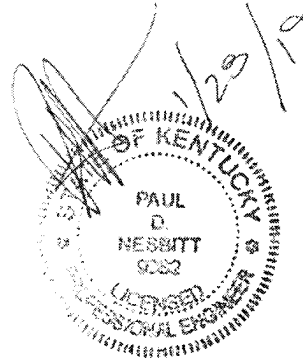




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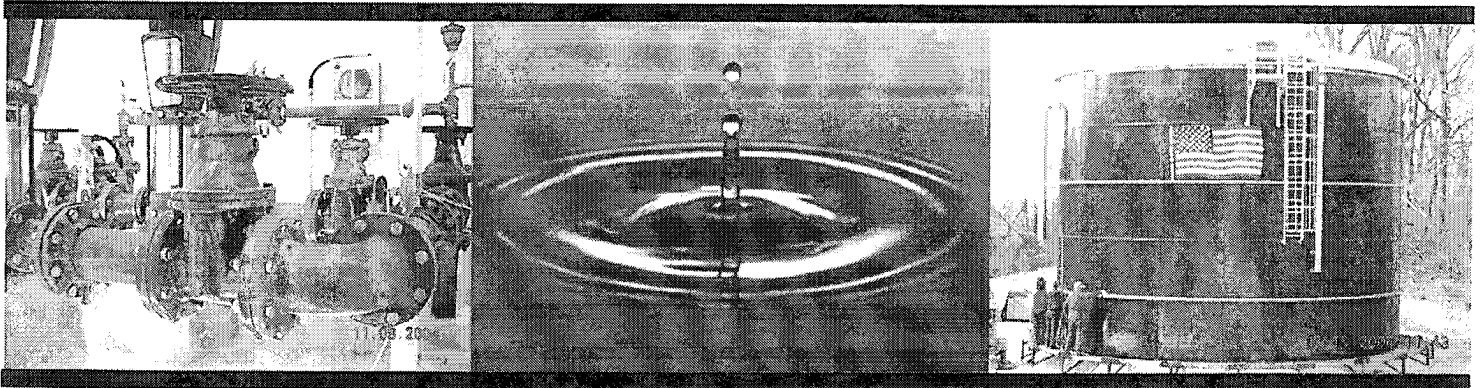
227 North Upper Street  
Lexington, KY 40507-1016



January 2019

# Breathitt County Water District Waterline Extensions Project

## 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 main and ancillary facilities will be secured for the project as soon as funding is solidified.

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 service along War Shoal Road, Old Bailey Hollow, Robinson Fork Road, and Rode Fork 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 pumping and pressure reducing valves in order to maintain the required system pressures. The only significant water way to be crossed is Cane Creek located in the Robinson Fork Area. In addition, no site clearing is anticipated. This project will occur in KYTC 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 1698 customers with potable water and has a water storage tank located at the beginning of this proposed project. 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 service four areas in the county providing potable water to 32 households and will also rehab several areas.

Area one will construct a water line to the War Shoal Road Area of Breathitt County. The project is expected to serve approximately nine customers. The project consists of approximately 2,000 LF of 6" PVC waterline, 1,013 LF of 4" PVC line and 500 LF of 2" PVC line.

Area two will extend water to Old Bailey Hollow located off Town Hill Road. The project will service 7 houses in the area. It will include a PRV and vault and one flush hydrant. The project includes approximately 1,550 LF of 4" PVC line.

Area three will service Robinson Fork Road located off of KY 30. Construction will consist of approximately 5,700 LF of 6" PVC line and 1,300 LF of 4" PVC. This project will service approximately 14 households.

Area four will service Rode Fork RD located off of KY 541. The project will consist of approximately 3,700 LF 4" PVC and 250 LF 2" PVC. The project will service two households.

