

**PRELIMINARY ENGINEERING REPORT  
FOR THE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS**

**JUNE 2020**

# **PRELIMINARY ENGINEERING REPORT**

## **FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS**

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

#### **I. GENERAL**

This Preliminary Engineering Report is intended to analyze the proposed water system improvements 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 north, northwest, and southwest pressure zones of the service area known as the Fishing Creek Area. The proposed project consists of approximately 2,000 LF of 18-inch water transmission main replacement via directional bore, the installation of approximately 33,400 LF of 12-inch water transmission main, the installation of approximately 4,000 LF of 4-inch water line replacement along Lanetown Road, 270 LF of 3-inch water line extension along Clifty Road/Bethlehem Road, 1,200 LF of 3-inch water line replacement along Todd Road, and 900 LF of 3-inch water line replacement along Shepola Road. In addition, the project includes the relocation of the existing Hickory Nut No. 2 Pump Station and the upgrade of the existing Lees Ford Pump Station to 1200 GPM.

The water transmission main will serve to transport water from the southern portion of the system around the newly Kentucky 914 Bypass to the north and northwest portion of the water distribution system. In addition, the new 12-inch transmission main will serve to meet the demand in the west and southwestern portions of the distribution system and to eliminate undersized water lines along WTLO Road and Kentucky Highway 80 prior to the Fishing Creek Bridge, and to meet the demands of the upgraded 1200 GPM Lees Ford Pump Station.

#### **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 and west of Somerset, Kentucky. This project area begins at the intersection of Kentucky Highway 914 Bypass and WTLO Road, then following along Kentucky Highway 914 Bypass to Hacker Road, then along a portion of Ringgold Road to Hickory Nut Road crossing Coldweather Creek. In addition, the transmission main replacement begins on WTLO Road and cuts across to Kentucky Highway 80 to the east side of Fishing Creek Bridge. Lastly, the project covers four roads, Clifty Road/Bethlehem Road, Todd Road, Shepola Road, and Lanetown Road. 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 seven 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 improve the capacity of flow from Kentucky 914 Bypass transmission main to the Somerset side of and across the Fishing Creek Bridge to the upgraded Lees Ford Pump Station. The new 12-inch water line replacement across the Coldweather Creek portion of the project will improve the quantity of flow from the Somerset side of Coldweather Creek to the Hickory Nut area (northwest) by eliminating a bottleneck created by two creek crossings that are undersized to carry the demand. The new transmission main consists of approximately 2,000 LF of 18-inch water transmission main replacement via directional bore, the installation of approximately 33,400 LF of 12-inch water transmission main 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 transmission mains, water pump station relocation, and water pump station upgrade are shown on the attached system maps.

The replacement portion of the existing water lines that are deteriorating and/or undersized with new upgraded water lines will help distribute ample water to the areas which currently are experiencing continuous water leaks. These leaks are difficult to find at times which requires a number of days to find leading to low water pressure, storage tanks draining, and taste problems. The location of the new water line replacements are shown on the attached system maps.

## V. ALTERNATIVES CONSIDERED

Alternate No. 1: Install new 12-inch water transmission at proposed alternate route and install a new 1200 GPM water booster pump station at Fishing Creek Bridge.

Alternate No. 2: 1: Install new 12-inch water transmission at a alternate route and relocate existing Lees Ford Pump Station.

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

The proposed project consists of approximately 2,000 LF of 18-inch water transmission main replacement via directional bore, the installation of approximately 33,400 LF of 12-inch water transmission main, the installation of approximately 4,000 LF of 4-inch water line replacement along Lanetown Road, 270 LF of 3-inch water line extension along Clifty Road/Bethlehem Road, 1,200 LF of 3-inch water line replacement along Todd Road, and 900 LF of 3-inch water line replacement along Shepola Road. In addition, the project includes the relocation of the existing Hickory Nut No. 2 Pump Station and the upgrade of the existing Lees Ford Pump Station to 1200 GPM.

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 \$5,197,000.00 and it is to be financed by a grant from USDA Rural Development for \$1,559,000 and a loan from USDA Rural Development for \$3,638,000.

