

OCT 17 2018

PUBLIC SERVICE  
COMMISSION

**BRACKEN COUNTY WATER DISTRICT**  
***WATER SYSTEM IMPROVEMENTS***  
***FINAL ENGINEERING REPORT***

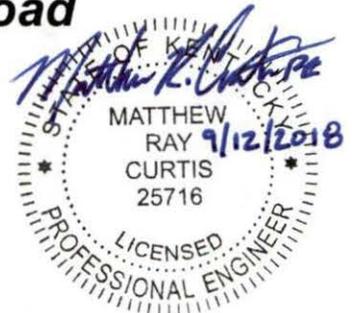


***BRACKEN COUNTY WATER DISTRICT***

***1324 Brooksville Germantown Road***

***Brooksville, KY 41004***

***September 2018***



# **BRACKEN COUNTY WATER DISTRICT FINAL ENGINEERING REPORT WATER SYSTEM IMPROVEMENTS**

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## **I. GENERAL**

The Bracken County Water District (BCWD) was formed in 1960. The existing system consists of approximately 340 miles of water lines with 4 functioning water storage tanks and 3 booster pump stations that serve approximately 2,492 customers in Bracken County.

## **II. PROJECT PLANNING AREA**

### ***A. Location***

The BCWD is located in Northern Kentucky in Bracken County. With the exception of the Cities of Augusta and Brooksville, the BCWD serves the majority of Bracken County along with a few customers in Mason, Pendleton and Robertson Counties.

The topography of Bracken County is moderately to well dissected, but some of the ridges are flat-topped, particularly northwest of Germantown in the eastern part of the county. Local reliefs of 150 to 200 feet are common near the small streams. Greatest local reliefs are along the Ohio Valley in the northern part of the county, where uplands are 300 to 400 feet above the river. The highest elevations in Bracken County are found along the drainage divide between Licking River and the small creeks that flow directly into the Ohio. Elevations of 940 to 980 feet are common there; 980 feet is the highest recorded in the county.

### ***B. Environmental Resources***

The major environmental features in the area feature a variety of landforms and topographic change from extremely steep to relatively flat. The gradual undulating terrain is the reason for a relatively few number of water storage tanks and pump stations. Water pressures range from 30 psi to over 185 psi in sections of the system. Many of the hollows are in floodplains in particular along the Ohio River and along the Licking River along the southern boundary of the county. No known historic sites are noted in the planning area.

### ***C. Growth Areas and Population Trends***

A quick review of the census information shows a fairly significant increase in the population over the next twenty years. Since the establishment of the BCWD the population of Bracken County has continued to grow. The water system has had

growth over the past 20 years because of numerous line extension projects. The population projections for Bracken County are shown below.

	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2040</u>
Population	8,488	8,744	8,810	8,672

### **III. EXISTING FACILITIES**

#### ***A. Location Map***

A map of the county showing the extent of the water system is located at the end of this report.

#### ***B. History***

The BCWD system was originally built in the 1960's. The BCWD purchases the majority of its water from the City of Augusta. Numerous water line extension projects have been developed over the past 50 years to establish the current BCWD customer base which serves approximately 97% of Bracken County.

#### ***C. Condition of Facilities***

BCWD currently purchases an average of 400,000 gallons a day from the City of Augusta. The system is in good to fair condition and work continues to improve the older, undersized sections of the BCWD.

Several of the original transmission water mains that connect to the City of Augusta water system and transport the majority of the BCWD water to its customers are undersized. During periods of peak demand BCWD struggles to keep certain water storage tanks adequately supplied and customers can experience underserved water supply/pressure; in particular the southwestern and northwestern portion of the system which is some of the oldest sections of the system.

#### ***D. Financial Status***

Annual audits will be submitted to Rural Development as required by the RD bond issue. A customer breakdown was provided in the Summary Addendum.

As with the majority of utilities across the country, the BCWD has seen its operating expenses rise over the past several years. Fuel and health insurance are the expenses that have seen the largest increase. Because the BCWD covers a vast geographic area, the fuel cost has had a tremendous impact on cash flow.

