Strategic Water Supply Plan Public Meeting #4
Minutes
July 16, 2013
6:30 p.m.

The City Council of the City of Norman, Cleveland County, State of Oklahoma, attended the Strategic Water Supply Plan Public Meeting #4 at 6:30 p.m. at the Norman Municipal Building on the 16th day of July, 2013, and notice of the public meeting was posted at the Municipal Building at 201 West Gray 48 hours prior to the event. Although this meeting was not a regularly scheduled meeting of Council a quorum of Council was present; therefore, a summary of the meeting was recorded as required by the Open Meeting Act.

Attendance

- Strategic Water Supply Plan Project Team: John Rehring and Amber Wooten
- Councilmembers: Castleberry, Griffith, Heiple, Holman, Kovach, Miller, Williams, Mayor Rosenthal
- Staff: Ken Komiske, Mark Daniels, Chris Mattingly, Charlie Thomas, Scott Aynes, Gay Webb

Status and Progress Update

Mayor Rosenthal welcomed the citizens in attendance and television audience to the fourth and final scheduled public meeting of the Strategic Water Supply Plan (SWSP). This process is to plan for our intermediate and long term water supply future. The Mayor acknowledged and thanked the Ad Hoc Committee for their work and input over the last year during this process. The Mayor stated additional public meetings will be held as we move forward and refine these options. She encouraged citizens to let Council know their preferences, concerns and questions about the three water supply plan options that Council will be considering. Mayor Rosenthal introduced John Rehring with Carollo Engineers to lead the presentation.

Mr. Rehring thanked those in attendance and gave a brief overview of the SWSP process which began over a year ago. Seven Ad Hoc Committee meetings have been held and this is the fourth and final scheduled public meeting in the process. He stated the goal of this process has been to select the best two or three water supply portfolios and tonight we will discuss the three recommended options.

Mr. Rehring explained the process began by looking at existing supply sources, new local sources and new regional sources. Screening criteria was applied to the supply sources to determine which were more viable for Norman. The criteria used included: supply availability, reliability, certainty and timeliness, and cost-effectiveness. A short-list of supply options was then developed from the most viable and cost-effective options, which became "building blocks" for the water supply portfolios. A portfolio is a combination of different sources that together can meet our long term average water needs of approximately 29 million gallons per day (mgd) through 2060.

Recommended Portfolios

Fourteen supply portfolios were reviewed, taking into consideration capital costs, operational cost and the non-economic attributes outlined by the Ad Hoc Committee and Council. Of the fourteen reviewed, the final three portfolios that best meet our objectives include:

- Portfolio 1 – Maximizes local supplies
  Lake Thunderbird firm yield (6 mgd)
  Existing wells (8 mgd)
  Additional conservation and non-potable reuse (2 mgd)
  Lake Thunderbird Augmentation (13 mgd)
  Capital Cost – $250 Million
  Operations and Maintenance – $21 Million per year

- Portfolio 13 – Regional raw water (co-owner with Oklahoma City)
  Lake Thunderbird firm yield (6 mgd)
  Existing wells (8 mgd)
  Additional conservation and non-potable reuse (2 mgd)
  Regional supplies via Oklahoma City (13 mgd)
  Capital Cost - $340 Million
  Operations and Maintenance - $23 Million per year

- Portfolio 14 – New wells and Lake Thunderbird Augmentation
  Lake Thunderbird firm yield (6 mgd)
  Existing wells (8 mgd)
  New groundwater wells (2 mgd)
  Additional conservation and non-potable reuse (2 mgd)
  Lake Thunderbird Augmentation (11 mgd)
  Capital Cost - $270 Million
  Operations and Maintenance - $22 Million per year

Implementation Planning

Mr. Rehring discussed the implementation possibilities of each of the recommended portfolios to include: phasing, how capacity could be added over time and financing increments. Mr. Rehring concluded the presentation with a summary of key attributes of the three recommended portfolios and asked for questions from the audience.

Feedback and discussion

Mr. Rehring answered the following questions:

- On slide titled Use Already Exceeds Local Supply, what causes the drop in yellow dashed line (annual average supply)?

