

**Lower Colorado Regional Water Planning Group
Water Management Strategies Meeting
AECOM, Treaty Oak Conference Room
June 17, 2019**

1. Lauri Gillam called meeting to order at 10:11 a.m.

2. Attendees (18)

Committee Members:

Lauri Gillam – Region K, Small Municipalities Rep, Water Management Strategies Committee Chair

Daniel Berglund – Region K, Small Business Rep

David Wheelock – Region K, River Authority Rep

Karen Haschke – Region K, Public Rep

Barbara Johnson – Region K, Industries Rep

Teresa Lutes – Region K, Municipalities Rep

Jennifer Walker – Region K, Environmental Rep

Additional Attendees:

David Bradsby – Region K, TPWD Rep

Christianne Castleberry – Region K, Water Utilities Rep (Alternate)

Helen Gerlach – Region K, Municipalities Rep (Alternate)

Rebecca Batchelder – Region K, River Authority Rep (Alternate)

Lann Bookout – TWDB

Alicia Smiley – AECOM

Kiera Brown – AECOM

Shelby Eckols – AECOM

Stacy Pandey – LCRA

Heather Rose – LCRA

Danny Bulovas – Public – Lake Travis

3. Public Comments

a. None.

4. Minutes Approval

a. Draft of April 10, 2019

i. David Wheelock requested changes to 5.b.i. and 9.a.ii.

1. 5.b.i. Delete the sentences *“Canal seepage can be measured, and it was found that the natural clay barrier has a water loss comparable to that of concrete lined canals. Issues with the canals stem from cattle damaging the clay barrier.”*

2. 9.a.ii. Change “...are already addressed with strategies like Brush Management” to “...and other items affecting the hydrologic response of the watershed, are included in the measured runoff data used for Region K planning, and this data includes the effects over the most recent eight years of the period of record, which is also the drought of record.”
- ii. David Wheelock requested update to task listed in 5.e.iii. Consultant is currently working on listed spreadsheet.
- iii. Jennifer Walker requested change to 6.a.i.3.
 1. Change “Defer to Water Conservation goals, if applicable” to “Defer to individual utility Water Conservation Plan goals, if applicable.”
- iv. Teresa Lutes requested change to 7.b.
 1. Clarify to read, “Teresa Lutes requested adjustments for City of Austin. COA’s regular standard of practice is no more than one day a week watering – along with other reduction measures built into day-to-day use – and it may not be possible to reach an additional 20% reduction with already considerable conservation embedded in standard practice.”
- v. Jennifer Walker motioned to approve the minutes with the changes. Lauri Gillam seconded. Committee passed.

5. Municipal Drought Management

a. Criteria

- i. Unless indicated by the WUG’s Drought Contingency Plan (DCP) or requested by the WUG itself, the following methodology was applied:
 1. If Base GPCD >100, then 20% Reduction Amount Applied
 2. If Base GPCD <100, then 5% Reduction Amount Applied

b. Discussion

- i. Updated public outreach costs from 2016 Plan: \$66/ac-ft/year. Consultant is waiting on the TWDB Socioeconomic Impact Analysis of Unmet Needs to determine costs to utilities based on reduced water sold.
- ii. Jennifer Walker asked which WUGs did not follow the basic methodology. Consultant indicated the provided spreadsheet of GPCD Reduction Amount by WUG accounted for individual DCPs under “severe” drought restrictions.

6. Austin Requested Water Management Strategy Evaluations

a. Aquifer Storage and Recovery (ASR)

i. Strategy Definition and Cost

1. ASR stores surplus treated water from the Colorado River in the Carrizo-Wilcox Aquifer.
2. Online: 2070; Yield: 60,000 ac-ft/yr; Capital Costs: \$363,910,000; Annual Cost: \$28,461,000; Unit Cost: \$474/ac-ft/yr

