pulaski County Water District, it is recommended that the Western Pulaski County Water District pursue the financial assistance as outlined above in order that this extension and improvement can be implemented. The Water District is the only major supplier of potable water within the rural areas of South Central, South Western, and Western portions of Pulaski County and their system is situated such that this extension and improvement could be made without adversely affecting service to their other customers.





**WESTERN PULASKI COUNTY WATER DISTRICT  
BIG CLIFTY CREEK AREA  
WATER TRANSMISSION MAIN & IMPROVEMENTS**

SCALE: 1" = 3,000'

**M** Monarch Engineering, Inc.

556 Carlton Drive  
Lawrenceburg, KY

**DELMAR  
QUADRANGLE**

SCALE: 1" = 2,000'

**LEE'S FORD PUMP STATION**  
LAT: 37° 02' 56.11" N  
LONG: 84° 40' 53.17" W

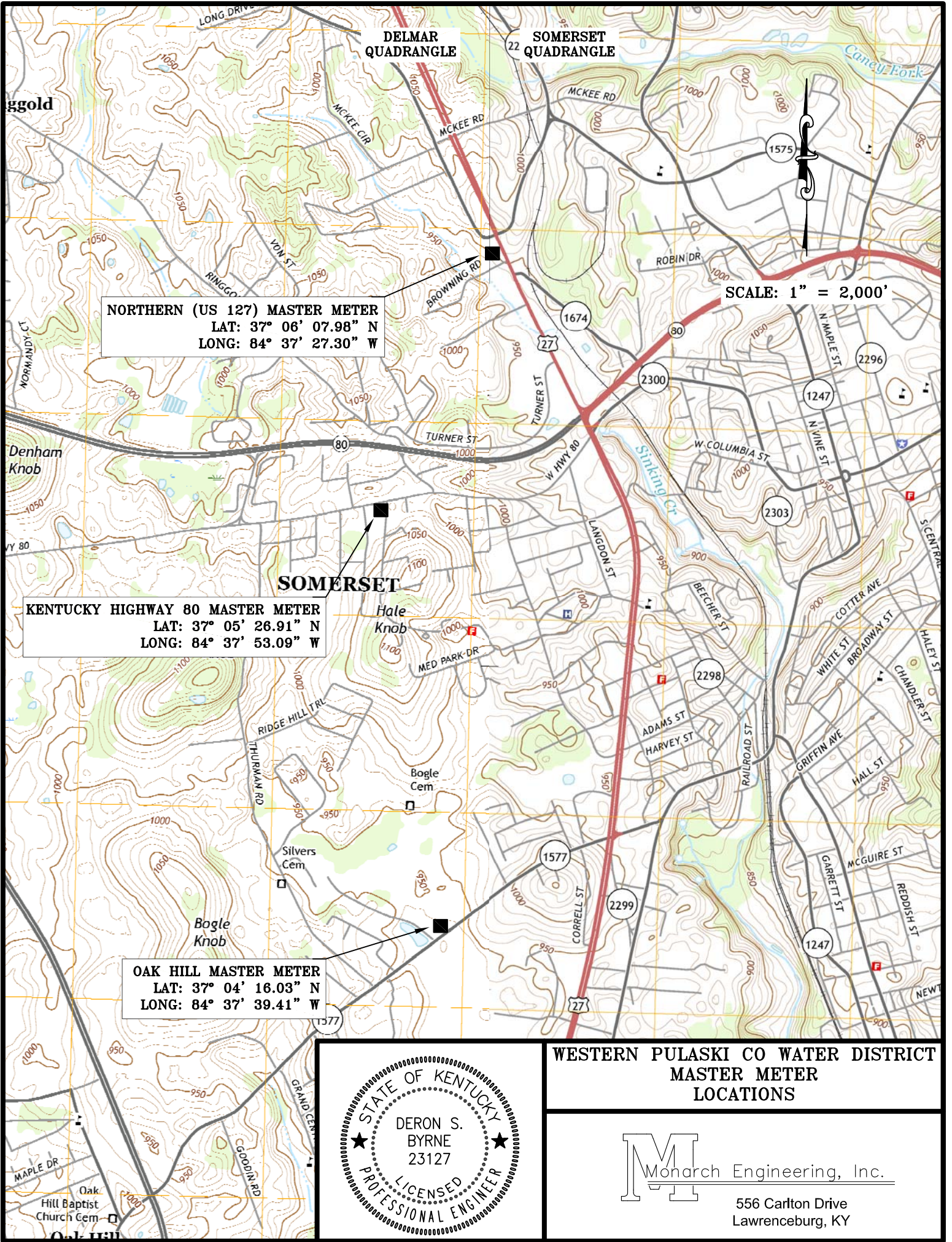
**REPLACE APPROXIMATELY 1,200 LF OF  
EXISTING 10-INCH AND 6-INCH WATER  
LINE WITH 12-INCH DUCTILE IRON  
BALL AND SOCKET JOINT WATER LINE  
ACROSS THE FISHING CREEK BRIDGE.**  
LAT: 37° 03' 06.41" N  
LONG: 84° 40' 43.56" W



**WESTERN PULASKI CO WATER DISTRICT  
KY 80/FISHING CREEK  
BRIDGE WATER LINE CROSSING**

**M** Monarch Engineering, Inc.  
556 Carlton Drive  
Lawrenceburg, KY





**NORTHERN (US 127) MASTER METER**  
 LAT: 37° 06' 07.98" N  
 LONG: 84° 37' 27.30" W

SCALE: 1" = 2,000'

**KENTUCKY HIGHWAY 80 MASTER METER**  
 LAT: 37° 05' 26.91" N  
 LONG: 84° 37' 53.09" W

**OAK HILL MASTER METER**  
 LAT: 37° 04' 16.03" N  
 LONG: 84° 37' 39.41" W



**WESTERN PULASKI CO WATER DISTRICT  
 MASTER METER  
 LOCATIONS**

**M** Monarch Engineering, Inc.  
 556 Carlton Drive  
 Lawrenceburg, KY