

Water System Master Plan Update 2021

3/16/21-Updates in Blue

The water system improvements currently underway are part of the 2013 Master Water and Wastewater Master Plan, and have roots to the 2009 Water Supply Master Plan and 2012 Arcadia Lake Yield Study. The first source of water decided during the Water Supply Plan said local water first which resulted in the Yield Study being performed on Arcadia Lake. During the Yield Study it was determined that Arcadia would supply 60% more water than was first anticipated when the lake was built. The original yield was 11 million gallons per day (MGD) and the new yield is 17.6 MGD. Both numbers are based on average annual use and not peak day usage. The peak use is considered when building the water system infrastructure and the lake is storage to accommodate peaks during summer months. This is also detailed in the Master Plan which is located at www.edmondwater.com at the bottom of the page.

The major water infrastructure currently in place was built when wells were drilled in the 50's population 6,000, and in the 70's population 16,000 and the water plant was constructed in the late 80's population 45,000. Edmond has more than doubled in size since the last major capacity was built for water supply. Additionally, in the late 90's an urgent need for additional water supply was realized and the pipeline and NW pump station was constructed to purchase water from OKC for our peak water use (outdoor use). Since then the water supply contract and rates with OKC have changed making it much more advantageous long term to build our own infrastructure as OKC will no longer serve only peak water use. We would not allow that type of use on our system and they are right to take that position.

When the lake was constructed the average daily flow design (yield) was 11.0 million gallons per day (MGD) and no peaking factor was used to allow the plant to expand as Edmond continued grow. That meant that the pipeline through the dam and all plant hydraulics were capped at the 11.0 MGD. No room to expand and no additional hydraulic capacity could be attained through the existing water intake structure or water treatment plant. When the original water treatment plant was built in the 1980s, it was built for less stringent water quality standards. Additionally, the plant was built with cheapest construction cost in mind and not the overall lifecycle costs. The costs to operate and maintain the complex equipment and chemicals within a treatment plant can exceed the cost of the treatment plant construction over the life of the assets. The original water treatment plant has high annual maintenance and operation costs per gallon treated.

During the design process for the water plant it was quickly realized that the existing water plant would not work with today's hydraulic design needs for current water quality regulations. The overall most cost-efficient path forward is to provide new treatment process structures and equipment while maximizing the use of existing pavement and holding basins. Maintaining a 30-year-old plant and trying to meet modern water quality parameters with it next to a new plant would be much more costly and challenging than building the capacity within a new plant.

March 2021 Update

Since the revised plan was approved by Public Works Committee and City Council back in June of 2019, Staff has been working towards implementing the revised plan. The following comprises where we are in the process as of March 2021:

1. **Phased in Plan**-move forward with the improvements but over a longer period of time. We can increase our reserves to pay partially with cash and utilize SRF funds to a greater extent. Other financing options will be explored as well. In order to spread the costs over the long term and not have water supply issues in the near term the following is proposed:
 - a. Move forward with the Control Building-The low bid was \$7,527,389 and this is being paid for from an SRF loan.
 - i. This is a main piece of the future water plant and is essential to have ready as the plant is brought on line. It will be key to any interim water plant projects that are proposed in this plan.
 - ii. The building houses the water treatment plant staff, well crew and data center.
 - iii. **The project is nearly 85% complete and expected to be finished by May 2021.**
 - b. Plan for drilling 20+ wells along transmission lines in the next year or so to stabilize and increase water supply. It is important to note that wells have and will continue to be an important drought proof water supply, and that they are in the Master Plan currently. There is roughly a \$12M cost associated with this but we can gain 4-5 MGD to get us by for the 10-year period until all improvements can be made to achieve capacity at the Water Plant.
 - i. **We continue to move forward with design on the new wells. The locations of the wells and numbers will be adjusted since the costs were significantly higher than first anticipated.**
 - ii. **The first package of 10 wells was awarded in January 2021 and drilling is set to start in April 2021. The first 10 wells and associated water lines were awarded for \$10,896,900.13.**

