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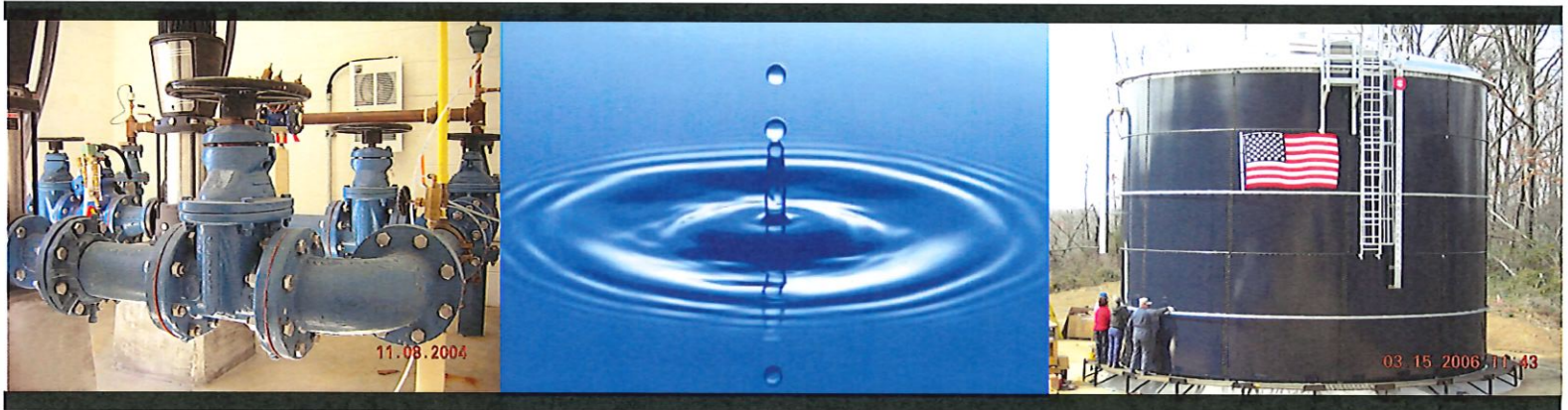
227 North Upper Street  
Lexington, KY 40507-1016



**April 2020**

# **Breathitt County Water District Waterline Extensions Project Phase 2**

## **Preliminary Engineering Report**



**SUBMITTED TO:**  
Breathitt County Water District

**PREPARED BY:**  
Nesbitt Engineering, Inc.  
Lexington, KY

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## **Chapter 1 – General Introduction**

Breathitt County, which encompasses the City of Jackson, is located in the eastern coalfields of Kentucky, approximately 85 miles south and east of Lexington on KY 15, and approximately 34 miles north of Hazard. Jackson, the county seat, is a fourth-class city located near the center of Breathitt County. The County borders Wolfe, Lee, Owsley, Perry, Knott, and Magoffin Counties. (See Figure 1)

The 2010 US Census population figure for Breathitt County is 13,878. There are 5,494 households in Breathitt County and therefore 2.53 persons per household.

Major highways passing through Jackson and/or Breathitt County are KY 15, KY 30, KY 52, KY 315, KY 1110, KY 476 and KY 205. Some of these listed areas are already provided potable water service by Breathitt County Water District (BCWD). The proposed project will extend potable water to various unserved areas in the county.

Necessary easements and property for installation of the utilities and ancillary facilities will be secured for the project as soon as funding is committed.

The Opinion of Estimated Construction Costs for this project is given in **Appendix “A”**.

Funding for the Project is estimated to come from an **ARC** (grant). Therefore, there will be no debt service required for this project.

## **Chapter 2 – Project Planning Area**

### Project Location

The project planning area is currently unserved with treated potable water. Existing water service in this area is supplied by wells or cisterns. The project will extend water to 28 households on Creekside Road, War Creek Road, Joe Ward Fork and Mann Road. The project planning area is depicted on the topographic map (see Figure 2).