## 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.

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
JUNE 2020**

**PROJECT COSTS**

|                                |                       |
|--------------------------------|-----------------------|
| DEVELOPMENT                    | \$4,194,900.00        |
| CONTINGENCY                    | 420,100.00            |
| ENGINEERING DESIGN             | 288,000.00            |
| CONSTRUCTION INSPECTION        | 154,000.00            |
| LEGAL & ADMINISTRATION         | 15,000.00             |
| LAND ACQUISITION               | 50,000.00             |
| PRELIMINARY ENGINEERING REPORT | 10,000.00             |
| INTEREST                       | 50,000.00             |
| ENVIRONMENTAL ASSESSMENT       | <u>15,000.00</u>      |
| <b>TOTAL PROJECT COSTS</b>     | <b>\$5,197,000.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
KY HIGHWAY 914 BYPASS 12-INCH WATER TRANSMISSION MAIN  
JUNE 2020**

| ITEM |                                    |           | UNIT     | TOTAL               |
|------|------------------------------------|-----------|----------|---------------------|
| NO.  | DESCRIPTION                        | QUANTITY  | COST     | COST                |
| 1    | 12-Inch PVC SDR 21 Water Line      | 14,000 LF | \$50.00  | \$700,000.00        |
| 2    | Bore & Case for 12-Inch Water Line | 300 LF    | 195.00   | 58,500.00           |
| 3    | Free Bore for 12-Inch Water Line   | 200 LF    | 75.00    | 15,000.00           |
| 4    | 12-Inch Gate Valve                 | 5 EA      | 3,700.00 | 18,500.00           |
| 5    | 10-Inch Gate Valve                 | 1 EA      | 2,700.00 | 2,700.00            |
| 6    | 8-Inch Gate Valve                  | 1 EA      | 2,200.00 | 2,200.00            |
| 7    | 6-Inch Gate Valve                  | 1 EA      | 1,500.00 | 1,500.00            |
| 8    | Connection                         | 4 EA      | 2,500.00 | 10,000.00           |
| 9    | Air Release Valve                  | 2 EA      | 3,500.00 | 7,000.00            |
| 10   | 3-Way Flush Hydrant                | 4 EA      | 3,500.00 | 14,000.00           |
| 11   | Exploration                        | 40 HR     | 200.00   | 8,000.00            |
|      | <b>TOTAL</b>                       |           |          | <b>\$837,400.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
FISHING CREEK WATER LINE REPLACEMENT  
JUNE 2020**

| ITEM |                                           |          | UNIT       | TOTAL                 |
|------|-------------------------------------------|----------|------------|-----------------------|
| NO.  | DESCRIPTION                               | QUANTITY | COST       | COST                  |
| 1    | 18-Inch HDPE DR 7 WL via Directional Bore | 2,000 LF | \$350.00   | \$700,000.00          |
| 2    | 12-Inch Ductile Iron Water Line           | 8,200 LF | 75.00      | 615,000.00            |
| 3    | Bore & Case for 12-Inch Water Line        | 100 LF   | 195.00     | 19,500.00             |
| 4    | 12-Inch Gate Valve                        | 4 EA     | 3,700.00   | 14,800.00             |
| 5    | 8-Inch Gate Valve                         | 3 EA     | 2,200.00   | 6,600.00              |
| 6    | Connection                                | 3 EA     | 2,500.00   | 7,500.00              |
| 7    | 3-Way Flush Hydrant                       | 2 EA     | 3,500.00   | 7,000.00              |
| 8    | Test Meter                                | 4 EA     | 750.00     | 3,000.00              |
| 9    | Hickory Nut Pump Station #2 Relocation    | 1 LS     | 355,000.00 | 355,000.00            |
| 10   | Exploration                               | 40 HR    | 200.00     | 8,000.00              |
|      | <b>TOTAL</b>                              |          |            | <b>\$1,736,400.00</b> |



**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
WTLO ROAD/KY HIGHWAY 3261 TO FISHING CREEK BRIDGE  
12-INCH TRANSMISSION MAIN & LEES FORD PUMP STATION UPGRADE  
JUNE 2020**

| ITEM |                                    |           | UNIT       | TOTAL                 |
|------|------------------------------------|-----------|------------|-----------------------|
| NO.  | DESCRIPTION                        | QUANTITY  | COST       | COST                  |
| 1    | 12-Inch PVC SDR 21 Water Line      | 11,200 LF | \$50.00    | \$560,000.00          |
| 2    | Bore & Case for 12-Inch Water Line | 400 LF    | 195.00     | 78,000.00             |
| 3    | Free Bore for 12-Inch Water Line   | 200 LF    | 75.00      | 15,000.00             |
| 4    | 12-Inch Gate Valve                 | 4 EA      | 3,700.00   | 14,800.00             |
| 5    | 8-Inch Gate Valve                  | 2 EA      | 2,200.00   | 4,400.00              |
| 6    | 6-Inch Gate Valve                  | 2 EA      | 1,500.00   | 3,000.00              |
| 7    | Connection                         | 4 EA      | 2,500.00   | 10,000.00             |
| 8    | 3-Way Flush Hydrant                | 2 EA      | 3,500.00   | 7,000.00              |
| 9    | Lees Ford Pump Station Upgrade     | 1 LS      | 500,000.00 | 500,000.00            |
| 10   | Exploration                        | 40 HR     | 200.00     | 8,000.00              |
|      | <b>TOTAL</b>                       |           |            | <b>\$1,200,200.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
CLIFTY ROAD/BETHLEHEM ROAD WATER LINE EXTENSION  
JUNE 2020**