The District has several components of its system that are in need of rehab and upgrade. This project will address those needs. The KY 541 water tank needs to be repainted. There are 10 sites that need to have their telemetry updated. The sites are as follows: KY 52 pump station, KY 52 water tank, KY 205 water tank, KY 15 Watts pump station, KY 15 Watts tank, KY 30 W pump station, KY 30 tank, KY 541 pump station, Town Hill tank and the Saturn Repeater which is located at Town Hill and is the main station for all telemetry in the system. The KY 15 pump station, KY 30 E pump station,

KY 476 pump station and the KY 541 pump station needs to have generator accessible hook-ups added to them for emergency situations. All 19 tanks in the system need to be inspected in this project.

#### 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

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

#### Opinion of Probable Cost

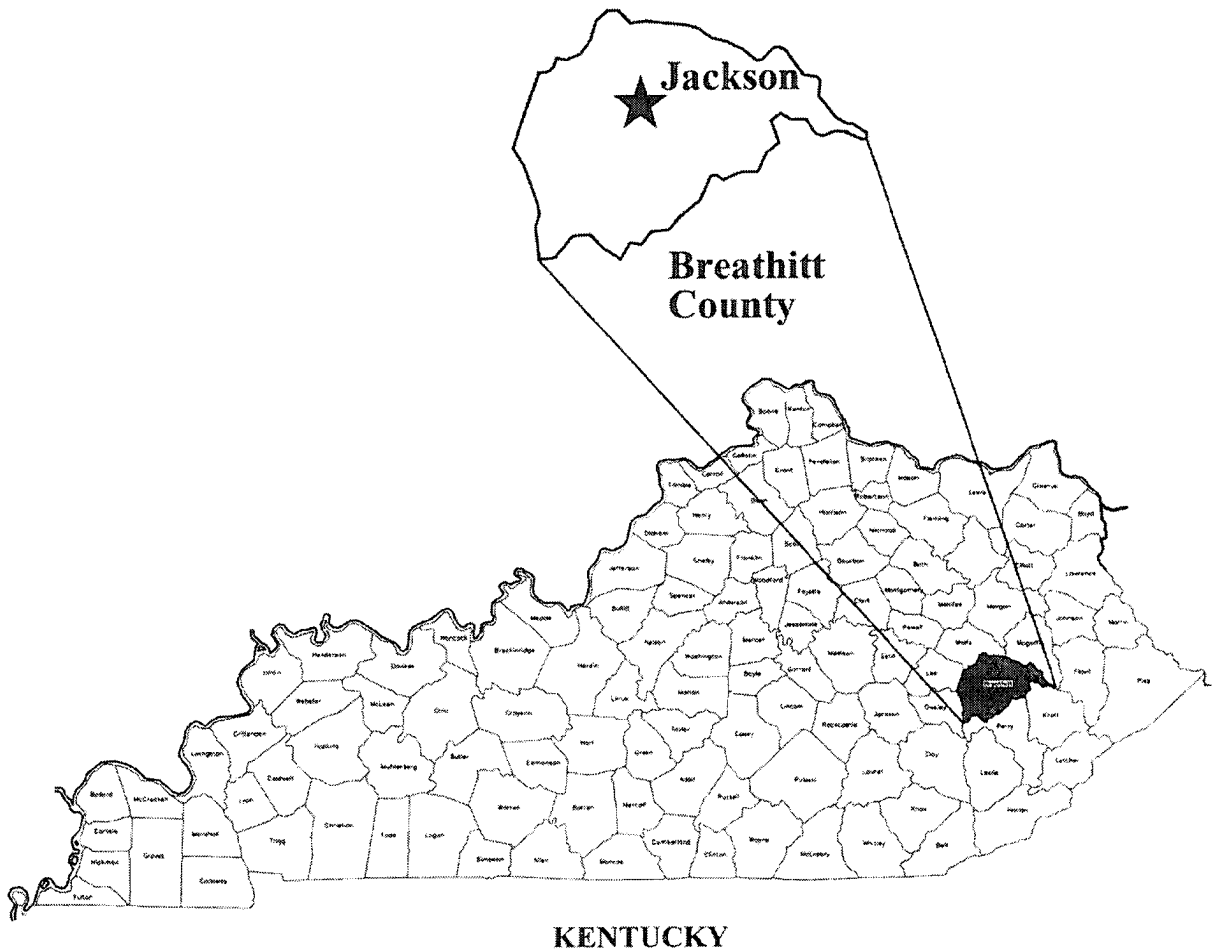
The **Waterline Extensions Project** opinion of probable Project Cost is delineated in Appendix "B" and is **\$750,000**. Potential funding sources are shown in Appendix "B".