### Environmental Resources Present

For most projects in Eastern Kentucky elevation changes are obstacles to be overcome. This project is no different and will require devices in order to maintain the required system pressures. Any waters to be crossed will be local creeks. In addition, no site clearing is anticipated. This project will occur in right of way or easements.

### Population Trends

This project is located in Breathitt County, Kentucky. According to the 2010 US Census figures, Breathitt County has a population of 13,878 persons, which is down from the 2000 Census figure of 16,100. Census population estimates 13,484 people in 2015.

### **Chapter 3 – Existing Facilities / Need for Project**

#### History

The Breathitt County Water District serves 1871 customers with potable water and has a water storage tank located throughout this project area. The water district purchases potable water from the City of Jackson. The City of Jackson is expected to have more than adequate capacity to supply the needed potable water for this proposed project.

#### Existing Facilities

The Breathitt County Water District began in 2003. Existing facilities are in good condition but require routine maintenance and upgrades.

#### Financial Status

The Breathitt County Water District strives to operate all of its water infrastructure facilities in a financially solvent manner.

#### Need for Project

There is no potable water service available in the proposed project area. Well water in Breathitt County, is extremely hard and contains noticeable amounts of iron. Salty water may be found from 50 feet to several hundred feet below the level of the principal valley bottoms. Where springs supply water, the yield is rarely more than 5 GPM. A more reliable and healthier source for water is needed.

## **Chapter 4 – Alternatives Considered**

These areas are currently unserved. Alternatives are limited to: (1) Phase the project into smaller projects, (2) not serving the areas and continue hauling water, (3) drilling new wells or (4) serving it from the water district's system. Serving the proposed area from the water district's system is the only viable alternative to provide clean and dependable potable water. Hauling water can easily contaminate the supply. Wells are expensive to construct and operate.

## **Chapter 5 – Proposed Project / Project Cost / Financing**

### **Proposed Project**

This project will provide service to four areas in the county. Creekside RD will service 5 households with approximately 5,761 LF of 4" PVC. War Creek RD will provide service to 18 households with approximately 9,406 LF of 4" PVC. Joe Ward Fork will construct approximately 2,800 LF of 4" PVC and 250 LF of 2" PVC to service 2 households. Mann Road will construct approximately 680 LF of 2" PVC to service 3 households. This project also includes the purchase of equipment which will include a service truck, mini excavator and an excavator trailer. The project will also perform system rehab. The 30 West and 30 East pump stations will have the pumps rebuilt/replaced to increase performance, reduce operation and maintenance costs and to ensure that there are no service interruptions. The valves and piping will be replaced at the KY 541, River Caney and KY 28 Pressure Reducing Vaults.

### **Project Schedule**

Once funding is secured, environmental review and design can begin. For an ARC grant, it is anticipated that the advertisement for bids will occur approximately 3 months from funding commitment. Construction would start approximately 2 months after bidding. Project closeout would occur approximately 4 months from construction start.

### **Approvals and Permits**

These waterline extensions will require engineering permits from the Division of Water and possibly the Kentucky Transportation Cabinet.

### **Opinion of Probable Cost**

The **Waterline Extensions Project Phase 2** opinion of probable Project Cost is delineated in Appendix "B" and is **\$750,000**. Potential funding sources are shown in Appendix "B".

## **Chapter 6 – Conclusions & Recommendations**

The proposed project will provide potable water service to 28 houses. Access to a safe, public water supply will allow for a healthier quality of life for the residents in this area of Breathitt County. As an added benefit, the residents of this area will now be able to enjoy modern conveniences such as doing laundry at home and drinking water from the tap like their neighbors in surrounding counties.

This project will have a positive impact to the residents of Breathitt County. It is recommended that funding be approved for the benefit of these facilities and the citizens of Breathitt County.



