

Strategic Water Supply Plan Public Meeting #3
Minutes
March 13, 2013
6:30 p.m.

Attendance:

- Strategic Water Supply Plan Project Team: John Rehring and Amber Wooten
- Councilmembers: Mayor Rosenthal, Castleberry, Gallagher, Lockett
- Staff: Ken Komiske, Mark Daniels, Chris Mattingly, Charlie Thomas, Gay Webb

Mr. Komiske welcomed the public and Ad Hoc Committee members to the third public meeting of the Strategic Water Supply Plan (SWSP). This process is to help plan for our long term water needs through 2060.

Mr. Komiske introduced John Rehring and Amber Wooten with Carollo Engineers.

Project Overview and update on progress

Mr. Rehring gave a project overview. He explained the two phases of the planning process; the first phase focuses on supply options, individual sources that alone, may or may not be able to meet our long term water needs. The second phase of the process focuses on portfolios, different packages of water supplies that together, could meet our 2060 water demands. The first SWSP public meeting included the basis of planning, water demand projections, supply options and evaluation criteria. The second public meeting reviewed individual water supply options and screening. The meeting tonight will focus on different supply portfolios to meet long term water needs through 2060. The fourth public meeting will focus on results of revised portfolios and where we go from here. Ultimately, we will end with two or three preferred supply portfolios.

Review of supply options and evaluation criteria

Ms. Wooten reviewed the existing, new local and new regional supply sources. The supply sources were categorized and compared using supply availability, reliability, certainty and timeliness, and cost-effectiveness to determine which supply options ones were most viable to Norman.

Portfolio evaluations

Mr. Rehring explained the per-capita water usage calculation of 160 gallons per capita per day (gpcd) with a peaking factor of 1.9 and a peak day demand of 55 million gallons a day (mgd) projected in 2060 to be used in the planning process.

Mr. Rehring described the 12 portfolios that have been evaluated. All portfolios meet the 29.1 mgd annual average day demand and 55 mgd peak day demand in 2060. The annual costs are in present day dollars.

Portfolio 1 – Maximize local sources

Lake Thunderbird firm yield (6.1 mgd)

Existing wells treated for chromium 6 and arsenic (8.1 mgd)

Additional conservation + non-potable reuse (1 mgd + 0.8 mgd)

New Garber Wellington wells to meet deficit through approximately 2020 (0.7 mgd)

IPR – Thunderbird augmentation post 2020 (12.4 mgd)

Capital Cost - \$260 Million

Operations & Maintenance Cost - \$21 Million

Portfolio 2 – Minimize capital cost

Lake Thunderbird firm yield (6.1 mgd)

Existing wells treated for chromium 6 and arsenic (8.1 mgd)

Additional conservation + non-potable reuse (1.8 mgd)

Purchase treated water from Oklahoma City (wholesale) (13.1 mgd)

Capital Cost - \$ 140 Million

Operations & Maintenance Cost – \$53 Million

Portfolio 3 – Regional option with Oklahoma City treated water

Co-owner with Oklahoma City for treated water (29.1 mgd)

Capital Cost – \$410 Million

Operations & Maintenance Cost – \$24 Million

Portfolio 4 – Regional option with Oklahoma City treated water

Co-owner with Oklahoma City for raw water (29.1 mgd)

Capital Cost - \$440 Million

Operations & Maintenance Cost - \$24 Million

Portfolio 5 – Regional option with new reservoir

New out of basin reservoir (29.1 mgd)

Capital Cost - \$620 Million

Operations & Maintenance Cost – \$26 Million

Portfolio 6 – Regional option with Kaw

Kaw Lake (29.1 mgd)

Capital Cost - \$620 Million

Operations & Maintenance Cost - \$26 Million

Portfolio 7 – Hybrid portfolio with Oklahoma City treated water

Lake Thunderbird firm yield (6.1 mgd)

Additional conservation + non-potable reuse (1.8 mgd)

Co-owner with Oklahoma City for treated water (21.2 mgd)

Capital Cost - \$320 Million

Operations & Maintenance Cost - \$22 Million

Portfolio 8 – Hybrid portfolio with Indirect Potable Reuse

Lake Thunderbird firm yield (6.1 mgd)

Additional conservation (1 mgd)

Indirect Potable Reuse – Lake Thunderbird augmentation (17 mgd)

Purchase treated water from Oklahoma City (wholesale) (5 mgd)