**Chapter 6 – Conclusions & Recommendations**

The proposed project will provide potable water service to 32 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 potential job retention.



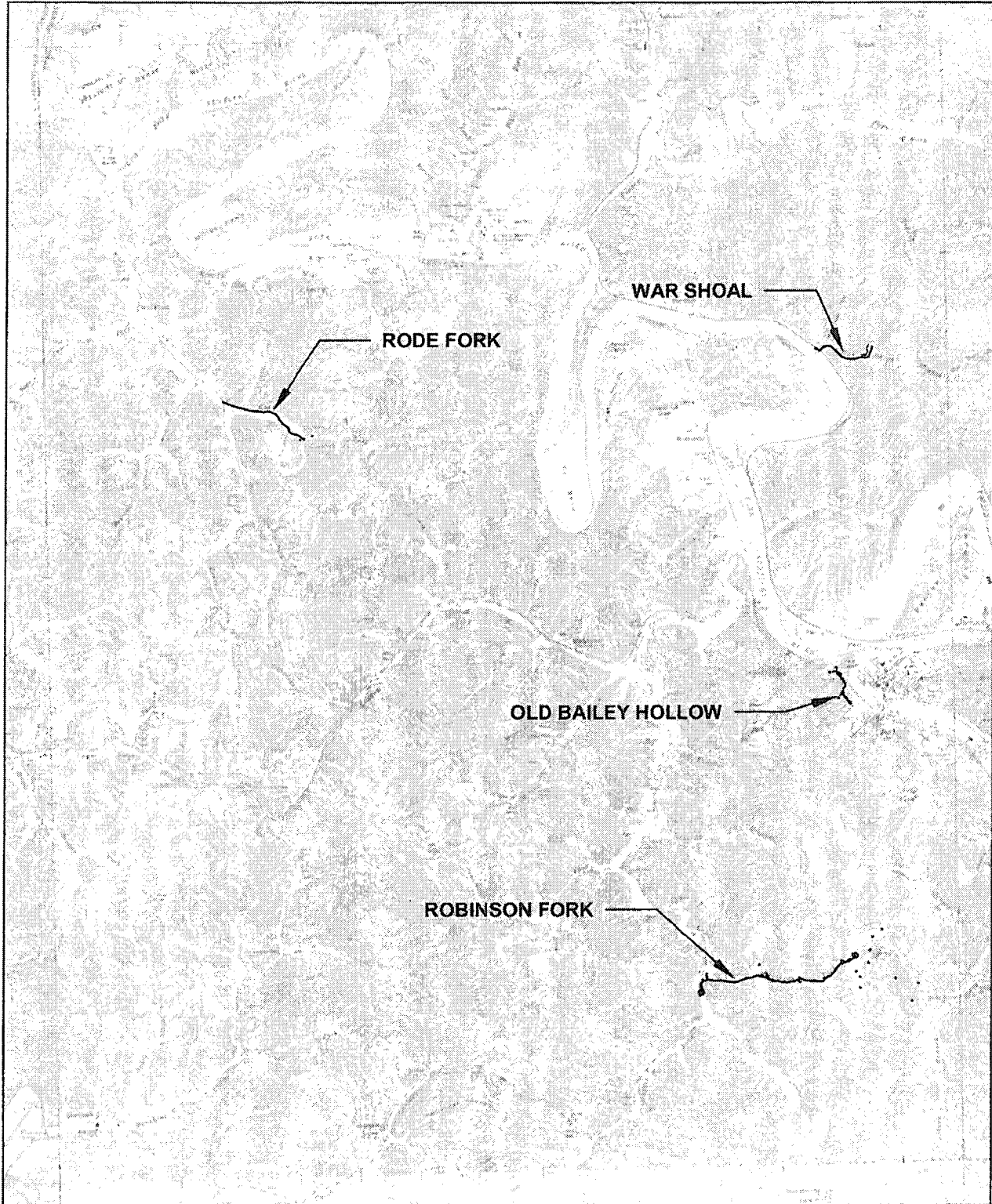


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LOCATION MAP  
BREATHITT COUNTY