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**COUNTY LOCATION MAP  
 BREATHITT COUNTY WATER DISTRICT  
 BREATHITT COUNTY, KY**

**FIGURE 1**

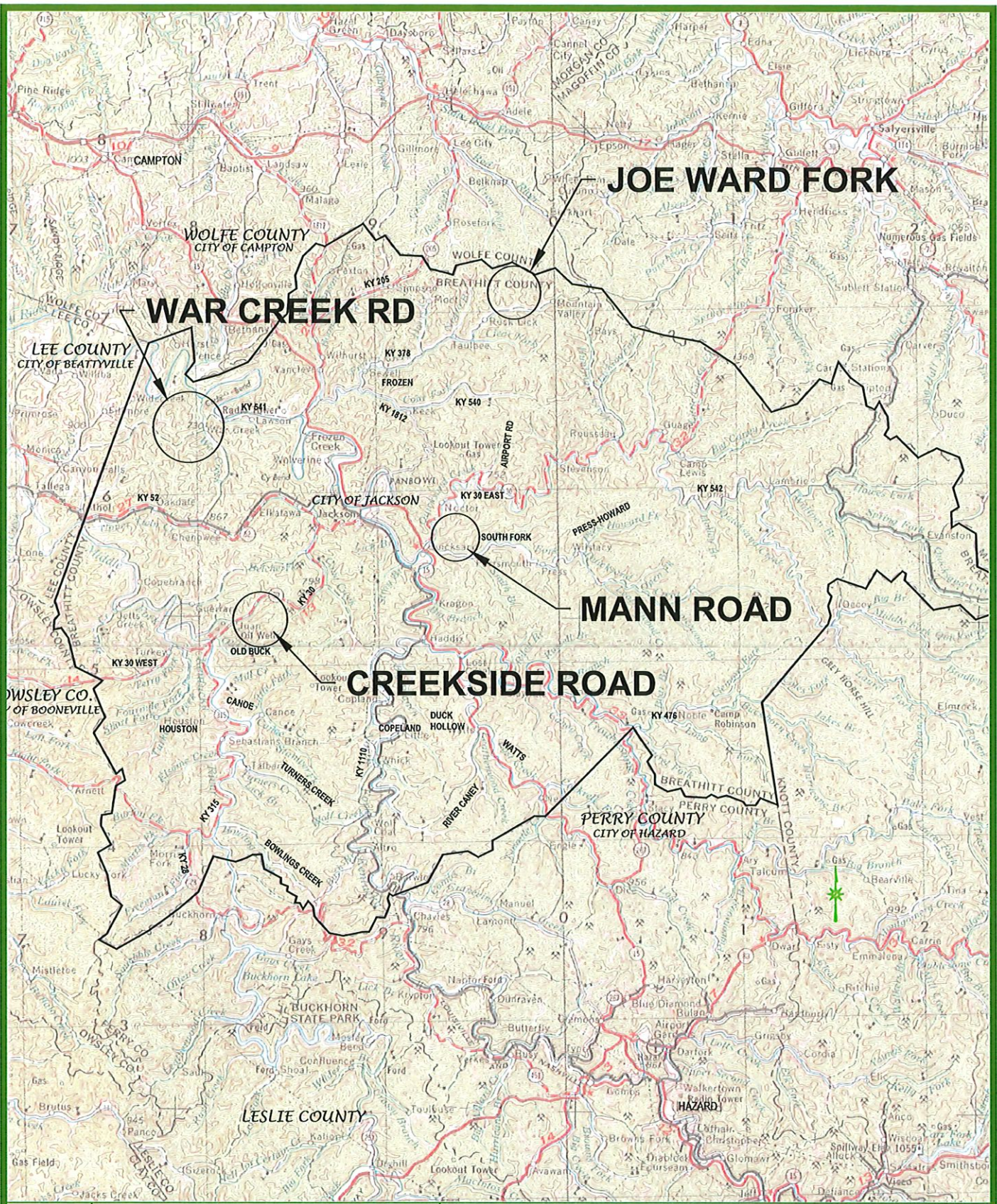
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# FIGURE 2