Capital Cost – \$180 Million

Operations & Maintenance - \$34 Million

Portfolio 9 – Hybrid portfolio maximum groundwater

Lake Thunderbird firm yield (6.1 mgd)

Additional conservation + non-potable reuse (1.8 mgd)

Existing wells treated for chromium 6 and arsenic (8.1 mgd)

New Garber Wellington wells (with treatment) to meet 2060 deficit (13.1 mgd)

Capital Cost - \$360 Million

Operations & Maintenance - \$26 Million

Portfolio 10 – Hybrid portfolio with Parker Reservoir

Lake Thunderbird firm yield (6.1 mgd)

Existing wells treated for chromium 6 and arsenic (8.1 mgd)

Additional conservation + non-potable reuse (1.8 mgd)

Parker Reservoir to meet 2060 deficit (13.1 mgd)

Capital Cost - \$490 Million

Operations & Maintenance - \$25 Million

Portfolio 11 – Hybrid portfolio with Oklahoma City treated water

Lake Thunderbird firm yield (6.1 mgd)

Existing wells treated for chromium 6 and arsenic (8.1 mgd)

Additional conservation + non-potable reuse (1.8 mgd)

Co-owner with Oklahoma City for treated water (13.1 mgd)

Capital Cost - \$300 Million

Operations & Maintenance - \$22 Million

Portfolio 12 – Hybrid portfolio with Scissortail Reservoir

Lake Thunderbird firm yield (6.1 mgd)

Additional conservation (1 mgd)

Scissortail Reservoir to meet 2060 deficit (22 mgd)

Capital Cost - \$440 Million

Operations & Maintenance - \$22 Million

Mr. Rehring described the criteria used in the detailed evaluations and the scoring process.

The criteria included:

Affordability

Long-Term Supply Reliability Phasing Potential

Timely Implementation and Certainty

Phasing Potential

Efficient Use of Water Resources

Environmental Stewardship
Treated Water Quality Aesthetics
Community Values (Recreation, Aesthetics, and Property Rights)

After evaluating all twelve portfolios, the five portfolios that scored the best include:

- Portfolio 1 – Maximize local sources
- Portfolio 2 – Minimize capital costs
- Portfolio 8 – Hybrid portfolio with Indirect Potable Reuse
- Portfolio 9 – Hybrid portfolio maximizing groundwater
- Portfolio 11 – Hybrid portfolio with Oklahoma City treated water

Mr. Rehring explained once we obtain feedback tonight and identify other potential portfolios or different emphasis for those supplies, we will go back and, if necessary, identify new portfolios and go through the same analysis process and bring them back to public meeting number four where we will have what appears to be best two or three supply portfolios to build on.

Feedback and discussion on supply portfolios

Mr. Rehring answered the following questions:

- What is the basis for population projections and subsequent demand projections? The population projections were taken from the Norman 2025 Plan extrapolated out to 2060. We looked at historical percent growth per year, which varies quite a bit, and number of people per year, which is more consistent. Projected growth (people per year) from 2020 – 2025 was used to extrapolate population projections from 2025 – 2060. The population projections combined with the percent of Norman’s population served by city water and the gallons per capita per day were used to estimate 2060 water demands.
- What is the difference between the Oklahoma Comprehensive Water Plan (OCWP) Scenario I and Scenario II conservation levels? First, note that these estimated savings are in addition to conservation measures that Norman is already doing. Scenario I includes additional public education, further reductions in non-revenue water, and stronger conservation pricing (as more water is used, the cost per 1000 gallons of water increases). Generally Scenario I measures build on what Norman is already doing. Scenario II conservation measures are more aggressive and could affect lifestyles, including measures such as turf grass buy-back programs that may not be fully embraced or adopted by the community.
- How do you quantify items like reliability? We evaluated reliability in a number of ways. One was using information from the OCWP about projected water shortages in the raw water supply source basin. We also looked at reliability in terms of the diversity of supply sources in the portfolio. Additionally, we looked at the