ii. Discussion

1. Teresa Lutes requested the startup decade for the strategy be updated from online in 2070 to online in 2040.
 2. Danny Bulovas asked how annual costs were determined, and if the listed \$28 million annual cost would continue indefinitely.
 - a. Consultant clarified the “largest annual cost” was composed of:
 - i. Operational costs
 - ii. The annualized total project cost (assuming a debt service period of 20 years)
 - b. After the end of the period of debt service to repay facility construction costs, the annual cost is composed of only the annual operational cost.
 3. Danny Bulovas asked if the \$/acre-foot/year was provided for each strategy for comparison purposes. The consultant confirmed that this was correct.
 4. Heather Rose asked if the energy pumping costs for both extraction and injection wells were included in the ASR cost estimate. Consultant confirmed that costs were included in the costs provided by the Austin Water Forward plan.
 5. David Wheelock asked if the cost of water treatment was included, given that treated water was proposed for injection into the storage aquifer. Wheelock indicated that the provided Cost Summary listed \$0 for water treatment. Consultant indicated that O&M costs were taken as a lump sum from the Austin Water Forward Plan and listed as a single line item in the Cost Summary.
 - a. Consultant will separate O&M costs by type (e.g. pumping energy, water treatment, pipeline maintenance, etc.) for this strategy and all other Austin strategies.
 6. Jennifer Walker indicated that the language provided in the presentation (“Increased pumpage of Colorado run-of-river water maintains SB3 and LCRA WMP environmental flow standards”) was not accurate, as these flows are not necessarily continuously present. However, Walker indicated that the language describing environmental flows in the provided strategy write-up text was satisfactory.
- b. Off-Channel Reservoir (OCR) and Evaporation Suppressant
- i. Strategy Definition and Cost
 1. Divert surplus Colorado Run-of-River flows to off-channel reservoir and apply biodegradable evaporation suppressant during summer months.
 2. Online: 2070; Yield: 25,000 ac-ft/yr; Capital Costs: \$343,937,000; Annual Cost: \$32,903,000; Unit Cost: \$1,316/ac-ft/yr
 - ii. Discussion

1. In 2014, TWDB ran a pilot test of proposed evaporation suppressant by application to Lake Arrowhead in Wichita Falls. The final report suggested that, with an 87 percent statistical level of confidence, the suppressant reduced evaporation.
2. David Wheelock requested that Evaporation Suppression be included in the RWP as its own strategy for any reservoir. Consultant confirmed that a separate scope item for a Reduced Lake Evaporation strategy exists and can be expanded for other reservoirs given a project sponsor.
3. Daniel Berglund proposed solar panel coverage as a potential method for Evaporation Suppression.
4. Daniel Berglund asked why the unit cost (\$/AFY) for OCR was greater than the unit cost for ASR. Teresa Lutes clarified that this difference was due to a higher yield for ASR, as compared to OCR. Lutes indicated that the ASR yield (60,000 acre-ft/yr) may need to be adjusted to reflect that, while 60,000 acre-ft/yr could be withdrawn in a single year, the average yield would be lower, assuming extraction over multiple years of drought.
5. Karen Haschke requested to know the location for the wellfields for the ASR strategy and the reservoir for the OCR strategy. Teresa Lutes indicated that the location of these infrastructures was not yet identified.
6. David Wheelock requested that all strategies make clear whether water produced is raw or treated, as the unit cost of untreated water would more often be less expensive.

c. Onsite Rainwater and Stormwater Harvesting

i. Strategy Definition and Cost

1. Lot/building-scale capture and storage of roof and other impervious surface runoff.
2. Online: 2040; Yield (2040): 1,800 ac-ft/yr; Yield (2070): 4,900 ac-ft/yr; Capital Costs: \$204,167,000; Annual Cost: \$16,393,660; Unit Cost: \$3,346/ac-ft/yr

ii. Discussion

1. Barbara Johnson asked if developers would be required to implement rainwater and stormwater harvesting. Teresa Lutes indicated that a combination of ordinances and incentives are in development to achieve the desired yields for this strategy. At this phase, ordinance is proposed for developments >250,000 SF.
2. Teresa Lutes requested the startup decade for strategy be updated from online in 2040 to online in 2030. Lutes indicated that she would provide a 2030 yield to the Consultant.

