



**Andy Beshear**  
GOVERNOR

## ENERGY AND ENVIRONMENT CABINET

### DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 Sower Boulevard  
Frankfort, Kentucky 40601  
Phone: (502) 564-2150  
Fax: 502-564-4245

**Rebecca Goodman**  
SECRETARY

**Anthony R. Hatton**  
COMMISSIONER

### KENTUCKY DIVISION OF WATER WELLHEAD PROTECTION PLAN 5-YEAR UPDATE FORM

#### Update Requirements:

This form should be used for the 5-year update submittal requirements of the Kentucky Wellhead Protection Program (WHPP) in compliance with 401 KAR 4:220 and SDWA Section 1428. Once the form is complete, please sign and send to:

Kentucky Division of Water  
Watershed Management Branch  
Attention: Dale Booth  
300 Sower Boulevard, 3<sup>rd</sup> Floor  
Frankfort, Kentucky 40601 or [dale.booth@ky.gov](mailto:dale.booth@ky.gov)

For assistance, contact Dale Booth at (502) 782-6895 or [dale.booth@ky.gov](mailto:dale.booth@ky.gov)

#### System Information:

PWS Name: **Wickliffe Municipal Water System**

PWS ID Number: **KY0040469**

AI Number: **61**

Contact Person/Title: **Guy Johnson/Superintendent**

Mailing Address: **PO Box 175, Wickliffe KY 42087**

Telephone: **270-335-3557** Email: **wickliffewater@gmail.com**

System Type\*: **Community**

\*Community; Non-Transient/Non-Community; Transient/Non-Community

Source\*: **Field of 3 Wells** \*Well(s) or Spring(s) and total number of each

AKGWA #(s): **Well #1/00033896; Well #2/00014945; Well #3/00033897**

County: **Ballard**

ADD: **Paducah ADD**

WWD Permit #: **1437** Permitted Amount (mgd): **0.500 mgd**

Population Served: **1264**

Overall Susceptibility Rating\*: **Med** \*High, Medium or Low

WHPP Changes Summary: **Wickliffe Municipal Water System withdraws its source water from a field of three deep wells in the Eocene sands of the Jackson Purchase and Claiborne Group in the Jackson Purchase region of Western Kentucky. Water withdrawals are permitted 0.500 million gallons per day (MGD), with current average monthly water withdrawals of 0.410 MGD (2018-2023) under Permit #1437. The WHPA delineation includes approximately 314 acres of mostly unmanaged deciduous forest and pasture/hay land use with minor amounts of low to high intensity development and eleven types of potential contaminants which are dominated by onsite septic systems. The overall susceptibility rating is medium. Wickliffe Municipal Water System's management strategies include education and outreach via Consumer Confidence Reports and the development of Groundwater Protection Plans for all activities that have the potential to pollute groundwater.**

#### **Update Form Instructions:**

Please complete each section that applies to any system or WHPP updates and submit the supporting documentation. Please indicate if a section is not applicable to this update. **Sections 4 and 6 through 11 are required for every 5-year update.**

Please sign certification on the last page upon completion.

#### **Section Updates:**

##### **Section 1: Treatment Plant**

If the treatment plant location has changed then provide a new location map below. This can be a county roadmap or a GIS-produced map. Please use the area below to provide relevant details, or to indicate that no change has occurred.

**The 0.750 Million Gallon Per Day (MGD) water treatment plant remains along US-51 at the Fort Jefferson Hill site just southwest of Wickliffe KY 42087**

##### **Section 2: Water Withdrawal and Water Quality**

If there have been changes in water withdrawal rates or water quality since the last submittal, provide a discussion of the relevant details in the space below (include new Water Withdrawal Permit Number if applicable). Include supporting documentation as an attachment.

**Wickliffe Municipal Water System is authorized to withdrawal 0.500 MGD of water from a field of three (3) wells under Permit #1437 which was last revised in 2017. Since the last**

update (2018-2023), average monthly water withdrawals have varied from 0.354 to 0.448 MGD with the average maximum monthly withdrawals varying from 0.455 to 0.530 MGD. The 1999 Phase I WHPP reported water withdrawals averaged 0.240 MGD in 1997, and 0.250 MGD in 1998, with maximum withdrawals reported at 0.506 MGD in 1997 and 0.434 MGD in 1998. So, over the last twenty (20) years average withdrawals have increased in addition to slight increases in maximum average water withdrawals.