- infrastructure that brings the raw water to Norman. Collectively, these tell us a lot about the reliability of a portfolio to meet Norman's long-term water needs.
- Did you evaluate the actual availability of water from Oklahoma City if we were to become a larger wholesale customer or a co-owner in the project? This was not explicitly evaluated: however, in 2009 Oklahoma City along with others looked at the availability and cost of bringing water from Southeast Oklahoma. This 2009 study showed that there is available raw water. There is still some uncertainty about which communities might participate in the project.
 - What about the tribal claims on Southeast Oklahoma raw water? There are ongoing mediation efforts surrounding Southeast Oklahoma water. This project does assume that eventually Oklahoma City's project will move forward, however, we have reflected the uncertainty associated with this supply in the portfolio scoring (for example, in timely implementation and certainty).
 - Will you expand on the Lake Thunderbird augmentation option specifically with regard to water quality impacts? A concern with this supply option is that Oklahoma Department of Environmental Quality (ODEQ) has not established the details of water quality requirements for indirect potable reuse (Lake Thunderbird augmentation). Lake Thunderbird is designated as a sensitive water supply. There is general language that says that you cannot degrade water quality of a sensitive water supply with permitted discharges. Central Oklahoma Master Conservancy District (COMCD) evaluated the augmentation of Lake Thunderbird with additionally treated reclaimed water (wastewater treatment plant effluent) in its 2012 study.
 - Was the uncertainty regarding ODEQ's actions factored into analysis? The uncertainty associated with this supply source is reflected in the timely implementation and certainty portfolio scoring.
 - What was assumed regarding the amount of reclaimed water Norman puts into Lake Thunderbird that could be recovered by Norman? This study assumes that the amount of water delivered to Lake Thunderbird will be recovered by Norman, minus losses due to evaporation and seepage. This assumption is based on our understanding of Oklahoma water law and precedents set by other states. Intentional indirect potable reuse is untested in Oklahoma. Norman may be asked to pay for a larger portion of Lake Thunderbird's operation and maintenance costs if they will be a bigger user.
 - This seems to like a big assumption. Norman would be taking its own reusable supplies and intentionally recharging Lake Thunderbird. That is significantly different from the original construction of the reservoir, where the three cities were allocated proportions of the yield from the reservoir from flows originating within the stream or watershed.
 - Why can we not use reclaimed water directly for potable supply? Some would argue that the technology to employ direct potable reuse (where reclaimed water is treated

- and then piped directly to the distribution system or to the water treatment plant) is available. However, it may not be the best option for Norman at this time. Storing water in a reservoir (like Lake Thunderbird) helps to buffer a relatively constant supply (reclaimed water) with a variable demand. Additionally, it provides dilution, some degree of natural attenuation, and an additional buffer between source and customer in case there is a water quality issue.
- Will we use more water consistently than we recover? Yes. During winter, we see 90% or more of water use coming back to the sanitary sewer, but that number is much lower in summer due to outdoor water use.
 - You included both purchasing raw and treated water from Oklahoma City initially, however you seem to include purchasing Oklahoma City treated water more in portfolios. Why was this decision made? At this point, we do not have enough information to distinguish between which Oklahoma City water option is best for Norman. Prior to becoming co-owner with Oklahoma City in the Southeast Oklahoma project or becoming a larger wholesale customer to Oklahoma City, more discussions and analysis need to be completed.
 - Of the top five portfolios, which one is most vulnerable to environmental changes, which is most vulnerable to political changes and which one is most vulnerable to economic changes? Assuming that environmental changes being discussed include both climate change and environmental disasters like hazardous spills, the portfolios that heavily depend on surface water are most vulnerable to climate change (although groundwater recharge can also be impacted). The Oklahoma Comprehensive Water Plan projections suggest that water supplies could be increased or reduced with climate change; there is significant uncertainty in those projections. Both surface water and groundwater supplies can be impacted by environmental accidents (e.g., via stormwater going into surface water). The portfolios that are least vulnerable to political changes are those that have supplies most within Norman's control, however you limit political vulnerability by having strong intergovernmental agreements on shared sources. Regarding economic vulnerability, capital cost is a function of the market (those with higher costs may be more susceptible to construction cost changes) while operation and maintenance costs are a function of the agreement (example wholesale customer to Oklahoma City). Additionally, high-energy requirements may increase economic vulnerability due to changes in energy costs.
 - Comment made it would be helpful if costs presented could be translated into a cost per customer. With the final two or three portfolios, implementation plans will be developed. At this point, we will have a cost per year of water. There are many ways that water can be paid for.
 - Has anyone talked to regulatory agencies about whether they will be writing rules that govern ownership of reclaimed water? This has not been done yet, however we know that COMCD is very interested in augmenting Lake Thunderbird immediately along