3. Daniel Berglund asked if rainwater was 100% reliable, given its nature to be inconsistent. Consultant will confirm that rainwater availability is calculated for DOR conditions for consistency with other strategy assumptions.
- d. Capture Local Inflows to Lady Bird Lake
- i. Strategy Definition and Cost
 1. Capture available flows through Lady Bird Lake and route to Ullrich water plant intake. Some infrastructure for this strategy would be utilized from the Indirect Potable Reuse (IPR) through Lady Bird Lake strategy. Total capital costs for both strategies are assigned to IPR; total operational costs for both strategies are assigned to Capture Local Inflows.
 2. Online: 2040; Yield: 1,000 ac-ft/yr; Capital Costs: \$0; Annual Cost: \$6,383,250; Unit Cost: \$6,383/ac-ft/yr
 - ii. Discussion
 1. City of Austin to provide a sketch of water flow for inclusion in the strategy write-up.
 2. David Wheelock asked why this strategy is separate from Indirect Potable Reuse (IPR). IPR strategy is proposed for use in a drought worse than the drought of record, whereas Capture Local Inflows to Lady Bird Lake would be used in non-drought and drought years.
 3. Jennifer Walker indicated that this strategy could influence environmental flows and that the LCRA may need to supply more water to achieve environmental flows. Walker requested that the strategy write-up be updated to reflect these concerns.
- e. Indirect Potable Reuse (IPR) through Lady Bird Lake
- i. Strategy Definition and Cost
 1. Highly treated South Austin Regional (SAR) WWTP effluent is routed to Ullrich water plant intake. Total capital costs for IPR and the Capture Local Inflows through Lady Bird Lake strategies are assigned to IPR; total operational costs for both strategies are assigned Capture Local Inflows. This strategy would only be utilized when combined storage of Lake Buchanan and Travis is below 400,000 ac-ft.
 2. Online: 2040; Yield: 11,000 ac-ft/yr; Capital Costs: \$90,405,000; Annual Cost: \$6,361,000; Unit Cost: \$318/ac-ft/yr
 - ii. Discussion
 1. Heather Rose asked if the strategy would cause pollutant accumulation over time, and if annual costs included advanced treatment to address pollutant accrual. Teresa Lutes responded that modeling showed continued dilution and would not impact water quality and the costs

include advanced treatment for removal of pollutants associated with wastewater effluent.

2. Daniel Berglund asked how the IPR treatment system would account for mercury accrual. Teresa Lutes responded that pollutant levels for IPR are a concern that would need to be addressed, but that IPR is only to be used when the total combined storage of Lakes Buchanan and Travis are below 400,000 acre-ft, a condition worse than experienced in the drought of record.

f. Lake Austin Operations

i. Strategy Description and Costs

1. Strategy would allow Lake Austin to be operated with a varying level if Lake Travis and Buchanan combined storage falls below 600,000 ac-ft. Local flows would be captured during storm events and stored for use.
2. Online: 2020; Yield: 2,500 ac-ft/yr; Capital Costs: \$0; Annual Cost: \$545,000; Unit Cost: \$218/ac-ft/yr

ii. Discussion

1. No proposed changes.

g. City of Austin Conservation

i. Strategy Description and Costs

1. Austin has a more aggressive conservation program than most WUGs and has made significant advances in reducing per capita water use.
2. Online: 2020; Yield (2020): 4,910 ac-ft/yr; Yield (2070): 40,620 ac-ft/yr; Capital Costs: \$514,560,000; Annual Cost: \$54,569,000; Unit Cost: \$1,343/ac-ft/yr

ii. Discussion

1. Stacy Pandey asked if water loss control could be listed separately – either as a separate strategy or a separate line item – from the Conservation strategy. AECOM will coordinate with Austin to see if that information is available.

7. Burnet County Regional Project Strategy Evaluations

- a. Three projects detailed in the 2011 Burnet-Llano County Regional Study were strategies updated for the 2021 RWP:

b. Buena Vista

i. Strategy Definition and Costs

1. Project would use Burnet's existing raw water intake (RWI), water treatment plant (WTP), and 18" transmission main. The RWI, WTP, and pump station would be expanded to serve Burnet and County-Other communities in Burnet County. LCRA contracts or contract amendments would be needed.