| ITEM NO. | DESCRIPTION                          | QUANTITY     | UNIT COST | TOTAL COST         |
|----------|--------------------------------------|--------------|-----------|--------------------|
| 1        | 3-Inch Water Line                    | 270 LF       | \$30.00   | \$8,100.00         |
| 2        | Creek Crossing for 3-Inch Water Line | 200 LF       | 350.00    | 70,000.00          |
| 3        | 3-Inch x 3-Inch Connection           | 2 EA         | 2,500.00  | 5,000.00           |
| 4        | Cut & Cap Exsting 3-Inch Water Line  | 1 EA         | 1,100.00  | 1,100.00           |
| 5        | 3-Inch Blowoff Assembly              | 1 EA         | 1,500.00  | 1,500.00           |
|          |                                      | <b>TOTAL</b> |           | <b>\$85,700.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
TODD ROAD WATER LINE REPLACEMENT  
JUNE 2020**

| ITEM NO. | DESCRIPTION                       | QUANTITY     | UNIT COST | TOTAL COST         |
|----------|-----------------------------------|--------------|-----------|--------------------|
| 1        | 3-Inch Water Line                 | 1,200 LF     | \$30.00   | \$36,000.00        |
| 2        | Bore & Case for 3-Inch Water Line | 100 LF       | 100.00    | 10,000.00          |
| 3        | 3-Inch Gate Valve                 | 3 EA         | 600.00    | 1,800.00           |
| 4        | 8-Inch x 3-Inch Connection        | 1 EA         | 3,000.00  | 3,000.00           |
| 5        | 3-Inch x 3-Inch Connection        | 2 EA         | 2,000.00  | 4,000.00           |
| 6        | 3-Inch Blowoff Assembly           | 1 EA         | 1,500.00  | 1,500.00           |
| 7        | Meter Reconnection                | 3 EA         | 500.00    | 1,500.00           |
| 8        | 3/4-Inch Service Tubing           | 120 LF       | 15.00     | 1,800.00           |
|          |                                   | <b>TOTAL</b> |           | <b>\$59,600.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
SHEPOLA ROAD WATER LINE REPLACEMENT  
JUNE 2020**

| ITEM NO. | DESCRIPTION                       | QUANTITY     | UNIT COST | TOTAL COST         |
|----------|-----------------------------------|--------------|-----------|--------------------|
| 1        | 3-Inch Water Line                 | 900 LF       | \$30.00   | \$27,000.00        |
| 2        | Bore & Case for 3-Inch Water Line | 40 LF        | 100.00    | 4,000.00           |
| 3        | 3-Inch Gate Valve                 | 1 EA         | 600.00    | 600.00             |
| 4        | 3-Inch x 3-Inch Connection        | 1 EA         | 2,000.00  | 2,000.00           |
| 5        | 3-Inch Blowoff Assembly           | 1 EA         | 1,500.00  | 1,500.00           |
| 6        | Meter Reconnection                | 2 EA         | 500.00    | 1,000.00           |
| 7        | 3/4-Inch Service Tubing           | 80 LF        | 15.00     | 1,200.00           |
|          |                                   | <b>TOTAL</b> |           | <b>\$37,300.00</b> |

**PRELIMINARY COST ESTIMATE  
WESTERN PULASKI COUNTY WATER DISTRICT  
FISHING CREEK AREA WATER SYSTEM IMPROVEMENTS  
LANETOWN ROAD WATER LINE REPLACEMENT  
JUNE 2020**

| ITEM NO. | DESCRIPTION                | QUANTITY     | UNIT COST | TOTAL COST          |
|----------|----------------------------|--------------|-----------|---------------------|
| 1        | 4-Inch Water Line          | 3,000 LF     | \$35.00   | \$105,000.00        |
| 2        | 4-Inch Gate Valve          | 1 EA         | 800.00    | 800.00              |
| 3        | 4-Inch x 3-Inch Connection | 3 EA         | 2,500.00  | 7,500.00            |
| 4        | 4-Inch Flush Hydrant       | 3 EA         | 3,000.00  | 9,000.00            |
| 5        | Meter Reconnection         | 30 EA        | 500.00    | 15,000.00           |
| 6        | 3/4-Inch Service Tubing    | 900 LF       | 15.00     | 13,500.00           |
| 7        | Pavement Replacement       | 3,500 LF     | 25.00     | 87,500.00           |
|          |                            | <b>TOTAL</b> |           | <b>\$238,300.00</b> |