Wickliffe Municipal Water System currently withdraws from three (3) wells drilled at 280 to 300 deep into the Eocene sands of the Jackson Purchase and Claiborne Group. These formations provide uplands and a high-level erosional surface over most of the area. They extend beneath river terraces along the Mississippi Valley. The Jackson Purchase, or Mississippi Embayment Region is in western Kentucky where Cretaceous and Tertiary sediments occur at the surface. The Jackson Purchase is the northeastern part of the upper Mississippi Embayment, a part of the Gulf Coastal Plain. The area is underlain by unconsolidated deposits of sand, gravel, silt, and clay. These deposits are on top of limestone that dips relatively steeply to the west. Groundwater occurs within the unconsolidated granular aquifers and is generally abundant.

Wickliffe is located at 385 feet on the bluffs 150 feet above where the Ohio joins the Mississippi River. The chemical quality of the water is generally good, but water from some aquifers contains objectionable amounts of iron and manganese. Water from alluvium is generally hard to very hard. In some areas, percolation of contaminated surface water, fluids from domestic sewage-disposal systems, and other sources of domestic or industrial pollution have contaminated the aquifer. In some formations with slightly acidic groundwater, a chemical reaction between the acidic groundwater and steel well casing and pump equipment will produce a high iron content in the water.

The Wickliffe Municipal Water System should contact and discuss further PFAs sampling, monitoring, and treatment options with the Kentucky Division of Water. The Jackson Purchase physiographic region showed a decreasing trend in fluorides, sulfates, and orthophosphate and increasing trends in potassium and selenium. (Report on the Condition of Ambient Groundwater in Kentucky 2018).

### **Section 3: Change or Modification to Groundwater Source**

If the system has changed or modified the wells or springs being used, provide the following: 1) a description of changes/modifications; 2) copies of the relevant form(s) (Kentucky Water Well Record, Well Maintenance & Plugging Record, Well Inspection Form or Spring Inventory Record); and 3) any other information relating to well construction (i.e., installation logs, driller's logs, lithological or geophysical logs), below.

The active delineated wellfield is composed of three (3) wells, including Well #1/00033896 which was constructed in 1985 to depth of 300 feet, Well #2/00014945 which was constructed in 1991 to a depth of 300 feet, and Well #3/00033897 which was constructed during 2001 to a depth of 280 feet. Currently Well #2/00014945 is not producing at the

needed capacity and pulling sand so it has become inactive and will need to be plugged. The City has proposed constructing a new well just west of the existing water treatment plant and adjacent to the existing wellfield on Phoenix Paper Wickliffe LLC property. They have coordinated getting construction quotes with Brotcke Well & Pump, Inc. This will not necessarily allow the city to meet capacity needs but can provide a backup source if another well fails or needs to be out of operation for maintenance or any other issue. Most of the production demands come from Phoenix Paper Wickliffe LLC and James Marine.

**Section 4 (REQUIRED): Planning Team**

Effective water supply protection requires community involvement and public awareness. Identify the planning team consisting of a leader and at least two team members, with their respective titles, below.

Leader:

**Guy Johnson, Superintendent**

Team Members:

**David Philips, Councilmember**

**Jacque Jones, Councilmember**

**Lynn Lane, Councilmember**

**Section 5: WHPA Delineation**

If the system is revising a Wellhead Protection Area (WHPA) delineation, or if a new groundwater source has been added since the last submittal, provide a site-specific description of the local geology and aquifer. Include references for published literature. Provide a summary of any aquifer tests (i.e. pumping tests, slug tests, tracer tests), including data gathering and evaluation methods. Show calculations and supporting data for each WHPA delineated or revised. Include the detailed hydrogeologic report as an attachment.

**The current WHPA for Wickliffe Municipal Water System has not changed for this update and encompasses 314.07 acres of mostly unmanaged deciduous forest and pasture/hay land use with minor amounts of low to high intensity development along US 51 and Union Construction Gate Road, and the Phoenix Paper Wickliffe facility. Please refer to the table below for the WHPA delineation:**

<b>Zone</b>	<b>Time of Travel (TOT)</b>	<b>Acres</b>
<b>1</b>	<b>180-day</b>	<b>16.16</b>
<b>2</b>	<b>10-year</b>	<b>132.37</b>
<b>3</b>	<b>Hydrologic boundary</b>	<b>314.07</b>

### **Section 6 (REQUIRED): WHPA Map**

Provide a WHPA map that shows each groundwater source labeled with the appropriate AKGWA #, all protection zones identified and the Contaminant Source Inventory (CSI) point locations.