FIGURE 1

DRAWN BY: MMS	DISK/FILE NAME:	JOB NO.: 998-45
DATE: 5/20/16	LAST PLOT DATE:	SCALE NOT TO SCALE



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**PLANNING AREAS  
 BREATHITT COUNTY WATER DISTRICT  
 BREATHITT COUNTY, KENTUCKY**

**FIGURE 2**

drawn by: <b>MMS</b>	job no.: <b>998-45</b>
date: <b>1/29/2019</b>	scale: <b>NTS</b>

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

**Waterline Extensions Project**

**Opinion of Probable Construction Cost**

# Breathitt County Water District

## Opinion of Probable Construction Cost Waterline Extensions Project (1/28/19)

Item	Unit	Quantity	Unit Cost	Total Cost
Combination Air Relief Valve	EA	3	\$ 600	\$ 1,800
6" PVC Pipe	LF	7700	\$ 16	\$ 123,200
4" PVC Pipe	LF	8550	\$ 13	\$ 111,150
2" PVC Pipe	LF	500	\$ 7	\$ 3,500
6" D.I.M.J. Gate Valve & Box	EA	4	\$ 800	\$ 3,200
4" D.I.M.J. Gate Valve & Box	EA	6	\$ 700	\$ 4,200
10.75" steel casing bore & jack	LF	180	\$ 175	\$ 31,500
Flush Hydrant Assembly, Type 1	EA	1	\$ 3,500	\$ 3,500
Flush Hydrant Assembly, Type 3	EA	5	\$ 2,500	\$ 12,500
5/8 x 3/4 Indiv. Customer meters w/priv	EA	32	\$ 1,200	\$ 38,400
3/4" CI 200 service line	LF	1560	\$ 6	\$ 9,360
Creek Crossing- Directionally Drilled	LF	600	\$ 100	\$ 60,000
Waterline Marker	EA	13	\$ 55	\$ 715
PRV and Vault	EA	1	\$ 15,000	\$ 15,000
Storage Tank Rehab (System Rehab)	EA	1	\$ 80,000	\$ 80,000
Scada Upgrades	LS	1	\$ 47,975	\$ 47,975
<b>Total - Opinion of Probable Construction Cost =</b>				<b>\$ 546,000</b>



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

**Waterline Extensions Project**

Opinion of Probable Project Cost & Possible Funding

**Breathitt County Water District**  
**Opinion of Probable Construction & Project Cost**  
**Waterline Extensions Project (1/28/19)**

<b>Total - Opinion of Probable Construction Cost =</b>	<b>\$ 546,000</b>
<b>Other Project Related Costs</b>	
Administration	\$ 27,300
Legal	\$ 5,000
<b>Engineering</b>	
Preliminary Engineering	\$ 5,000
Design and Contract Admin.	\$ 58,500
Resident Observation	\$ 41,000
Permitting	\$ 5,000
Surveying, Easements, ROW (hourly)	\$ 5,000
Archeological, Environmental Study, etc.	\$ 5,000
Contingencies	\$ 52,200
<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>