2. Project Yield:
 - a. Burnet – Online: 2030; Yield (2030): 1,000 ac-ft/yr; Yield (2040): 2,000 ac-ft/yr
 - b. Burnet County-Other (Brazos) – Online 2030; Yield (2030): (500 ac-ft/yr); Yield (2040): 1,000 ac-ft/yr
 - c. Burnet County-Other (Colorado) – Online: 2030; Yield (2030): 565 ac-ft/yr; Yield (2040): 1,884 ac-ft/yr
 3. Capital Costs: \$28,886,000; Annual Cost: \$5,546,000; Unit Cost: \$1,136/ac-ft/yr
- ii. Discussion
 1. No proposed changes.
- c. East Lake Buchanan
- i. Strategy Definition and Costs
 1. Strategy to provide surface water to portions of County-Other in Burnet County whose current groundwater supplies are unreliable and contaminated with radionuclides. New raw water intake would pump to a regional water treatment plant near Bonanza Beach, along the northeast side of Lake Buchanan. Pump station and transmission mains would deliver water to Council Creek Village and other participants in the area.
 2. Project Yield:
 - a. Burnet County-Other (Colorado Basin) – Online: 2030; Yield (2030): 498 ac-ft/yr; Yield (2040): 935 ac-ft/yr
 3. Capital Costs: \$11,925,000; Annual Cost: \$1,830,000; Unit Cost: \$1,957/ac-ft/yr
 - ii. Discussion
 1. Jennifer Walker asked why no return flows were assumed for this strategy. David Wheelock indicated that TCEQ regulations prohibit discharges into the Highland Lakes.
- d. Marble Falls Regional Water System
- i. Strategy Description and Cost
 1. Strategy to serve growth in Burnet County for Marble Falls and portions of County-Other (Colorado Basin). New raw water intake, pump stations, and water treatment plant upstream of Max Starcke Dam. New transmission mains and new storage tanks to serve future developments.
 2. Project Yields:
 - a. Marble Falls – Online: 2030; Yield: 4,000 ac-ft/yr
 - b. Burnet County-Other (Colorado) – Online: 2030; Yield: 1,578 ac-ft/yr

3. Capital Costs: \$56,608,000; Annual Cost: \$8,010,000; Unit Cost: \$1,436/ac-ft/yr

ii. Discussion

1. Jennifer Walker asked if there are any shared facilities for the strategies covered in the Regional Study like there are for the Capture Local Inflows to Lady Bird Lake/IPR through Lady Bird Lake strategies. Consultant confirmed none are shared.

8. STPNOC Strategy Evaluations

a. Alternate Canal Delivery

i. Strategy Definition and Cost

1. Strategy will allow higher quality water to be pulled from the Colorado River and transported to the STPNOC cooling tower reservoir. Strategy involves construction of pipeline and pump station to transport from existing LCRA irrigation canals to reservoir.
2. Online: 2030; Yield: 12,727 ac-ft/yr; Capital Costs: \$18,127,000; Annual Cost: \$3,384,000; Unit Cost: \$266/ac-ft/yr

ii. Discussion

1. Stacy Pandey recalled a regulatory issue with using the existing pump station for this strategy. Strategies can still be recommended in the Plan if they have legal impediments, but it would be good to note it in the strategy write-up.
2. Jennifer Walker requested that the environmental impacts section be updated to say environmental flows may be impacted as a result of changing the location of the diversion point.

b. Brackish Surface Water Blending

i. Strategy Definition and Cost

1. During an emergency, STPNOC and LCRA will pursue relief from TCEQ to be able to pump brackish surface water to blend in with the existing fresh water in the STPNOC reservoir.
2. Online: 2020; Yield: 3,000 ac-ft/yr; Capital Costs: \$0; Annual Cost: \$0; Unit Cost: \$0/ac-ft/yr

ii. Discussion

1. No proposed changes.

9. Municipal Conservation

a. Progress to-date: WMS Committee and RWPG voted on and approved the following methodology to be applied to all municipal WUGs:

1. If the 2020 GPCD is greater than 140, apply a 10% GPCD reduction per decade until 140 GPCD is reached.
2. If the 2020 GPCD is less than 140, no conservation considered.