**See attached WHPA Map. The wellhead protection area for the three (3) active public water system wells is further delineated into three (3) zones based on time of travel (TOT) and the hydrological boundary for potential contaminants, including:**

**Zone 1: 180-day time of travel**

**Zone 2: 10-year time of travel**

**Zone 3: Hydrologic boundary**

### **Section 7 (REQUIRED): Contaminant Source Inventory**

Provide an updated CSI in table format. This can be created using the spreadsheet template provided, and copied into the space below. If no changes occurred since the last update, the table can be pulled from previous WHPP documents. Each contaminant source listed should have a Contaminant Source ID # that corresponds to the WHPA map in Section 6. The CSI table must show the susceptibility determination ranking for each contaminant source. Include a brief narrative discussion of the overall system susceptibility. For more information on potential sources of contamination, please visit the DOW's [Web Tools for SWP Planning website](#). Please contact program staff for assistance.

**See attached CSI. Wickliffe Municipal Water System currently withdraws from a wellfield that has a delineated protection area of approximately 314 acres of mostly deciduous forest and pasture/hay and minor amounts of low to high intensity development. There are eleven (11) different types of potential contaminants that include railroad, highway, and septic systems. The overall susceptibility rating is medium.**

### **Section 8 (REQUIRED): Management Strategies**

Provide a discussion of the previous and newly proposed management strategies to prevent source water contamination. This discussion must include the previous management strategies that were implemented as well as the goals that were met. Next, include any NEWLY proposed management strategies, associated goals, implementation plans and the party responsible for implementation. For information about wellhead protection strategies please visit the DOW's [Source Water Protection Strategies website](#).

### **Previous Management Strategy Update:**

**Wickliffe Municipal Water System has pursued public education and outreach to manage the WHPA including using the Consumer Confidence Report (CCR), Water Supply Protection Area road signs along the boundary of the WHPA, and the development of Groundwater**

Protection Plans (GPPs) for all activities that have the potential to pollute groundwater.

**Newly Proposed Management Strategies:**

Wickliffe Municipal Water System will continue to pursue public education and outreach to manage the WHPA including using the CCR and the development of GPPs.

**Section 9 (REQUIRED): Contingency and WHP Planning**

Provide a description of Contingency and WHP Planning. Complete the Emergency Response Phone List, Procedures for Public Notification, identification of Potential Future Problems and the procedures to establish Alternative Water Supplies. This section must also address how often the WHPP will be reviewed and updated.

**Emergency Response Phone List**

Fill in all Blanks and Phone Numbers with appropriate information.

Local Emergency Response	Phone Number
Plant Operator	(270) 335-3557
Wickliffe City Fire Department	(270) 207-8699
Ballard County Sheriff	(270) 335-3561
Local Emergency Dispatch Ballard County DES	(270) 665-5083 or 911

State and Federal Assistance	Phone Number
Kentucky DOW (Frankfort)	(502) 564-3410
Kentucky DOW Associated Field Office (FO) Paducah Regional Office	(270) 898-8468
Kentucky Environmental Response Team 24-hour response line	(502) 564-2380 (800) 928-2380
Kentucky State Fire Marshall	(502) 573-0382

Any Other Pertinent Contacts	Any Other Pertinent Numbers
Kentucky Rural Water Association (KRWA)	(270) 843-2291

Click here to enter text.	PHONE NUMBER

**Procedures for Public Notification:**

In the event of a water system emergency that would threaten the health or life of the public, use the following procedure. Prepare and broadcast an advisory, including directions for the public. Describe the public notification process and provide contacts for those media outlets. If the system uses methods other than traditional media please list them.

**Customers will be notified via announcements made on television, newspaper, radio stations.**

Newspaper, Television, and Radio Stations	Phone Numbers
WBCE AM 1200 or WGKY FM 95.9	(270) 335-5171
WPSD-DT1 Local 6 or wpsdlocal6.com	(270) 415-1900

**Potential Future Problems:**

Describe the *most likely* scenarios that could threaten the water supply.

**In accordance with the CSI, faulting or failing septic systems or an accidental spill or release from the railroad and roadways that cross through the WHPA is the most likely threat to the aquifer.**

**Alternative Water Supply (Short and Long Term):**

Describe the short term and long-term water supply alternatives that address each of the potential future problems identified above. List all current interconnections with other water systems. Discuss the capacity of each potential alternative water supply to sustain normal operations.