It is based on anticipated drop in allocation from Lake Thunderbird. The allocation is currently based on the reservoir's conjunctive yield (firm yield of the watershed plus groundwater wells), but we anticipate that the allocation will be reduced to the firm yield of the reservoir only. Right now, the yield of the wells is double-counted in our permits.

- What does "Lake Thunderbird Augmentation" mean? Please distinguish whether this is augmentation with water from Oklahoma City, reclaimed wastewater, etc.

  For the SWSP project, Lake Thunderbird Augmentation means using reclaimed, highly treated, wastewater effluent to increase the yield of Lake Thunderbird. We would then pump the additional water from Lake Thunderbird as a source of potable supply. In the SWSP project, raw water from Oklahoma City would not be stored in Lake Thunderbird.

- Why was there such a push from local agencies to get authorization from the Federal government to get permission to store raw water from Oklahoma City in Lake Thunderbird?

  The Lake was authorized for construction and storage of water originating in the Lake Thunderbird tributary area (i.e., its watershed). In light of Norman's forecasted increases in demand and existing limitations on Thunderbird's yield, Central Oklahoma Master Conservancy District (COMCD) sought approval for augmenting the lake's supplies, including releases from Oklahoma City supplies to Lake Thunderbird or from other future sources. Changing the allowable uses of Lake Thunderbird required an act of Congress.

- Why is there an initial steep jump in the demand projection, then a flat period, followed by a demand growth period? Are you saying that low flow fixtures are being replaced as they age (retrofit)? What is the source of population projections used in the SWSP?

  This pattern is caused by how demand projections were estimated in previous studies and the change to the projection method made in the SWSP project. For the SWSP project, we are using the highest per capita demand from recent years (accounts for drought and Norman's existing conservation programs) plus a 10 percent contingency (to account for potential new industries and other planning uncertainties). The flat portion of the projection is result of passive conservation measures (retrofits of older higher-flow fixtures, driven by plumbing code requirements). The passive conservation savings were derived from the Oklahoma Comprehensive Water Plan. They represent a gradual replacement of old, high water use fixtures, but the retrofits and water savings are expected to be in place by around 2030. The population projections are based on the Norman 2025 Plan.

The population is not projected to grow at a steady percentage each year, but generally, population is projected to grow by about 1,500 people each year.

- We have heard the Garber-Wellington aquifer may be losing water (withdrawal rate is higher than recharge rate). We are looking at 50-year planning period and should think beyond that too. What is the possibility of this supply not being available in the future?

  There are two aspects to consider when using groundwater as a supply source: quantity and quality. We have discussed some groundwater quality implications. Currently, the State of Oklahoma is studying the quantity of water that can be withdrawn (measured in acre-feet per year per acre of land dedicated) from the Garber-Wellington. (Norman currently uses groundwater under a permit with a temporary withdrawal rate.) Based on preliminary information, there will be a reduction in the permitted withdrawal rate. However, there is sufficient land available that Norman can choose to dedicate to groundwater wells (i.e., permit availability will not limit supply). However, just because you have a permit does not mean that you have water physically available to withdraw. Norman will need to continue to manage wells (well spacing, annual operation, etc.) to make sure that we do not see big reductions in well production.

- Understand Lake Thunderbird has a silting problem. How long will it be available?

  Lake Thunderbird's permitted yield already accounts for 100 years of assumed siltation. We are about half way through this period now. Analysis shows that siltation is on track with Bureau of Reclamation projections. The reliable yield assumes that 100 years of siltation has already occurred. Beyond about 2060 (when the 100 year period ends), siltation may cut back on available supply in drought years. There will be some tough decisions as this date approaches (dredging, raising lake, decreasing yield, etc.), but currently, no action is required to maintain the firm yield at Lake Thunderbird.

- If we do not tap into southeast Oklahoma water, is Texas likely to get it?

  The U.S. Supreme Court recently ruled in Oklahoma's favor in the north Texas agencies' litigation. This essentially gave Oklahoma the ability to control its own water supplies within the framework of the Red River interstate compact.

- Some of us are very concerned about conservation. The amount of conservation savings shown seems very small.