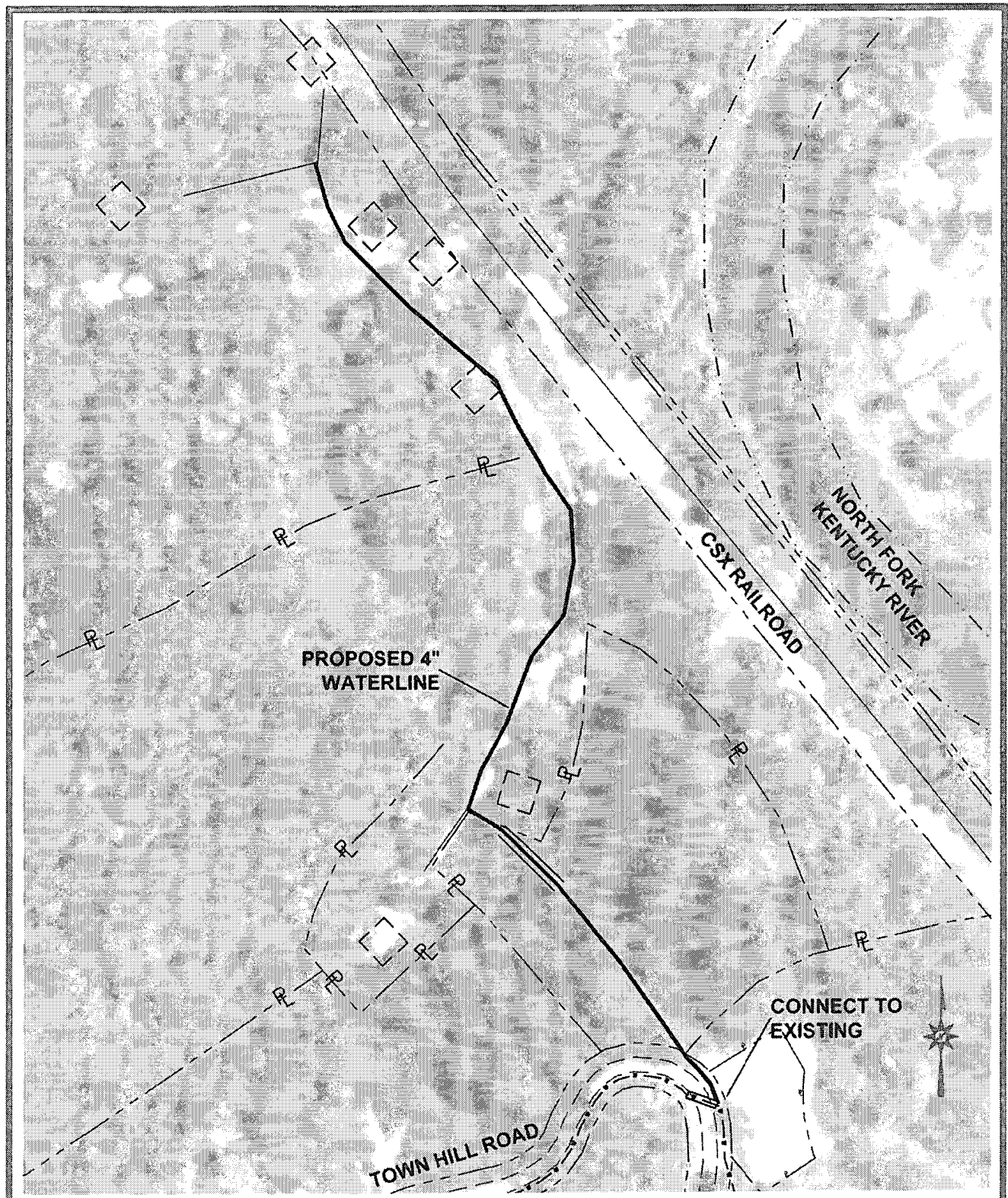
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**Appendix "C" – Project Area Map**

**Waterline Extensions Project**

Project Area Map



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**OLD BAILEY HOLLOW  
 BREATHITT COUNTY WATER DISTRICT  
 BREATHITT COUNTY, KENTUCKY**