**Over the short-term, issuing boiled water advisories but over the long-term different treatment technologies/processes could be employed, constructing new wells, and/or developing interconnections with other neighboring water systems.**

**Currently Wickliffe Municipal Water System does not have interconnections with any other water systems. The closest potential for interconnection is Barlow Water System which is almost five (5) miles northeast along U.S. 60. Bardwell City Utilities is another system that lies the same distance south of Wickliffe on U.S. 51.**

**Schedule for Update and Review:**

**The Wellhead Protection Plan will be reviewed regularly and updated every five years as required by regulation.**

**Section 10 (REQUIRED): Copies of Public Notices and Education Materials**

Provide copies of wellhead protection public notices and education materials distributed.

**A copy of this wellhead protection plan will be posted by Kentucky Rural Water Association (KRWA) and the link to plan will be printed on customer bills for public notice.**

**Section 11 (REQUIRED): Public Meeting Documentation\*\*\***

Provide the record of WHPP public meeting attendance, minutes and comments.

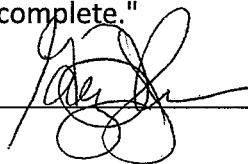
**A copy of this wellhead protection plan will be posted by Kentucky Rural Water Association (KRWA) and the link to WHPP will be printed on customer bills for public notice. A copy will be provided in the attachments for documentation.**



**Certification Signature (TO BE COMPLETED BY PLANNING REPRESENTATIVE):**

"I certify that this document and all attachments were prepared under my direction or supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete."

**Signature:** \_\_\_\_\_



**Date:** September 26th, 2024.

**Printed Name/Title:** Guy Johnson

**Assistance:**

For any assistance, please contact Wellhead Protection Staff:

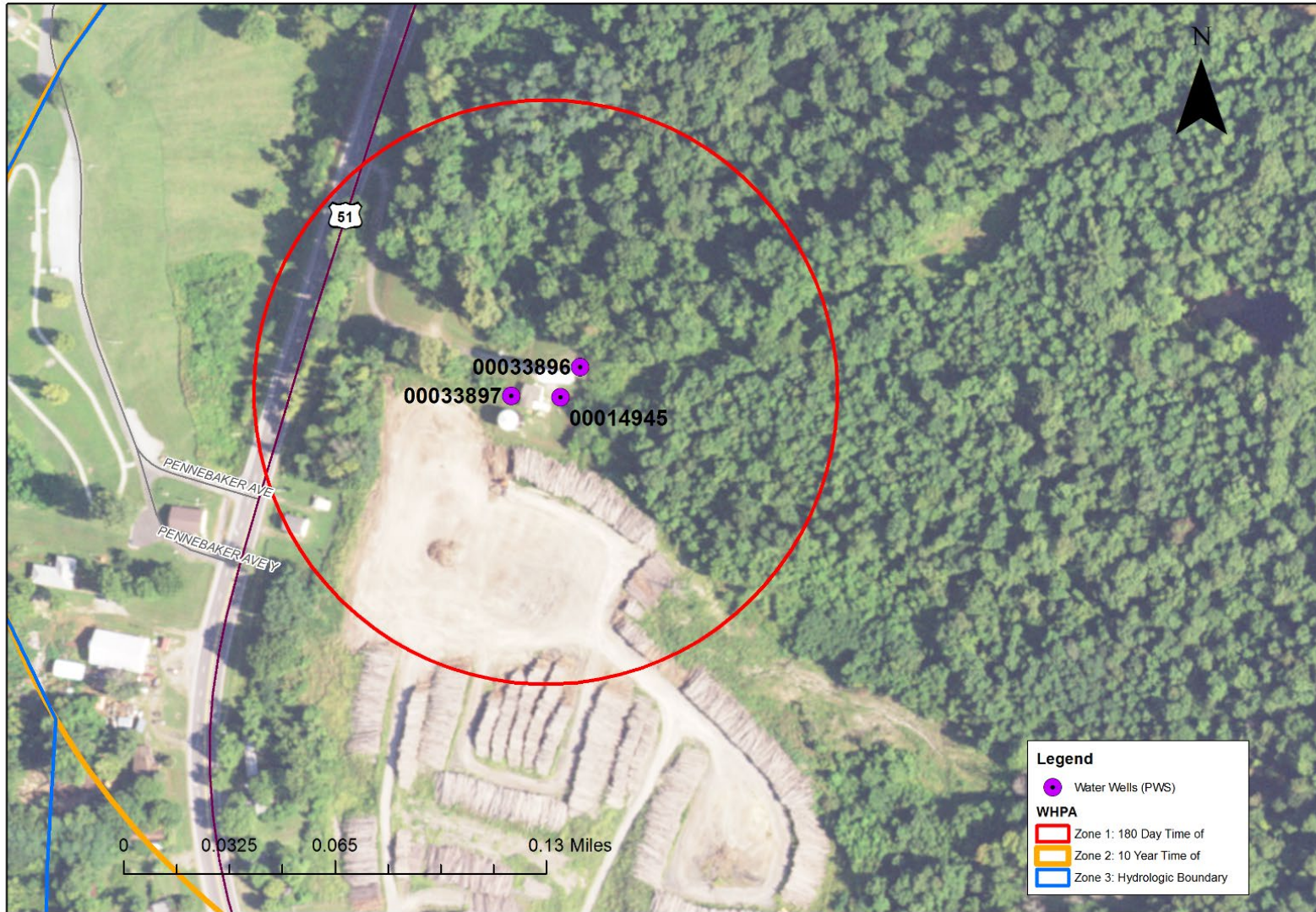
Dale Booth  
(502) 782-6895  
[Dale.Booth@ky.gov](mailto:Dale.Booth@ky.gov)