## **IV. NEED FOR THE PROJECT**

### ***A. Health and Safety***

The proposed project to upgrade approximately 9.3 miles of distribution mains, replace approximately 23 miles of asbestos cement distribution mains and replace approximately 150 customer service meters will help to improve overall water quality. Improving water turnover/water age by eliminating older, problematic distribution mains and removing dead ends by looping some of the existing water lines will improve the quality of water for residents in these particular areas and also provide alternatives for service during emergency outages.

Many of the families living in the project areas currently rely on asbestos cement distribution water mains. Due to the age and material of these mains there are many breaks that have to be repaired and create issues for these households related to water quality and continuity of service. This exposes some families to poor quality water and limits the amount of water available to them.

The proposed project will help to improve the overall service from a water quality and reliability standpoint to the BCWD customers.

### ***B. System O&M***

By upgrading approximately 9.3 miles of distribution mains the BCWD will reduce their pumping costs and therefore reduce the amount of operation and maintenance budget required for the BCWD system. It will also enable the BCWD to transmit more water to its distribution system.

## **V. ALTERNATIVES CONSIDERED**

Alternatives considered included replacing asbestos cement distribution mains with like size distribution mains but this does not provide BCWD with any hydraulic improvements which in turn help to reduce operation and maintenance expenses. An additional alternative considered was to only replace the lines as they deteriorate to the point of not functioning. This is cost prohibitive for the BCWD and does not benefit the customers by providing a safe, dependable, high quality product.

## **VI. PROPOSED ALTERNATIVE**

The proposed project is to upgrade approximately 9.3 miles of distribution mains, replace approximately 23 miles of asbestos cement distribution mains and replace approximately 150 customer service meters. The upgrade of distribution mains occurs primarily in the central portion of the BCWD distribution system in the

vicinity of the city of Brooksville. These upgrades allow for the BCWD to hydraulically flow water to all areas of their system in an efficient manner during normal operations and it also provides alternative feeds during emergency situations.

The areas in which distribution main sizes will be increased include Bluegrass Road, located east, northeast of Brooksville, an area along Highway 22, located in the northwest section of the BCWD system, an area near Powersville, which is located southwest of the city of Brooksville, an area north of Brooksville, located between Highway 8 and Highway 9 and an area along Highway 165, which is just south of Powersville. As previously discussed these areas are all centrally located near the city of Brooksville and the BCWD will be able to flow water efficiently throughout all areas of its system.

Additionally, the project will replace approximately 23 miles of asbestos cement distribution main. There are eleven different areas in which this distribution main will be replaced which are scattered throughout the entire distribution system. Some of the communities where this replacement will take place include Chatham, Powersville, Foster, Frogtown, Bladeston, Johnsville, Lenoxburg, and near Augusta. Additionally, there will be distribution main replaced along Highway 22, Highway 1011, Bluegrass Road, and Old Highway 19.

The project will also include replacing approximately 500 feet of an 8" PVC cross country transmission main. This section of distribution main is located in an area that has seen repeated leaks due to the topography in which it is located. As a main feed to the distribution system any problems that occur present problems for the entire distribution system.

Lastly, the project will include the replacement of approximately 150 customer service meters with radio read meters. The replacement of these meters will create efficiencies for the BCWD in reading meters, detecting leaks, and providing improved service to its customers.

Each of the items listed above will help to improve the overall service from a water quality and reliability standpoint to the BCWD customers.

A summary of the proposed project is as follows:

	Approximate Year in Service	Approximate Age (in years)	
Upgrade of 9.3 miles of distribution main	Highway 22	1962	55
	Bluegrass Road	1962	55
	HWY 165 to Belmont Road	1962	55
	Highway 1011	1962	55
	Asbury Road to Dutch Ridge	1962	55
	Shoftstall Road	1984	33

Replacement of approximately 23 miles of AC water main	Highway 22	1963	54
	Highway 1011	1963	54
	Highway 1019	1964	53
	Highway 1159	1964	53
	Highway 1109	1963	54
	Old Hwy 19	1964	53
	Highway 10	1964	53

Hydraulically the project takes advantage of elevations to reduce long-term pumping costs while also improving water quality and maintaining adequate pressure in all areas of the distribution system.