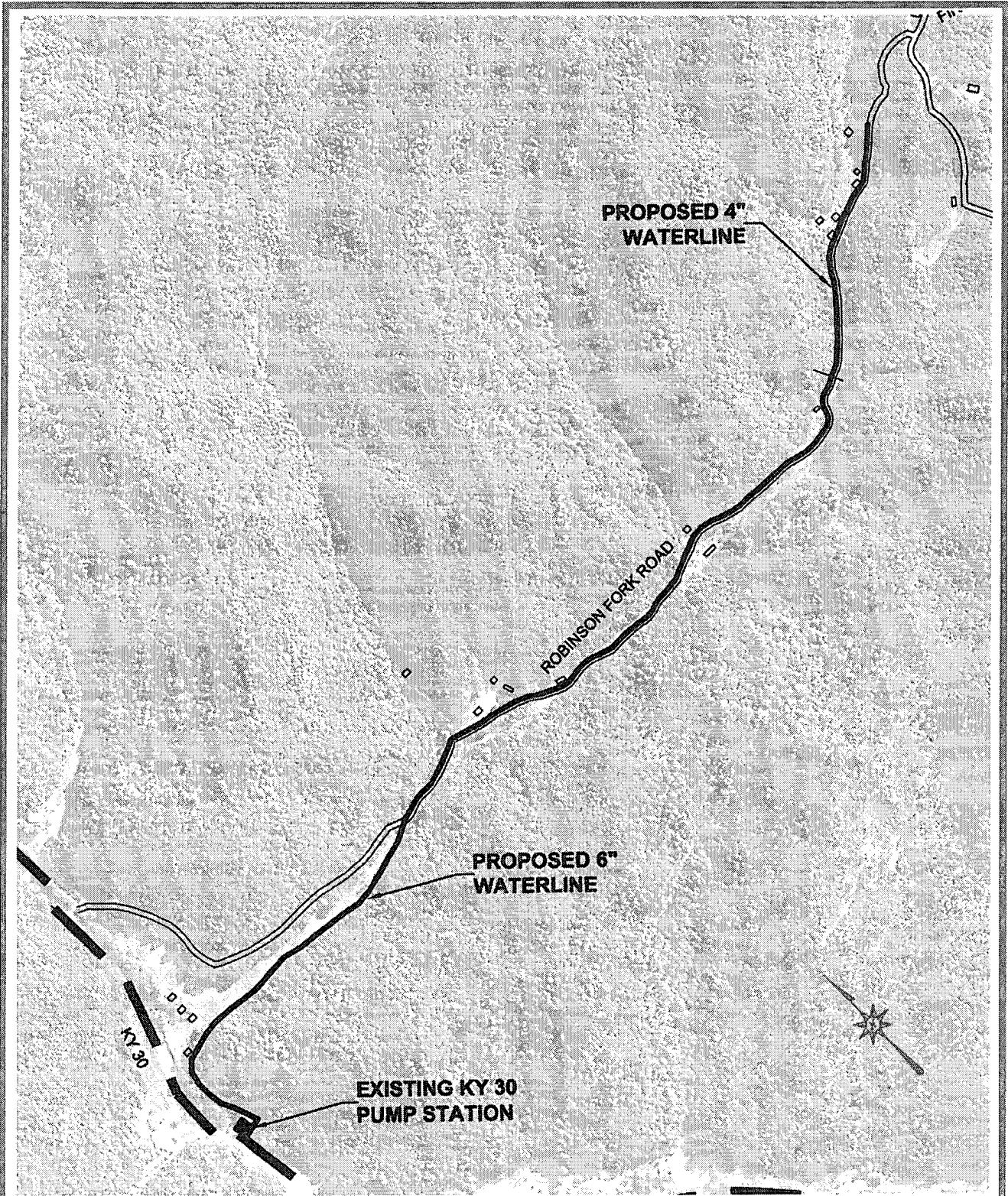
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 MMS

