



## Water System Master Plan Update 2022

### **4/30/22-Updates in Blue**

The water system improvements currently underway are part of the 2013 Water and Wastewater Master Plan. The Master Plan used the 2009 Water Supply Master Plan and 2012 Arcadia Lake Yield Study to make recommendations as to which improvements would need to be made for Edmond's long term water needs. 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 used as storage to accommodate peak water usage during summer months. This is also detailed in the Master Plan which is located at [www.edmondwater.com](http://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.

## **April 2022 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 April 2022:

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 to stabilize rates 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 online. 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, laboratory facilities and data center.
    - iii. The project is complete. The Well Staff has moved into the building and Water Operations will move in by July 2022.**
  - 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 and the goal is to 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 complete on the first 9 wells. One well had to be abandoned due to water quality issues. The contract amount was decreased by change order. The first 10 wells and associated water lines were awarded for \$10,896,900.13.**
  - iii. **The first 9 wells are set to be in production by summer of 2022.**
  - iv. **The next package of wells will be bid later in 2022 once more locations are permitted, and easements are acquired.**
- c. Evaluate the plant project and see where savings can be made up while spreading the costs over a 7-10 year time frame.
- i. We will evaluate what pieces of the plant can be separated out into smaller projects to attract more bidders and possibly bring prices down. We would look to possibly bid one or two projects at the water plant over the next year but they would not increase the water production capabilities, however they would get more pieces into place to make the rest of the plant project smaller overall.
  - ii. Possibly Break out one or two other interim projects to decrease the plant project size over the next couple of years.
    1. Two interim packages have been identified for bidding prior to the large water plant project.
    2. We received bids on the first package (WTP-01A) for Residual handling in May 2020. The estimate was for \$40M and the low bid was \$38.1M. **The project is approximately 75% complete and expected completion is in the October 2022.**
    3. **We received bids on the second package (WTP-01B) in March 2022. The estimate was for \$135M and the low bid was \$192M. 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. Construction is expected to start in July 2022 with a 42 month construction time.**
  - iii. Bid the rest of the plant project in 2023-24. We continue to evaluate the needs to ensure we are right sizing the project now while leaving room and planning for future expansions.

1. This project scope will be finalized once the next phase of the WTP is finished in design. **We expect to start design in July 2022 now that the WTP-01B project has been awarded. The final phase will include ozone treatment facilities, lime softening processes, filtration, and chemical storage for treatment processes. The projected bidding will be in 2023 with no date set at this time.**
- d. Cutoff OKC Water-annually \$1M savings. This would free up funds to build/drill the wells but may require some additional conservation measures in the summer peak months.
  - i. One of the options and most likely to happen will be reducing lawn watering from odd/even, which is currently mandatory year around, to twice per week or more stringent if needed.
    1. This will be completed once the well drilling project is complete.
- e. Move forward with all other pieces of the water system improvements as planned and move up a couple to the near term. The projects currently planned are:
  - i. transmission lines from the intake to plant and plant to I-35,
    1. Design is being finalized and we expect to bid in one or two separate projects in 2023 to lineup better with the second phase of water plant construction. Estimated cost \$15-18M.
  - ii. Ground Storage at I-35 complex,
    1. Design is being finalized and we expect to bid in 2023 to lineup better with the second phase of water plant construction. Estimated cost \$10M.
  - iii. the Intake Structure, and
    1. **The environmental permitting and easements through the Corps of Engineers are completed after 7 years of working through the process. Bids were received for the project in April 2022 for \$66.4M. The estimated cost was \$45M.**
  - iv. other large diameter lines in the distribution system. Danforth from Soccer Fields to College area and 33<sup>rd</sup> Street from I-35 to Broadway.
    1. **The Danforth Waterline is under construction and is expected to be complete in October 2022. Estimated cost was \$12M and the bids were \$9,167,511.**
    2. **The 33<sup>rd</sup> Street Waterline is in the design and easement acquisition phase and will generally run from I-35 to Broadway.**
  - v. 33<sup>rd</sup> Street water tower
    1. **The project bids were received and rejected due to market conditions causing the prices to increase. We will rebid the project in 2022.**

## **2. Summary of the recommended path forward-April 2022**

- a. Projects awarded
  - i. Water Plant Control Building-\$7,527,389-**100% Complete-Final Cost \$8,051,183.84**
  - ii. **First Phase of Water Plant Expansion-WTP-01A (Solids Handling Facilities)-\$38,174,538-75% Complete**
  - iii. **Second Phase of Water Plant Expansion-WTP-01B-\$191,898,860.62. This phase 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.**
  - iv. **Intake Structure-\$66,425,128.**
  - v. Drilling 10 Wells-\$9,603,786.31
  - vi. Well Transmission Lines-\$1,293,114
  - vii. Danforth Water Line (Soccer Fields to UCO)-**\$9,167,511-70% Complete.**
- b. Move forward soon with design/construction of 20+ wells
  - i. Drill 20+ Wells for 5MGD Capacity-**6 wells are designed and going through the permitting phase before bidding. Additional wells are being planned.**
  - 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. Transmission Lines from Plant to I-35-**Estimated** at \$15M-Bidding in 2023
  - ii. Ground Storage at I-35 Pump Station-**Estimated** at \$10M-Bidding in 2023
- d. Other Projects to design and/or construct in the near term (1-3yrs)
  - i. 33<sup>rd</sup> Street Water Tower-**Estimated** at \$6M-**Rebid in 2022.**
  - ii. 33<sup>rd</sup> St. Waterline from I-35 to Broadway -**Estimated** at \$10M-Design contract awarded.
- e. Water Plant Project 2023-2024
  - i. Build the 30MGD treatment capacity-**Estimated** at \$200M
    - 1. **Design to start in summer 2022.**

## **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-**\$8,051,183.84**
    - 2. Water Plant Interim Project (WTP-01A) -\$38,174,538
    - 3. Water Plant Interim Project (WTP-01B)-\$191,898,860.62**
    - 4. Water Treatment Plant (WTP-01C)
    - 5. Water Plant Intake (INT-01)-**\$66,425,128**
    - 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
  - ii. Project cost-\$9,167,511
- e. 33<sup>rd</sup> Water Tower (Includes 24" Water Line from Kelly to Broadway)
  - i. Engineering-\$738,470
  - ii. 24" Waterline from Kelly to Broadway-\$5,376,180**
- 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.