The total project cost is shown on the detailed engineer estimate located at the end of the report.

BCWD will institute a rate increase with this project. The proposed rates and additional financial data was presented in the Summary Addendum to the Preliminary Engineering Report. See attached Rate Summary for rate increase information.

## **VII. PROJECT BUDGET AND FINANCING**

The project was advertised for construction bids on July 26, 2018 with a bid opening on August 9, 2018. There were four bidders for the Contract No. 2 – System Improvements Project.

The low bidder was Tilton Excavating, LLC of Mt. Olivet, Kentucky with a low bid of \$2,874,243.75. Bracken County Water District and Bluegrass Engineering staff have worked with Tilton Excavating, LLC and has found them to be a responsible and responsive bidder and contractor. Therefore, a letter of recommendation was provided to the District.

The low bid was below the engineer's estimate for the project, therefore the District has added a few additional items that will be added to the contractor's contract through a change order and a few items will be purchased with project funds at the end of the construction period by the Owner.

The funding available for the project consists of the following source:

Rural Development Loan	\$3,427,000
Rural Development Grant	<u>\$1,141,900</u>
<b>TOTAL</b>	<b>\$4,568,900</b>

The revised budget for the project is as follows:

Legal and Administrative	\$10,000
Planning & Study	\$15,000
Environmental	\$12,500
Rate Study	\$12,500
Easement Acquisition	\$10,000
Basic Engineering Services	\$260,800
Construction Inspection	\$141,100
Construction	\$2,874,243.75
Change Order No. 1 – System Improvements Project	
Old KY 19 Replacement	\$415,500
KY 1159 Replacement	\$216,850
Hillsdale Road Replacement	\$62,750
Additional Ext. to New Customers	\$40,650
Engineering Service Amendment	
Basic Engineering for C.O. No. 1	\$55,000
Inspection for C.O. No. 1	\$20,000
Environmental Modification	\$7,500
Easement Acquisition	\$5,000
Owner Purchased Items	
Main Pump Station (VFDs)	\$35,000
New Customer Meters	\$13,500
Contingencies	\$361,006.25
<b>TOTAL</b>	<b>\$4,568,900</b>

It is the recommendation of Bluegrass Engineering, PLLC to proceed to the construction phase of this project after submittal of Rural Development post bid documents and proceed with the pre-closing and pre-construction conferences.

### **VIII. PROPOSED PROJECT SCHEDULE**

The proposed project schedule is:

1. Contract Award/Initiate Construction – November 2018
2. Substantial Completion – August 2019
3. Final Completion/Initiation of Operation – September 2019

**ATTACHMENTS:**

1. Rate Summary
2. Letter of Recommendation w/Bid Tabulations – System Improvements Project

## NOTICE OF PROPOSED RATE CHANGE

In accordance with the requirements of the Kentucky Public Service Commission ("PSC") as set out in 807 KAR 5:069, Section 3, notice is hereby given to the customers of the Bracken County Water District ("District") of a change in water rates for users of the District's water system. The changes in water rates are required by the U.S. Department of Agriculture, acting through Rural Development ("RD") in connection with a loan by RD to the District in the principal amount of \$3,427,000 to be evidenced by the issuance by the District of its waterworks revenue bonds in such amount, which RD has agreed to purchase Provided the District meets certain conditions of RD, including revising the water rates as set forth below:

### Current Monthly Water Rates

Residential, Commercial and Industrial

First 2,000 gallons and Minimum Bill	\$25.89
Next 38,000 gallons	\$ 9.89 per 1,000 gallons
Over 40,000 gallons	\$ 7.86 per 1,000 gallons
Wholesale Rate	\$ 3.79 per 1,000 gallons
Bulk Sales: Loading Stations	\$ 9.00 per 1,000 gallons

