

PRELIMINARY ENGINEERING REPORT

2019 WATER AND SEWER SYSTEM IMPROVEMENTS PHASE 18

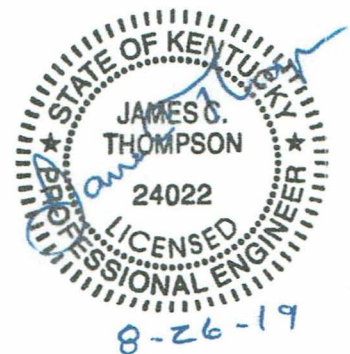
FOR THE

COLUMBIA/ADAIR UTILITIES DISTRICT

109 GRANT LANE

Columbia, Kentucky 42728

August 2019



**COLUMBIA/ADAIR UTILITIES DISTRICT
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PROJECT PLANNING

Adair County is located in south central Kentucky. The current population estimate is 19,215. The County's population has had steady increases since the 1970 census. The census counts since 1960 are show in the table below:

Census Year	Population	Percent Change
2010	18,656	8.2%
2000	17,244	12.3%
1990	15,360	0.8%
1980	15,233	16.8%
1970	13,037	-11.3%
1960	14,699	

The median household income per the American Community Survey five-year average of 2013-2017 is \$36,575 for the county.

The Columbia/Adair County Utilities District was created in 2009-2010 as a result of the combining the City of Columbia's water and wastewater with the Adair County Water District. The Adair County Water District was formed in 1971 and served the rural, unincorporated areas of Adair County. In 2003, Columbia and the Adair County Water District formed the Columbia/Adair County Water Commission to construct a new water treatment plant for both entities. The Commission is no longer viable with the combining of the City and Water District.

The District's service area is the city of Columbia and all of Adair County. The District currently has 7,972 water customers of which the majority - 7,283 are residential and 1,720 wastewater customers.

EXISTING FACILITIES

The facilities of CAUD are a combination of the former City of Columbia water and wastewater facilities and the distribution system of the former Adair County Water District.

The water treatment plant was constructed in 2008 and has a rated capacity of 5 MGD. There is room to expand the plant as needed.

The Distribution system consist of approximately 500 miles of line, eleven water storage tanks, and nine pump stations.

The wastewater treatment plant was constructed in 1959, has a rated capacity of 1.2 MPD and is in good condition.

NEED FOR PROJECT

CAUD wishes to extend a water line around the KY 55 Bypass. This will allow CAUD to serve this potentially high growth area with water. The water line on Liberty Road is a lower class rated pipe and as a result of this, the pump station serving the area must be run at lower than optimal pressure. This results in the pump station running more than would be necessary if the line was rated for higher pressures. The approximate 25 households on White Oak and Acree Road currently rely on groundwater wells or cisterns for water. By extending water to these two areas, a safer quality of water will be offered to these households. The installation of telemetry at various water facilities would give CAUD the ability to better control the function of these facilities and control water pressure, flow and ultimately water loss.

Currently, the CAUD has five influent pumps at its wastewater treatment plant. Three of the pumps are suction lift type pumps and are quite old. The suction piping on these pumps need repaired quite often. The other two pumps are submersible type and are in good condition. It would be better operationally if the 3 oldest pumps were replaced with the same type of pumps.

ALTERNATIVES CONSIDERED

The only alternative considered for the water main replacement would be to do nothing and continue to run the pumps at the lower pressure and long run times.

The alternatives to the extended water main around the by-pass are to do nothing which would could prevent growth in this area of the system and the other alternative would be to run individual water mains from alternate routes as users constructed buildings along the by-pass. This would be considerably more expensive as it would increase the overall linear footage required to serve the area as well as cost more per foot to install at different times.

The alternative for replacing the influent pumps at the WWTP would be to repair the existing piping and replace the existing pumps and motors. This would be a temporary solution as the other components of these pumps (electrical, controls, ventilation, etc.) are near the end of their useful life.

An environmental review will be undertaken to review the impact of the project on the environment. At this point in time no major impacts are expected. Most of the proposed activities will take place at existing facilities and the water line extensions will most likely be constructed on rights of way.

PROPOSED ALTERNATIVE

The proposed project consists of improvements to both the water and wastewater systems of CAUD. The improvements include:

- Installation of 8-inch water main around the KY 55 Bypass
- Replacement of approximately 2,800 LF of water main on Liberty Road
- Extension of water lines on White Oak and Acree Road
- Installation of telemetry on 19 existing sites; detailed listing is found in Appendix A
- Installation of 3 new influent pumps at the wastewater treatment plant

Should there be funds remaining after the bidding of the project, CAUD would consider the following additions to the project:

1. Replacement of Longhunter lift stations no. 1 and 2
2. Water line extensions on Corbin Richards Road, Canaan Land Road and Garman Road
3. Improvements to Carbon Feed System at the WTP

PROPOSED PROJECT SCHEDULE

The proposed schedule for the project is:

- Environmental Review complete and submitted: 11/01/2019
- Bid Advertising: 02/01/2020
- Construction Start: 04/15/2020
- Construction Complete: 08/30/2020

The total estimated cost for construction is \$2,031,500 with a total project cost estimate of \$2,592,930. The Engineer's detailed estimate of project cost is attached to this report as Appendix B.

It is expected that the for CAUD will institute a rate increase with this project. The proposed rates and additional financial data will be presented in the Summary Addendum to the Preliminary Engineering Report that will be submitted separately from this PER.

APPENDIX A

CAUD Facilities to Receive Telemetry & Location Coordinates:

1. Caldwell Tank 37°14'12" N 85°08'00" W
2. East 80 Tank 37°04'28" N 85°08'02" W
3. Water Treatment Plant 37°12'53" N 85°19'58" W
4. North 55 Meter 37°07'19" N 85°17'44" W
5. North 55 Control Valve 37°07'14" N 85°17'46" W
6. School Meter 37°06'12" N 85°19'28" W
7. Wal-Mart Tank and Pump Station 37°04'30" N 85°19'58" W
8. Pike Meter 37°05'39" N 85°19'03" W
9. Aces Control Valve 37°06'39" N 85°19'56" W
10. Aces Meter 37°06'43" N 85°19'47" W
11. Longhunters Meter 37°06'55" N 85°19'21" W
12. Industrial Park Tank and Pump Station 37°09'26" N 85°17'46" W
13. Shepherd Tank and Pump Station 37°08'57" N 85°11'34" W
14. Sparksville Tank 37°00'44" N 85°24'18" W
15. CAUD Office 37°07'06.88" N 85°17'58.69" W
16. Oshkosh Tank 37°05'07" N 85°17'41" W
17. Lindsey Wilson Tank 37°06'05" N 85°17'53" W
18. Appen Avenue Pump Station 37°05'36" N 85°17'40" W
19. Knifley Pump Station 37°12'12" N 85°08'08" W

APPENDIX B