  Conservation is critically important in Norman (we saw this in feedback from Ad Hoc Committee members and during public meetings). The conservation savings build on Norman's current conversation programs. In communities with no

significant conservation, studies show that around a 10% reduction can often be achieved. However, in communities like Norman who have been proactive in implementing conservation, you would not expect to get this much of a reduction in demand. The 1 mgd presented here represents a 3% reduction in 2060 demand (in addition to what is already being done). If conservation takes hold more quickly, there is flexibility in plan to delay implementation of other supply sources. Norman is also planning an update to its Conservation Plan, which might drive further conservation efforts and programs.

- I am very concerned about maintaining local control. I did not see any reference to agreement made with Del City.

  The agreement with Del City is not a firm or permanent supply, but when it is available, it can be used.

- What do you mean when you refer to augmenting Lake Thunderbird? Is it possible to work with the Corps of Engineers to allow the lake level to rise and allow us to capture more water?

  See previous response regarding Lake Thunderbird augmentation. Around the country, some reservoir owners are conducting updated flood studies that may allow reallocation of water from the flood pool to the conservation pool where it could be used municipal purposes. Right now, we do not have authorization to store water in the flood pool. Updating the flood study would be expensive and complicated.

- Is anything in process now regarding an updated flood study?

  Not to my knowledge.

- The conservation projections seem low. I think that there is a lot more that can be done. I like Portfolio 14 because you can phase it in as you need it. For the pipeline from Lake Thunderbird to existing WTP, would it be designed for maximum flow (you would not want to phase this)?

  There is a current project that expands transmission capacity from Lake Thunderbird to the WTP to 17 mgd.

- What about the new pipeline from Lake Thunderbird to existing WTP under Lake Thunderbird augmentation?

  Yes, it would likely be constructed in a single phase, but because it is a shorter distance, it is not as costly to construct this all at once (relative to the 100-mile Atoka pipeline parallel).

- Supply slides through 2060 show a steady use of Lake Thunderbird yield, but you said that yield factored in 100 years of siltation. Why doesn't the use change over time as siltation occurs?

  When Bureau of Reclamation did its yield study, it assumed that 2060 siltation has already occurred. Norman's allocation of yield assumes that full 2060 siltation has occurred even though it is only part way there. The supply use was held constant at Norman's portion of the firm yield from Thunderbird.

- How do you augment the lake when silt is filling up the lake already?

  It is not a question of filling up the lake when it is full but of adding water to the lake when the water level is low (it is the "bottoming out" of the lake's conservation pool water level that dictates firm yield).

- We are using "reclaimed" water to mean highly treated wastewater. What makes it safe is that we are mixing it with lake water. However, there is less and less water in the lake.

  The relative proportion of effluent in the lake remains small, and we have included processes to make discharges to the lake be very high quality.

- Oklahoma Department of Environmental Quality (ODEQ) has shown no hint of approving augmentation. How can we count on this source?

  I wouldn't characterize it as "no hint" of approval. The City is in discussions with ODEQ along with other cities who are interested in augmenting sensitive water supplies. We are already doing something similar with users downstream of S. Canadian who use water from the river as a source of potable supply. It is common practice in other states and there is regulatory precedence in the United States. There are on-going discussions about this with ODEQ. Conservation and reuse are part of the Oklahoma Comprehensive Water Plan (OCWP). The Legislature adopted a resolution to use the same amount of fresh water in 2060 as was used in 2012. The only way this happens is if conservation/reuse is implemented. ODEQ has not come out with indirect potable reuse plans (IPR), but we are working with them to do so.

- If we put a lot of our eggs in one basket while waiting for ODEQ, do we risk losing the opportunity to form a regional partnership with Oklahoma City?

  Oklahoma City has not set a date for regional partners to make a commitment to the project. Oklahoma City may ultimately add a third parallel pipeline in the future. If we decide to collaborate with them, it may change the date of that future pipeline. This is all something that will need to be negotiated with Oklahoma City.

- Would it not be possible for Norman to have more aggressive conservation plan?

  Yes, it is possible and should be reflected in an updated conservation plan. For planning, we need to be conservative and prepare for potential worst-case conditions. We have a flexible plan that allows for delaying other projects if conservation is adopted more rapidly or widely than is assumed here. For planning purposes and looking at other communities, it seems that 1 mgd is a reasonable planning number.