### Proposed Monthly Water Rates

Residential, Commercial and Industrial

	<u>New Monthly Rate</u>	<u>Dollar Change</u>	<u>Percent Change</u>
First 2,000 gallons	\$27.85	\$1.96	8%
Next 38,000 gallons	\$10.63	\$ .74	8%
Over 40,000 gallons	\$ 8.43	\$ .57	8%
Wholesale	\$ 4.04	\$ .25	7%
Bulk Sales	\$ 9.50	\$ .50	6%

The proposed monthly water rates shall be effective for water sold after the date of the final approving Order of the PSC, which Order is expected to be issued no later than 30 days of the filing of the Application. Based on a monthly usage of 5,000 gallons, the average bill of a Bracken County Water District customer would increase \$4.18 from \$55.56 to \$59.74 or 8%. The Application for approval of the rate change has been filed with the PSC and may be examined during normal business hours at the following locations: (i) Bracken County Water District Office, 1324 Brooksville Germantown Road, Brooksville, Kentucky 41004; (ii) PSC, 211 Sower Boulevard, Frankfort, Kentucky, Monday through Friday, 8:00 a.m. to 4:30 p.m., E.T.; and (iii) via the PSC website at <http://psc.ky.gov>. Comments regarding

the Application may be submitted to the PSC via its website or by mail to PSC, P.O. Box 615, Frankfort, Kentucky 40602.

The proposed rates are required under the terms of an agreement between the District and RD and KRS 278.023 does not grant the PSC any discretionary authority to modify or reject any portion of the agreement between the District and RD, or to defer the issuance of all necessary orders to implement the terms of the agreement. The RD loan proceeds will be used to finance the costs of the installation of approximately 20,000 LF of 8" water main, 90,000 LF of 6" water main, 45,000 LF of 4" water main, 20,000 LF of 3" water main and all related appurtenances. Signed: Anthony Habermahl, Chairman, Bracken County Water District.



August 15, 2018

Mr. Anthony Habermahl, Chairman  
Bracken County Water District  
1324 Brooksville Germantown Road  
Brooksville, Kentucky 41004

Re: Recommendation of Award  
Water System Improvements Project

Dear Mr. Habermahl,

Bids for the above referenced project were opened Thursday, August 9, 2018 at 11:00 am (local time). Four (4) bidders submitted on the above referenced project, BP Pipeline, Frederick & May Construction, G & W Construction and Tilton Excavating, LLC. The low bidder was Tilton Excavating, LLC of Mt. Olivet, Ky with a bid of \$2,874,243.75.

Bluegrass Engineering and I have worked with Tilton Excavating, LLC on successful projects over the past several years, therefore Bluegrass Engineering would recommend to Bracken County Water District that Tilton Excavating, LLC be awarded the System Improvements Project.

The bid tabulation was previously emailed to Bracken County Water District.

If you have any questions, or need additional information, please contact me at your earliest convenience.

Sincerely,

BLUEGRASS ENGINEERING, PLLC

A handwritten signature in blue ink, appearing to read 'Paul Reynolds', is written over a horizontal line.

Paul Reynolds  
Project Manager

c: File



**BID TABULATION**

CONTRACT NO. 2 - WATER SYSTEM IMPROVEMENTS PROJECT  
 BRACKEN COUNTY WATER DISTRICT  
 BROOKSVILLE, KENTUCKY  
 BE PROJECT NO. 18012  
 BID OPENING: Thursday, August 9, 2018 - 11:00 am