**Please sign and return completed form to:**

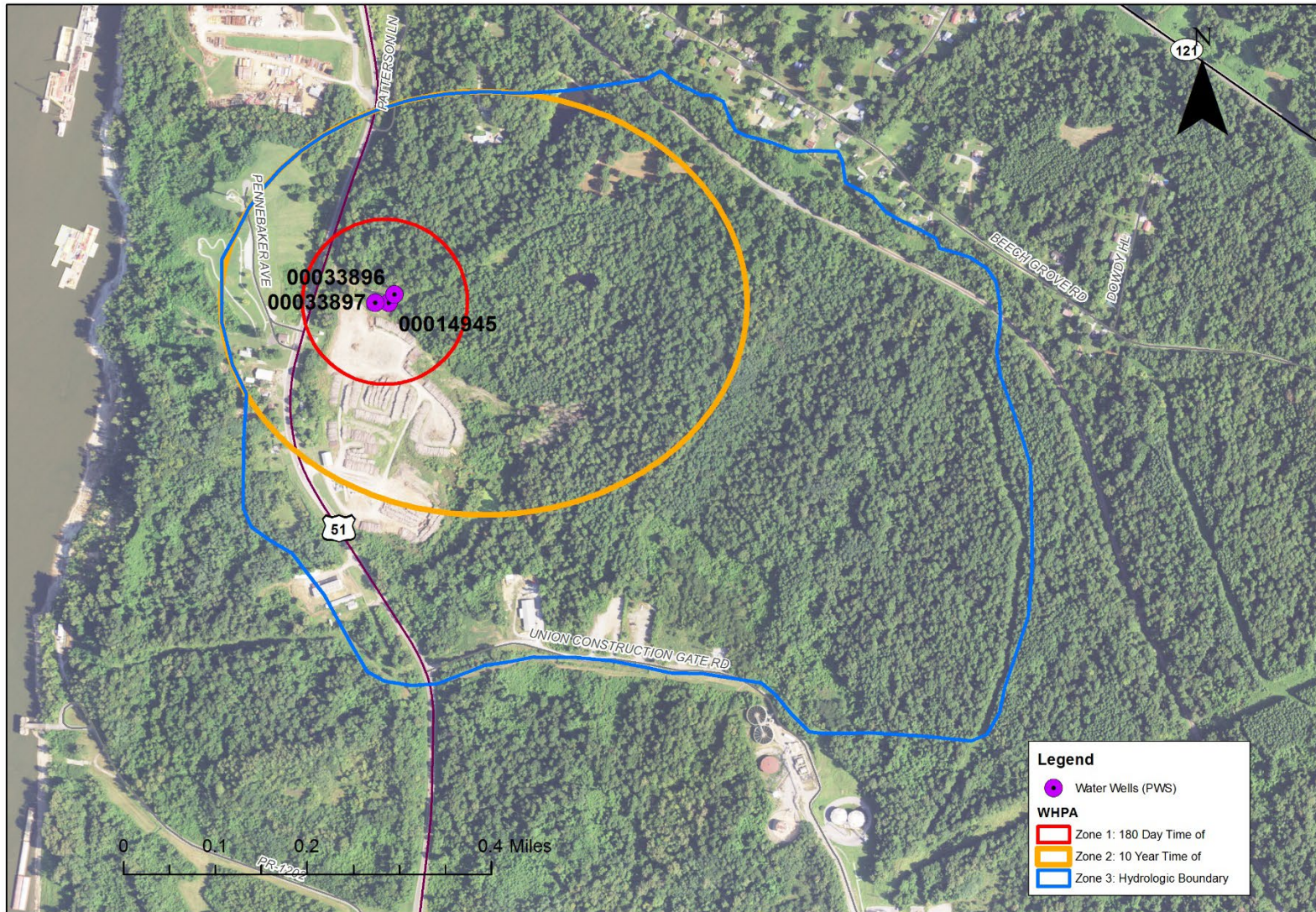
Kentucky Division of Water  
Watershed Management Branch  
Attention: Chip Zimmer  
300 Sower Boulevard, 3<sup>rd</sup> Floor  
Frankfort, Kentucky 40601  
or [Dale.booth@ky.gov](mailto:Dale.booth@ky.gov)