- This is a 50-year plan, but nowhere in plan is addressed the issue between serving non-potable demands with potable water. Right now, we treat all water like drinking water even though there is a large percentage of water used that we do not drink. Is there a reason that we did not include ultimate separation of potable non-potable water?

  Each recommended portfolio includes additional direct non-potable reuse (DNPR). It helps us cut back peak day demand (5 mgd of 55 mgd for 2060). However, DNPR systems are expensive to implement in developed areas. It is essentially a parallel pipe system going through urbanized areas. You often see them implemented in new developments near the source of supply (water reclamation facilities). The SWSP reframed the question to ask we have an effluent source, how do we use it efficiently? This is reflected in Lake Thunderbird augmentation (IPR) options. Communities are finding that a single pipe augmenting a supply source and a single diversion to existing treatment and distribution piping is much more cost effective than DNPR parallel systems. In recommended portfolios, you are seeing a combination of these efficient uses of resources.

- When we build new developments, we should keep this in mind – require division between potable/non-potable supplies.

  We need to keep in mind the ability to get from source (WRF) to the new development. Should the city choose, the DNPR system proposed is expandable. It is a question of whether expanding purple pipe is better use of resource than other options (like IPR).

- Why can we not pump arsenic contaminated water into Lake Thunderbird where it can be diluted (alternative way to augment Lake Thunderbird)?

  It is a question of what is the best way to use existing offline wells. We have shown here bringing these wells into a new centralized treatment facility. The United States Geological Survey (USGS) recently completed a study that looked at pumping arsenic wells into tributaries to mitigate arsenic on its way to Lake

Thunderbird. The study showed some promise but raised some concerns. The USGS is continuing to study this issue.

- When you talk non-potable water, are you talking gray water?

  Gray water refers to water collected from showers, sinks, etc. and used at the household level – different from use of treated effluent from a water reclamation facility.

- We are building 1,000 houses in north Norman. If you put gray water from all of these houses, you have maybe 80,000 gallons of water you can save. I did not see this in any of options discussed. It seems that conservation is something that we can do with stricter rules. Why isn't this been included for new homes?

  That absolutely could be used as part of updated conservation plan and Norman's future. Overall, it will not replace one of the larger projects that we need to do in the future.

- State bill 252, chapter 627 (water reuse regulations). I read it in great detail but it does not include drinking water. Did they pull out drinking water, did they not consider it, was it expunged in committee? Do you know why it wasn't included?

  Potable reuse brings a lot of concerns that we need to take care of (concerns that are not there for non-potable reuse). They held category 1 in reserve with intention of developing indirect potable reuse guidance. There is quite a bit of interest at the state level and in communities driving ODEQ to develop indirect potable reuse regulations.

- Demand growth at 1,500 per year results in about a year 2050 growth of 65% whereas graphs show water use up to 90% growth.

  Per capita use first was founded on the recent higher per capita use (reflects existing conservation savings, but also the need to meet dry year demands). It also includes a 10% reserve (ready for emergency or industry growth). Demand growth is function of population growth but is also impacted by what percentage of Norman's population is on city's water. In past we have shown high/low demand projections. Tonight we focused on the high demand projection (conservative sizing) that reflects 100% of residents are on city water service.

- Regarding chromium-6 and arsenic: we have already treated one well for arsenic. We can do that now. California has been treating for chromium-6 for years. Are you saying that it is 10 years down the road before we can do this here? Technology is improving (reverse osmosis, ultraviolet light) and it is capable of taking out pharmaceuticals, fecal, Cr6, etc., from water. We could treat wells now

and have more water now. All wells are not contaminated with chromium-6, was this a general statement?

Absolutely, we can treat individual wells for arsenic. However, it is debatable whether it is cost effective and operationally practical to treat wells individually. As technology develops, it becomes more cost effective to treat for arsenic, chromium-6, and other future potential regulated items. What we see is that the most effective and efficient way to address this is to bring wells together for treatment. Once centralized treatment and collection is in place, it makes sense to treat water from the currently inactive arsenic wells also. California does not have chromium-6 regulations, but the state is expected to issue them and is expected to issue them before the federal regulations. For the SWSP, we anticipated federal regulations in 2018. Depending on federal regulated level and using available data on Norman's wells, it is anticipated that a majority of wells will require chromium-6 treatment.