BASE BID: Contract No. 2 - Water System Improvements Project				BP Pipeline Quincy, Kentucky		Frederick & May Construction West Liberty, Kentucky		G & W Construction Morehead, Kentucky		Tilton Excavating, LLC Mt. Orvet, Kentucky	
Item No.	Description	Quantity	Unit	\$/unit	Bid Amount	\$/unit	Bid Amount	\$/unit	Bid Amount	\$/unit	Bid Amount
1	8" D.I.P. Water Main, Class 350	1,500	LF	\$ 39.00	\$ 58,500.00	\$ 28.00	\$ 42,000.00	\$ 38.83	\$ 58,245.00	\$ 29.25	\$ 43,875.00
2	8" PVC Water Main, Class 250	21,000	LF	\$ 18.00	\$ 378,000.00	\$ 14.00	\$ 294,000.00	\$ 15.61	\$ 327,810.00	\$ 16.25	\$ 341,250.00
3	6" PVC Water Main, Class 250	93,000	LF	\$ 14.00	\$ 1,302,000.00	\$ 12.25	\$ 1,139,250.00	\$ 11.61	\$ 1,079,730.00	\$ 13.00	\$ 1,209,000.00
4	6" D.I.P. Water Main, Class 350	700	LF	\$ 32.00	\$ 22,400.00	\$ 27.00	\$ 18,900.00	\$ 34.92	\$ 24,444.00	\$ 50.00	\$ 35,000.00
5	4" PVC Water Main, Class 250	31,000	LF	\$ 9.50	\$ 294,500.00	\$ 9.50	\$ 294,500.00	\$ 7.52	\$ 233,120.00	\$ 9.70	\$ 300,700.00
6	3" PVC Water Main, Class 250	6,000	LF	\$ 10.00	\$ 60,000.00	\$ 9.00	\$ 54,000.00	\$ 9.66	\$ 57,960.00	\$ 9.00	\$ 54,000.00
7	2" PVC Water Main, Class 250	800	LF	\$ 8.80	\$ 7,040.00	\$ 8.00	\$ 6,400.00	\$ 9.43	\$ 7,544.00	\$ 12.00	\$ 9,600.00
8	Flushing Hydrant Assembly	28	EA	\$ 3,600.00	\$ 100,800.00	\$ 4,200.00	\$ 117,600.00	\$ 3,762.59	\$ 105,352.52	\$ 3,600.00	\$ 100,800.00
9	Blow Off Hydrant Assembly	14	EA	\$ 2,800.00	\$ 39,200.00	\$ 3,800.00	\$ 53,200.00	\$ 2,628.50	\$ 36,799.00	\$ 2,500.00	\$ 35,000.00
10	Underground Blow Off Hydrant	1	EA	\$ 3,200.00	\$ 3,200.00	\$ 4,200.00	\$ 4,200.00	\$ 1,383.24	\$ 1,383.24	\$ 2,500.00	\$ 2,500.00
11	New Customer Service	101	EA	\$ 1,100.00	\$ 111,100.00	\$ 1,300.00	\$ 131,300.00	\$ 729.84	\$ 73,713.84	\$ 850.00	\$ 85,850.00
12	Reconnect Existing Customer Service	280	EA	\$ 400.00	\$ 112,000.00	\$ 600.00	\$ 168,000.00	\$ 457.38	\$ 128,066.40	\$ 600.00	\$ 168,000.00
13	Air Release Valve	5	EA	\$ 800.00	\$ 4,000.00	\$ 2,000.00	\$ 10,000.00	\$ 1,003.57	\$ 5,017.85	\$ 700.00	\$ 3,500.00
14	Open Cut W/10" PVC Casing Pipe	100	LF	\$ 25.00	\$ 2,500.00	\$ 85.00	\$ 8,500.00	\$ 70.40	\$ 7,040.00	\$ 150.00	\$ 15,000.00
15	10" PVC Casing Pipe	400	LF	\$ 20.00	\$ 8,000.00	\$ 85.00	\$ 34,000.00	\$ 50.40	\$ 20,160.00	\$ 50.00	\$ 20,000.00
16	12" PVC Casing Pipe	100	LF	\$ 21.00	\$ 2,100.00	\$ 95.00	\$ 9,500.00	\$ 52.74	\$ 5,274.00	\$ 50.00	\$ 5,000.00
17	16" Steel Casing, Bore & Jack	300	LF	\$ 160.00	\$ 48,000.00	\$ 160.00	\$ 48,000.00	\$ 187.58	\$ 56,274.00	\$ 10.00	\$ 3,000.00