## Section 6: WHPA Map

# Wickliffe Municipal Water System Well Locations



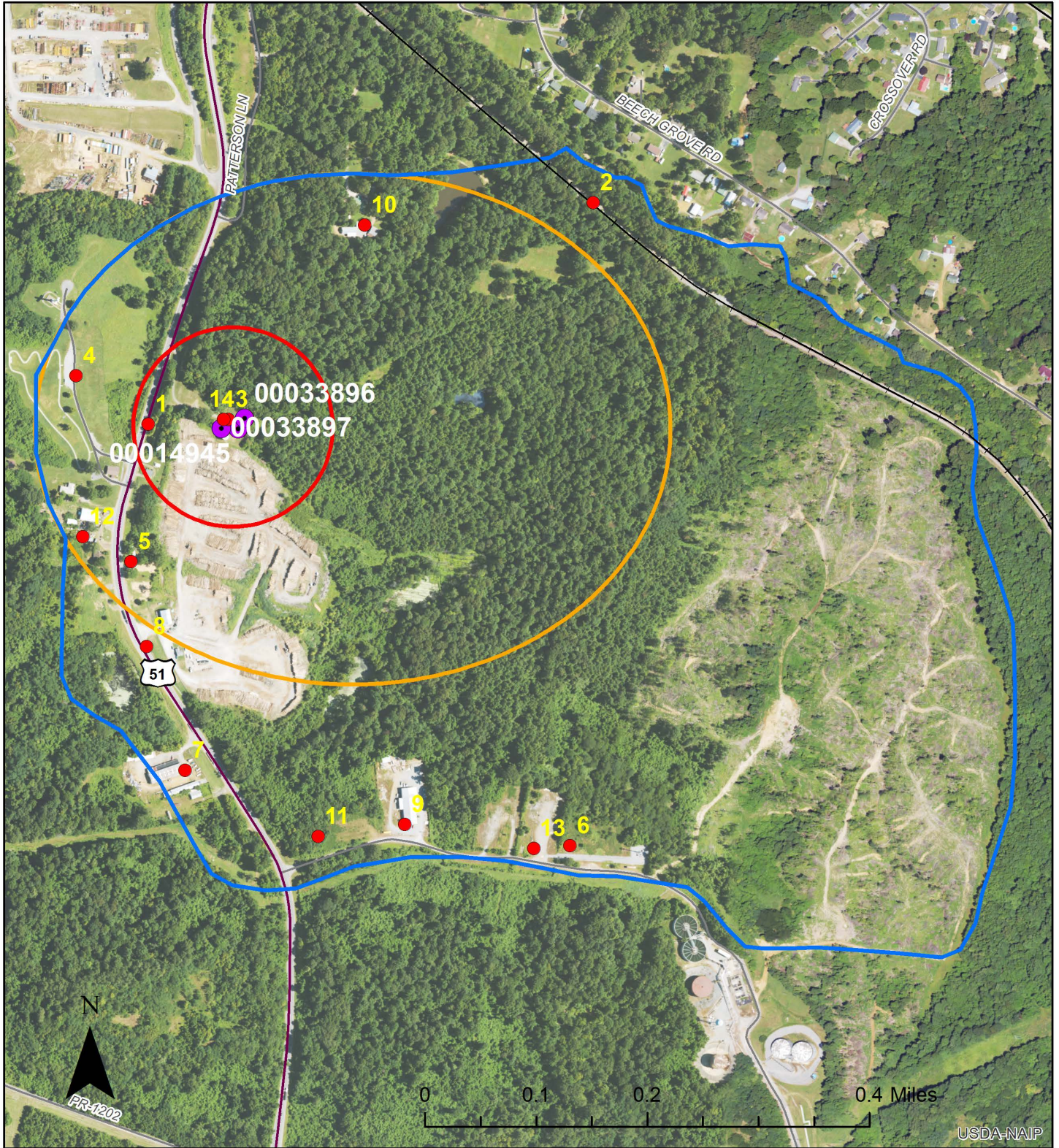
Date: 10/17/2023  
Author: Kentucky Division of Water