1. **Design is being finalized and we expect to bid in one or two separate projects in Spring 2022. Estimated cost \$15-18M.**
- ii. Ground Storage at I-35 complex,
 1. **Design is being finalized and we expect to bid by the Spring 2022. Estimated cost \$10M.**
- iii. the Intake Structure, and
 1. **The environmental permitting through the Corps of Engineers is nearly complete and we should bid fall 2021. Estimated cost is \$45M.**
- iv. other large diameter lines in the distribution system. Danforth from Soccer Fields to College area and 33rd Street from I-35 to Broadway.
 1. **The Danforth Waterline is out for bids currently and expect construction to begin in late Spring 2021. Estimated cost is \$12M.**
- v. 33rd Street water tower
 1. **In design and expected to bid in Spring of 2021. Estimated cost \$6M.**

2. Summary of the recommended path forward-March 2021

- a. Projects awarded
 - i. Water Plant Control Building-\$7,527,389-**85% Complete**
 - ii. **WTP-01A (Solids Handling Facilities)-\$38,174,538-25% Complete**
 - iii. **Drilling 10 Wells-\$9,603,786.31**
 - iv. **Well Transmission Lines-\$1,293,114**
- b. Move forward soon with design/construction of 20+ wells
 - i. Drill 20+ Wells for 5MGD Capacity
 - ii. Cutoff OKC Water after Wells are constructed-Annually \$1M in savings-Waiting on well drilling to be complete.
- c. Projects currently under design
 - i. Danforth Water Line (Soccer Fields to UCO)-**Estimated** at \$12M-**In the Bidding Phase.**
 - ii. Intake Structure-**Estimated** at \$40M-**Completing the permitting process through the Corps of Engineers.**
 - iii. Transmission Lines from Plant to I-35-**Estimated** at \$15M-**Bidding in 2022**
 - iv. Ground Storage at I-35 Pump Station-**Estimated** at \$10M-**Bidding in 2022**
- d. Other Projects to design and/or construct in the near term (1-3yrs)
 - i. 33rd Street Water Tower-**Estimated** at \$6M-**Bidding in Spring 2021.**
 - ii. 33rd St. Waterline from I-35 to Broadway -**Estimated** at \$10M-**Design contract awarded.**

- iii. Interim Water Plant Projects-**Estimated** at \$70-90M-**The next package is scheduled to bid in the Fall of 2021 to appropriately phase work on site. It will include the new high lift pump station, ground storage tanks at the WTP site, electrical building with generators, and new Granular Activated Carbon filters along with ancillary improvements. The cost will be between \$70-90M.**
- e. Water Plant Project 2023-2024
 - i. Build the 30MGD treatment capacity-**Estimated** at \$150-\$200M
 - 1. There is a wide range of estimated costs due to the unknown price escalation for the 4-5 year period.

3. Summary of 2013 Water Master Plan Project actual costs to date-

- a. NW Water Tower and pump station improvements-
 - i. Engineering-\$649,006
 - ii. Project Cost-\$5,893,000
- b. Danforth Water Tower
 - i. Engineering-\$517,920
 - ii. Project Cost-\$4,711,000
- c. Water Plant Projects (includes all listed projects under one design contract)
 - i. Engineering and Architectural Design-Total \$27,252,582
 - 1. Water Plant Control Building-
 - a. Project Cost-\$7,527,389
 - 2. Water Plant Interim Project (WTP-01A) -\$38,174,538**
 - 3. Water Plant Interim Project (WTP-01B)
 - 4. Water Treatment Plant (WTP-01C)
 - 5. Water Plant Intake
 - 6. Transmission Lines-WTP to I-35
 - 7. Transmission Lines-Intake to WTP
 - 8. Ground Storage at I-35 Pump Station
- d. Danforth Water Line Design
 - i. Engineering-\$737,110
- e. 33rd Water Tower (Includes 24" Water Line from Kelly to Broadway)
 - i. Engineering-\$738,470
- f. Well Project
 - i. Engineering-\$1,714,800
 - ii. 10 Wells-\$9,603,786.31**
 - iii. Transmission Lines for first 10 wells-\$1,293,114.**