18	14" Steel Casing, Bore & Jack	900	LF	\$ 160.00	\$ 144,000.00	\$ 140.00	\$ 126,000.00	\$ 193.09	\$ 173,781.00	\$ 10.00	\$ 9,000.00
19	14" Steel Casing, Open Cut	50	LF	\$ 55.00	\$ 2,750.00	\$ 80.00	\$ 4,000.00	\$ 93.29	\$ 4,664.50	\$ 100.00	\$ 5,000.00
20	12" Steel Casing, Bore & Jack	300	LF	\$ 120.00	\$ 36,000.00	\$ 120.00	\$ 36,000.00	\$ 136.01	\$ 40,803.00	\$ 150.00	\$ 45,000.00
21	6" Steel Casing, Bore & Jack	50	LF	\$ 85.00	\$ 4,250.00	\$ 60.00	\$ 3,000.00	\$ 118.78	\$ 5,939.00	\$ 100.00	\$ 5,000.00
22	Tapping Sleeve & Valve	39	EA	\$ 2,000.00	\$ 78,000.00	\$ 2,300.00	\$ 89,700.00	\$ 2,500.00	\$ 97,500.00	\$ 1,950.00	\$ 76,050.00
23	Cut & Plug Existing W.M.	52	EA	\$ 300.00	\$ 15,600.00	\$ 1,100.00	\$ 57,200.00	\$ 876.50	\$ 45,682.00	\$ 500.00	\$ 26,000.00
24	8" Gate Valve & Box	20	EA	\$ 1,400.00	\$ 28,000.00	\$ 1,300.00	\$ 26,000.00	\$ 1,411.84	\$ 28,236.80	\$ 1,200.00	\$ 24,000.00
25	6" Gate Valve & Box	35	EA	\$ 1,000.00	\$ 35,000.00	\$ 1,150.00	\$ 40,250.00	\$ 1,042.58	\$ 36,490.30	\$ 800.00	\$ 28,000.00
26	4" Gate Valve & Box	15	EA	\$ 700.00	\$ 10,500.00	\$ 850.00	\$ 12,750.00	\$ 839.14	\$ 12,587.10	\$ 750.00	\$ 11,250.00
27	3" Gate Valve & Box	10	EA	\$ 650.00	\$ 6,500.00	\$ 800.00	\$ 8,000.00	\$ 791.59	\$ 7,915.90	\$ 700.00	\$ 7,000.00
28	2" Gate Valve & Box	1	EA	\$ 1,600.00	\$ 1,600.00	\$ 500.00	\$ 500.00	\$ 681.41	\$ 681.41	\$ 600.00	\$ 600.00
29	Connection to Existing W.M.	18	EA	\$ 1,800.00	\$ 32,400.00	\$ 2,000.00	\$ 36,000.00	\$ 476.72	\$ 8,580.96	\$ 1,800.00	\$ 32,400.00
30	Additional Service Tubing	5,000	LF	\$ 10.00	\$ 50,000.00	\$ 7.50	\$ 37,500.00	\$ 8.50	\$ 42,500.00	\$ 7.00	\$ 35,000.00
31	Remove Existing Flushing Hydrant Assembly	10	EA	\$ 600.00	\$ 6,000.00	\$ 650.00	\$ 6,500.00	\$ 1,200.00	\$ 12,000.00	\$ 100.00	\$ 1,000.00
32	Clean up and restoration of disturbed areas	Sum of Total Bid Price of Item No.'s 1-31	%	LF	\$ 308,000.00	5.00%	\$ 145,837.50	5.00%	\$ 137,264.79	5.00%	\$ 136,868.75
<b>TOTAL BASE BID AMOUNT - (ITEMS No 1 - 32):</b>					<b>\$3,311,940.00</b>		<b>\$3,062,587.50</b>		<b>\$2,882,560.61</b>		<b>\$2,674,243.75</b>

\*Numbers in Red indicate errors in Contractor's Bid Amount Calculation

The above is a true and complete tabulation of the bids received on Thursday, August 9, 2018, 11:00 am  
 I certify that this is true and accurate tabulation of the bids.

Bluegrass Engineering, PLLC

By:   
 Paul Reynolds  
 Project Manager