Date: 10/17/2023  
 Author: Kentucky Division of Water

## **Section 7: Contaminant Source Inventory**

# Contaminant Source Inventory



USDA-NAIP

- Potential Contaminants
- +— Active Railroad
- Water Wells (PWS)
- Zone 1: 180 Day time of travel for potential contaminant
- Zone 2: 10 year time of travel
- Zone 3: Hydrologic Boundary

# Contaminant Source Inventory and Susceptibility Analysis for Wickliffe Municipal Water/KY0040469

CSI Map ID #	Site ID	Contaminant Source Type	CS CODE	Name	Address	Lat	Lon	Quantity	Zone	Proximity Value	Contaminant Value	Hydrologic Sensitivity	Numeric Rating	Susceptibility Ranking	Contaminant Notes
1		Major Roadways	M-7	U.S. 51	Wickliffe, KY	36.9559	-89.0908	1	1	3	3	1	16	HIGH	
2		Railroad Lines	C-32	Canadian National Railway	Wickliffe, KY	36.9590	-89.0837	1	3	1	3	1	12	MED	
3		Other Municipal Sources	M-10	Wickliffe Municipal Utilities Diesel Generator	Wickliffe, KY	36.9560	-89.0895	1	1	3	3	1	16	HIGH	
4		Municipal Landfills	W-7	Wickliffe Landfill	CS-1016, Wickliffe, KY	36.9565	-89.0920	1	2	2	3	1	14	MED	
5		Residential Septic	R-4	Septic System	678 Westvaco Road, Wickliffe, KY	36.9541	-89.0910	1	2	2	2	1	11	MED	
6		Residential Septic	R-4	Septic Systems	Wickliffe, KY	36.9506	-89.0837	5	3	1	2	1	9	LOW	
7		Junk Yards (Scrap and Auto)	C-22	Maupins Cores and Recycling LLC	823 Westvaco Rd, Wickliffe, KY	36.9514	-89.0900	1	3	1	2	1	9	LOW	Septic System
8		Hardware/ Lumber/ Parts stores	C-19	Waldschmidt Lumber Company UST	Wickliffe, KY	36.9530	-89.0907	1	3	1	3	1	12	MED	UST
9		Other Commercial Sources	C-27	Bass Maintenance Corp	Wickliffe, KY	36.9508	-89.0864	1	3	1	2	1	9	LOW	Septic System
10		Residential Septic	R-4	Septic System	Wickliffe, KY	36.9586	-89.0874	1	2	2	2	1	11	MED	

11	Other Wells	G-10	Irrigation Well/00019816 (Waldschmidt Lumber Co)		36.9506	-89.0878	1	3	3	3	1	16	HIGH	
12	Car/ Boat/ Camper Dealerships	C-6	Beardsley's Auto Sales	627 Fort Jefferson Rd.	36.9544	-89.0918	1	3	1	3	1	12	MED	
14	Other Commercial Sources	C-27	Wade Garret BBQ (closed)		36.9505	-89.0843	1	3	1	2	1	9	LOW	Septic System
15	Drinking Water Treatment Plants	M-3	City of Wickliffe	PO Box 175	36.956	-89.0896	1	2	2	2	1	11	MED	Septic System

CSI Totals	Low	8
	Med	7
	High	3

Overall Susceptibility Ranking	LOW
--------------------------------	-----



**Section 10 & 11: Public Notice Documentation**