## LOCATION MAP BREATHITT COUNTY WATER DISTRICT BREATHITT COUNTY, KY

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date: 4/28/2020	scale: NTS

**Appendix "A" – Opinion of Probable Construction Cost**

**Waterline Extensions Project Phase 2**

Opinion of Probable Construction Cost

# Breathitt County Water District

## Opinion of Probable Construction Cost Waterline Extensions Project Phase 2

Item	Unit	Quantity	Unit Cost	Total Cost
4" PVC SDR 17 Pipe	LF	17900	\$ 11.50	\$ 205,850
2" PVC SDR 17 Pipe	LF	930	\$ 8.00	\$ 7,440
4" D.I.M.J. Gate Valve & Box	EA	7	\$ 700.00	\$ 4,900
Flush Hydrant Assembly type 1	EA	5	\$ 3,000.00	\$ 15,000
Flush Hydrant Assembly type 3	EA	4	\$ 1,600.00	\$ 6,400
5/8 x 3/4 Individ. Customer meters w/priv	EA	28	\$ 1,000.00	\$ 28,000
3/4" CI 200 service line	LF	1472	\$ 4.00	\$ 5,888
Hwy Xing, Bore & Jack w/ 10.75" steel casing	LF	30	\$ 110.00	\$ 3,300
Creek Crossing- Directional Drill	LF	1000	\$ 70.00	\$ 70,000
Combination Air Release Valve	EA	4	\$ 625.00	\$ 2,500
Waterline Marker	EA	13	\$ 55.50	\$ 722
Equipment	LS	1	\$ 110,000	\$ 110,000
System Rehab	LS	1	\$ 75,000	\$ 75,000
<b>Total - Opinion of Probable Construction Cost =</b>				<b>\$ 535,000</b>



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**Appendix "B" – Opinion of Probable Project Cost &  
Possible Funding Sources**

**Waterline Extensions Project Phase 2**

Opinion of Probable Project Cost & Possible Funding

# Breathitt County Water District

## Opinion of Probable Construction & Project Cost Waterline Extensions Project Phase 2

<b>Total - Opinion of Probable Construction Cost =</b>	<b>\$ 535,000</b>
<b>Other Project Related Costs</b>	
Administration	\$ 37,500
Legal	\$ 5,000
<b>Engineering</b>	
Design	\$ 47,000
Contract Admin.	\$ 11,000
Resident Observation	\$ 41,000
Funding Assistance	\$ 5,000
Permitting	\$ 5,000
Surveying, Easements, ROW (hourly)	\$ 5,000
Archeological, Environmental Study, etc.	\$ 5,000
Contingencies	\$ 53,500
<b>Total Opinion of Probable Project and Construction Costs =</b>	<b>\$ 750,000</b>

<b>Possible Funding Sources</b>	
Appalachian Regional Commission (Grant)	\$ 750,000
<b>Total Project Funds</b>	
	<b>\$ 750,000</b>



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**Appendix "C" – Project Area Map**

**Waterline Extensions Project Phase 2**

Project Area Map



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**WAR CREEK WATERLINE EXTENSION**  
**BREATHITT COUNTY WATER DISTRICT**  
**Breathitt County, Kentucky**