- Staying local is cheapest way. You sight 12% weighting ratio here for cost but I think that you have made an error in saying that cost is only 12% important. It seems more like 20%. Also, aren't bonds shown going to be about 25% higher than what is shown for paying bondsman?

  Costs we assumed for bond issuance are included here. The 12% weighting is based on feedback from Ad Hoc committee members, City Council members, Mayor, and city staff that chose to participate in the paired comparison exercise. We have not seen statistics indicating such a high percentage of bond fees, and there are other funding avenues (e.g., state revolving fund low-interest loans).

- Is there a way to consider which portfolio offers us more flexibility? Won't technology continue to change?

  Flexibility is factored into both phasing potential and timely implementation. Technology impacts treatment for any of these sources but technology changes are unlikely to change the availability of supply. There is uncertainty but our job is to sort through uncertainties, make best decision that we can, then continue to update the plan as we know more.

- It looks like there is excess capacity phased in early years (for Portfolio 13), is there a reason that it is not delayed to more closely match demands?

  In Portfolio 13, we participate as co-owner with Oklahoma City and need to build the pipeline at one time. We build a significant portion of capacity up front. Beyond that, the increases occur in community interest areas of DNPR. This could be delayed, depending on community interests. Buying into Oklahoma City raw water infrastructure sets a course of where we get a big portion of supply long-term (but does not significantly affect treatment decisions).

- I think that we are overlooking what we are going to do with tribal issues. The tribe has not decided what to do about Lake Sardis. It could be 50 years before that is decided. I believe that OWRB bought Sardis from Federal. What did OKC pay for Sardis water rights? If it is all federal, why can we not just buy Lake Thunderbird? We need to make non-potable mandatory.

  Acknowledged comments.

- From Oklahoma City to the Arkansas state line, the change in rainfall is equal to the change in rainfall between Arkansas to the east coast. If you want water, you go east.

  You can see that when we looked at regional sources, we did not look to western Oklahoma.

- I assume Oklahoma City makes money off supplying water to others.

  They are allowed to cover costs. There is some economy of scale in large regional projects.

- There is quite a bit of interest in conservation. I like that you are planning for supply reserve and are being conservative in demand projections. The way you pay for some of these projects are not necessarily bonds. Did the voters authorize OWRB an additional $300M that they can use for loans?

  Essentially, this authorization is for an expansion of their existing low cost loan program. It puts the State's resources as loan guarantees for borrowers. This translates to issuing more low interest loans. This is definitely a tool in our financial toolbox.

- What about groundwater recharge? Tucson has engineered wetlands that are marvelous. Their recharge does not include drilling new wells. They ripped ground about 5-feet where most of bacteria exist. They recharge using big ponds located on the ripped land. Arizona also has dual pipe system. Why can't something like this be implemented here?

  Arizona has sandy soils that are more conducive to percolating water than the clay soils that we have here and actually limit percolation. Arizona also has regulatory precedent for recharging groundwater with treated effluent. Oklahoma does not. When it does come, we anticipate that the regulations will be more stringent than what will be required to augment surface water.

- What about using wetlands? We have Little River running quite a distance into Lake Thunderbird. For several years, I have been trying to talk about engineered

wetlands (There is available land near Franklin and 60th.) Has anyone been talking about using these?

The applicability would be adding engineered wetlands as part of IPR treatment process. Our industry has found that getting reliable, year-round treatment from wetlands in order to meet discharge permits is challenging. It is possible to get good treatment in summer and poor or no treatment in winter.

The meeting adjourned at 8:45 p.m.

Items submitted for the record:

1. PowerPoint presentation entitled, 2060 Strategic Water Supply Plan Public Meeting #4, July 16, 2013

ATTEST:

Brenda Hall
City Clerk

Cindy S. Rosenthal
Mayor

CITY OF NORMAN CORPORATE SEAL OKLAHOMA