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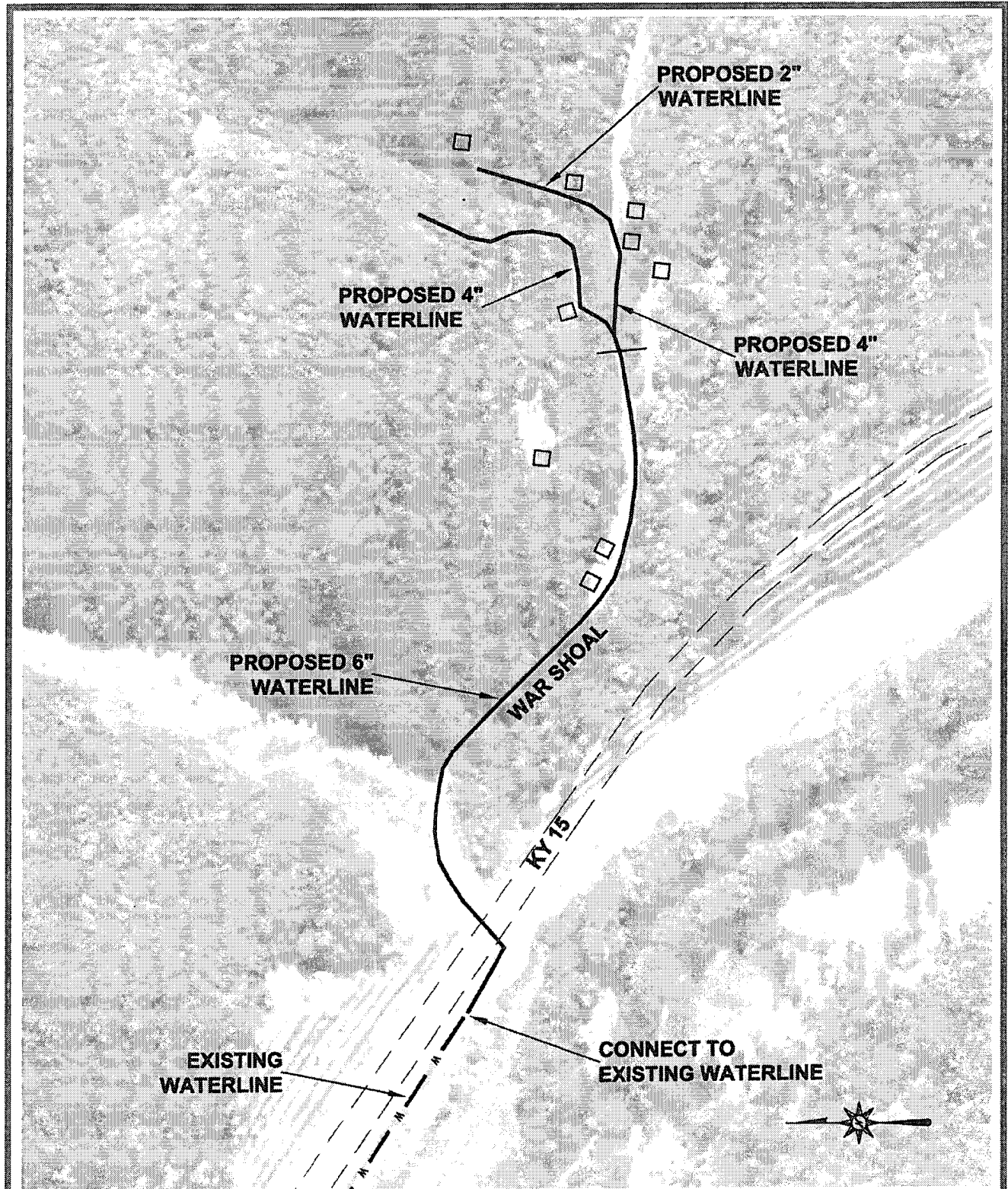
**ROBINSON FORK  
 BREATHITT COUNTY WATER DISTRICT  
 BREATHITT COUNTY, KENTUCKY**