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 mms

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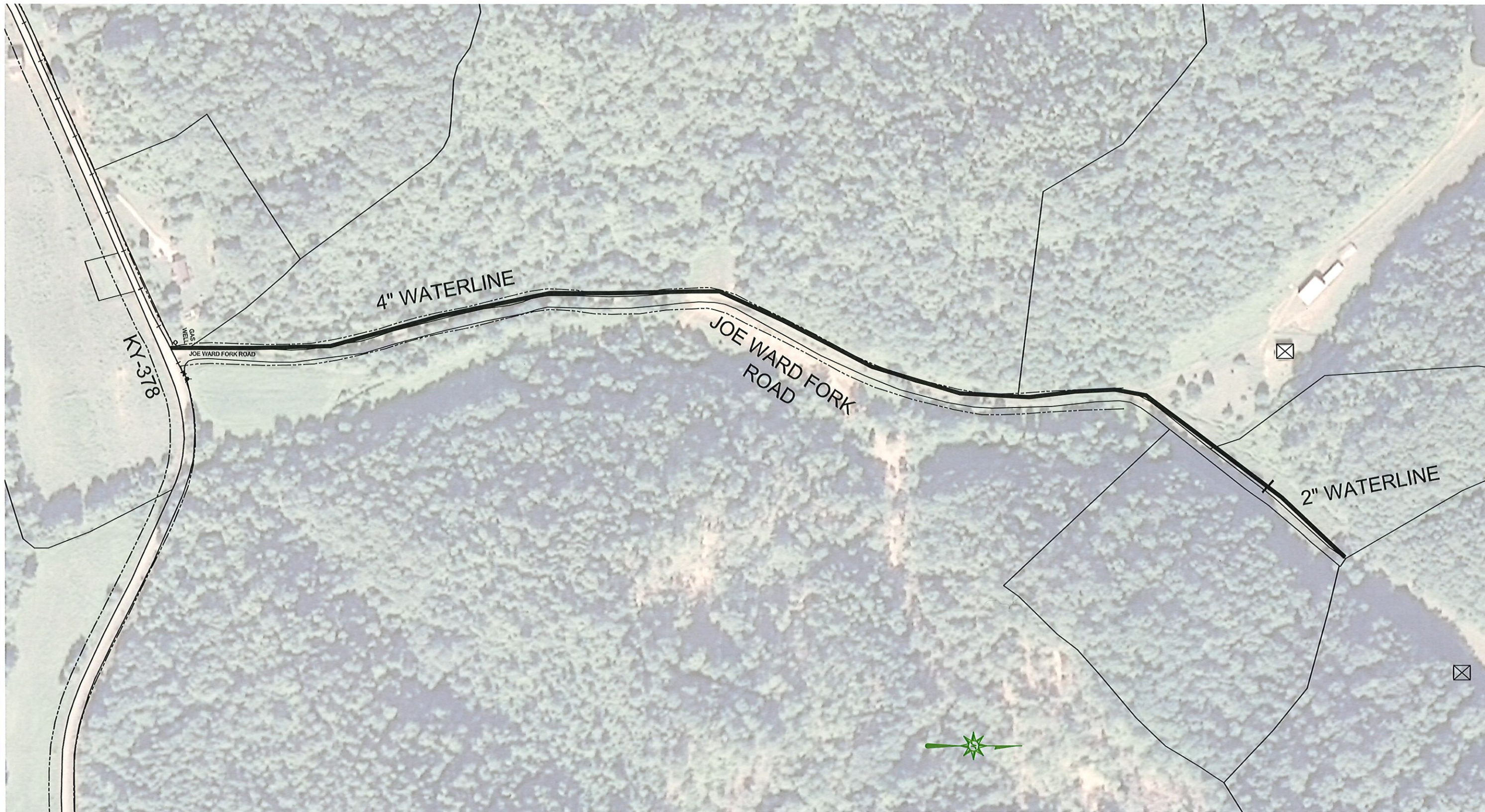


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**CREEKSIDE ROAD WATERLINE EXTENSION  
 BREATHITT COUNTY WATER DISTRICT  
 Breathitt County, Kentucky**

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JOE WARD FORK  
 BREATHITT COUNTY WATER DISTRICT

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MANN'S ROAD

BIG BRANCH ROAD



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**BIG BRANCH (MANN ROAD) WATERLINE  
 BREATHITT COUNTY WATER DISTRICT  
 BREATHITT COUNTY, KENTUCKY**

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