- with Oklahoma City, so the concept of augmenting Lake Thunderbird will continue to be pushed.
- Has limiting population been considered as part of the long-range water supply planning process? No, we used the Norman 2025 plan. Updates to this plan would be the place to address land use planning and growth planning. Water supply planning would need to be updated pending land use plan updates.
 - Have you looked at the possibility of building a new lake for Norman, how much would it cost and how big would the lake need to be? First, there are not good reservoir sites everywhere. As part of the OCWP, feasible reservoir sites with good yields were identified. The ones closest to Norman were Parker and Scissortail. Norman's potential costs for those are identified in the SWSP supply portfolios.
 - What needs to be done by others to implement some of these supply sources? Mr. Komiske responded that City staff is meeting with legislators, Oklahoma Water Resources Board and Oklahoma Department of Environmental Quality to discuss reuse and use of arsenic wells. The City is interested in moving forward on these options with the safety of our citizens as a priority.
 - Why is no one cleaning out Lake Thunderbird while it is low (trash removal) or dig it deeper? The firm yield of the lake assumes some amount of sedimentation allowance (meaning that having sediment fill in the lake to this level does not affect the available supply). As far as digging the lake deeper, it would be tremendously costly. It would not only have to be deeper but wider; which would have property implications so relative to other sources available, it does not look as viable compared to other options.
 - Has Lake Thunderbird been dredged for sediment? No, not to my knowledge. However the accumulation of sediment for that reservoir is built into the calculations of the yield of the reservoir. It will eventually need to be dredged to maintain that yield, but the lake is only 50 years old so we have not reached that point yet where it is impacting the yield beyond what the calculations say that it can produce.
 - Do you know how much it would cost to dredge Lake Thunderbird? Comment made that option of dredging Lake Thunderbird should be considered. Mr. Komiske responded we have not looked specifically at dredging Lake Thunderbird but we have relied on other engineering reports, such as a study in Texas, which indicated that in land rich areas, it is less expensive to build a new reservoir than it is to clean out or dredge an existing reservoir. Lake Thunderbird is 50 years old and lakes are usually built with a 100 year life so we have not reached the point of dredging. Additionally, you will need a considerable amount of land mass to dry the dredged material. It has been found to be cheaper to build a new reservoir.
 - Would you have to find area for excavated materials from construction of a new lake too? When you are trying to locate a new reservoir, you would look for an area that

- has natural topography that would provide adequate water storage volume (with new dam structure) that does not require significant excavating.
- Comment made advocating trash and debris removal should be done at times when Lake Thunderbird water level is down.
 - What is the difference in capacity of Lake Thunderbird now versus when it was built? Surveys are taken from time to time to determine if the sedimentation in the Lake is occurring at the rate they expect it to and it is currently on track. The yield we are allowed to take has not changed.
 - What will be the impact on the system if the drought continues? Mr. Komiske responded we are in our third year of the drought. Currently COMCD has instituted a mandatory 10 percent reduction in Lake Thunderbird use. We are following our conservation plan. Norman has implemented Stage 2 mandatory conservation (meaning odd/even watering, not watering on Wednesday and Thursday, reduced street sweeping, etc.). Should COMCD require further reductions, Norman would follow ordinances already in place and move to Stage 3 mandatory conservation, which would be one day a week watering.
 - We have been talking about the long-term water supply plan. What is the short-term (next 1 – 5 years) water plan? Mr. Komiske answered based on the last rate increase, all new wells and changes that were approved have been implemented (finishing expansion of transmission pipeline from Lake Thunderbird to the Water Treatment Plant and the first phase of the expansion of the Water Treatment Plant. There is not additional money available for new water supplies. We have made an agreement with Del City to purchase their excess water from Lake Thunderbird. Additionally, we have an agreement to purchase water from Oklahoma City on an emergency basis and if the water is available.

Mr. Komiske thanked those in attendance and encouraged citizens to provide feedback on this very important issue. He asked Mayor Rosenthal to make the closing remarks. Mayor Rosenthal announced there will be one more SWSP public meeting and strongly encouraged citizens to provide feedback to staff or Council on the different supply options and portfolios being presented. The Mayor also announced the Environmental Control Advisory Board will be co-sponsoring a public education meeting to be held in the Council Chambers on April 1st at 6:30 p.m. on ways individuals can adapt to the short-term water challenges in terms of plantings and things you can do at home to reduce your water consumption. The Mayor thanked the Ad Hoc Committee members and those in attendance.

The meeting adjourned at 8:25 p.m.

Items submitted for the record:

1. PowerPoint presentation entitled, 2060 Strategic Water Supply Plan Public Meeting #3, March 13, 2013