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 MMS

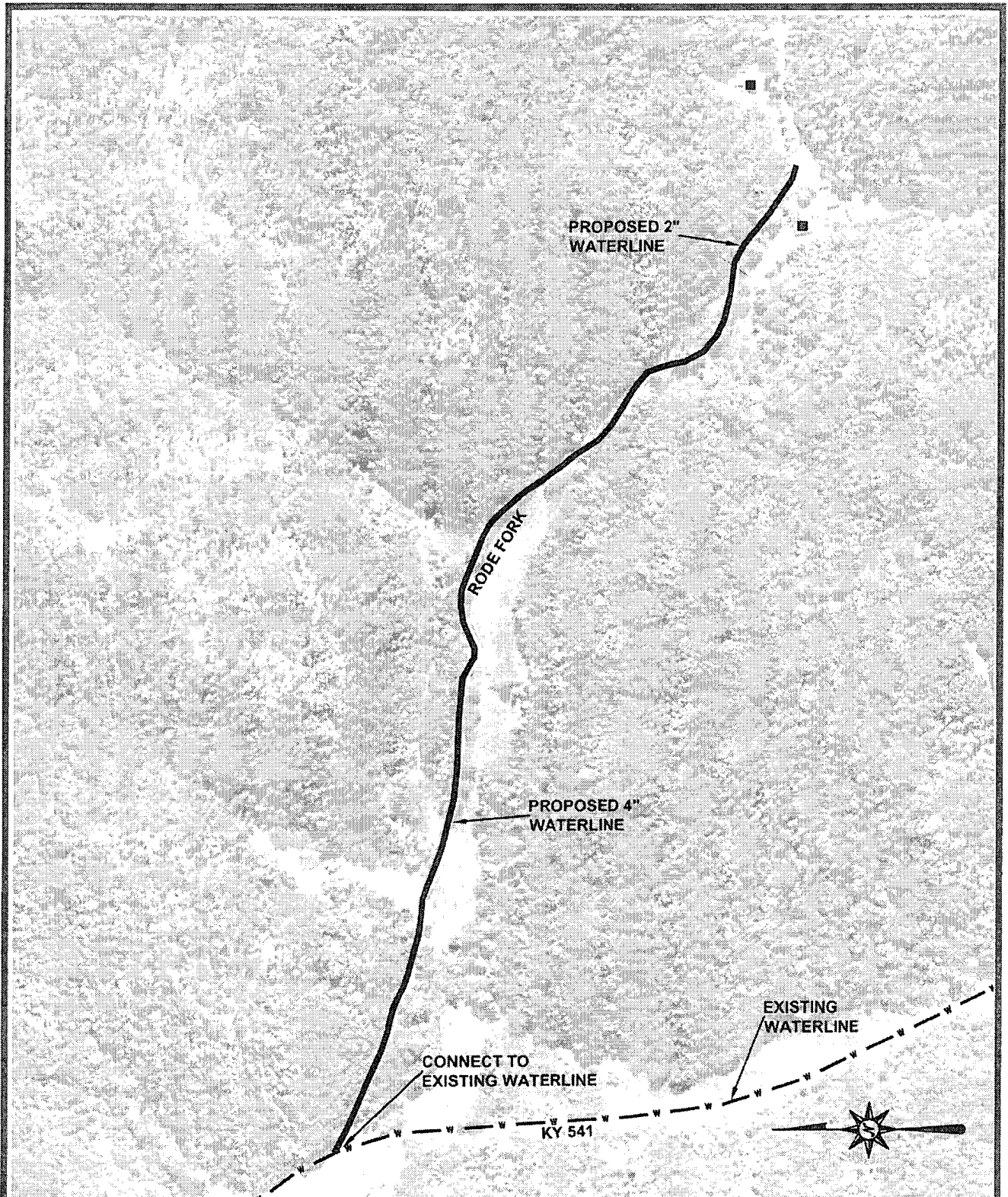
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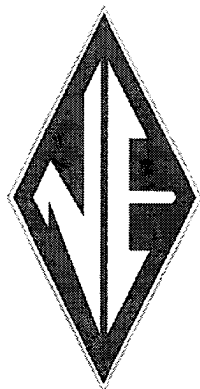
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	drawing revisions:	drawn by: <b>MMS</b>	job no.: <b>998-45</b>	
	date: <b>1/29/2019</b>	scale: <b>NTS</b>		



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	drawn by: <b>MMS</b>	job no.: <b>998-45</b>	date: <b>1/29/2019</b>	scale: <b>NTS</b>



Nesbitt Engineering, Inc.  
227 North Upper Street  
Lexington, Kentucky  
40507-1016  
Tel (859) 233-3111  
Fax (859) 259-2717