3. Defer to individual utility Water Conservation Plan goals, if applicable.
- b. Discussion: Costing Assumptions
- i. To obtain more realistic costs for municipal conservation, the methodology for the 2016 RWP cycle was updated. Separated into capital and non-capital costs, the assumptions are as follows:
 - ii. Capital Cost Measure Assumptions
 1. Advanced Metering Infrastructure (Smart Meters)
 - a. 3 people per household; 100% of households will install smart meters in the next 50 years; Installation of smart meters reduces demand by 5%; Smart meter cost is \$270 per meter.
 - b. Daniel Berglund requested justification for the 5% demand reduction achieved by smart meters. Jennifer Walker indicated that there are large water savings from early leak detection and behavioral changes because of live tracking.
 - c. Stacy Pandey recommended the addition of an online portal to track customer usage, like that used by the LCRA, as a requirement. The LCRA requires customers to use the portal in order to access grants.
 2. Leak Detection and Replacement
 - a. 10% of pipeline is replaced (pipe length from TWDB Water Loss Audit (WLA); 80% of the replaced pipeline is 8", 20% is 12"; Anticipated demand reduction of 3%.
 - b. Stacy Pandey recommended including 4" and 6" replacements in the costing, as these size lines are common for smaller WUGs. Jennifer Walker suggested this may be due to the WLA only listing WUGs with >3,300 connections.
 - c. The WLA does not cover all municipal WUGs, so the Region K Consultant does not have pipe length for all WUGs with conservation as a recommended strategy.
 - iii. Non-Capital Cost Measure Assumptions
 1. Remaining per decade reduction is due to non-capital actions. Non-capital cost measures include implementing standards, incentives, and education and outreach. This assumption was used in the 2016 RWP cycle. Consultant assumed \$250/ac-ft saved.
 - iv. A breakdown of capital costs using the TWDB costing tool was provided as an example for West Travis County PUA and Johnson City.
 1. David Wheelock requested that the O&M for pipeline replacement be 0%, with a footnote indicating that no additional maintenance costs are incurred by replacement lines that would not already be incurred from the existing line.
 2. Jennifer Walker requested that water loss control (line replacement) and advanced metering infrastructure be listed separately – either as

separate strategies or separate line items – from the Municipal Conservation strategy. Consultant will investigate separating out the costing in separate tables under the same strategy, as the projects are still municipal conservation.

10. New / Other Business

- a. Jennifer Walker requested a strategy status tracking spreadsheet and a timeline of deadlines, particularly those for WUGs to get information to AECOM, to obtain an overall picture of what remains in the planning cycle.
- b. At the July 10 RWPG meeting, Lann Bookout will present on House Bill (HB) 807, new legislation that affects the regional planning process. Barbara Johnson requested information on HB 2486, which forces Houston to sell its water rights to the Brazos River Authority.
- c. David Wheelock asked for status on Chapter 7, and whether a Drought Management Committee will be necessary for this cycle's process. AECOM is currently waiting on Drought Preparedness Council recommendations to be released for incorporation into the Chapter. Once released, one committee meeting may be desired to go over details of Chapter and make any updated recommendations.
- d. Jennifer Walker and David Wheelock asked when the quantitative analysis will be completed for strategies environmental and socioeconomic impacts, and when Joe Trungale will perform modeling. Joe Trungale is currently developing strategy model for evaluating impacts. He will be performing the modeling over the next few months.
- e. Goal is to complete all draft strategies in time for October Region K meeting.

11. Next Meeting

- a. The next RWPG meeting will be July 10, 2019 at 10:00 a.m. at the LCRA Dalchau Service Center.
- b. The next WMS meeting will be after RWPG meeting in the beginning of August. Consultant will bring additional strategies for WMS committee to review. Potential strategies may include, but are not limited to, LCRA strategies, expand local use of groundwater, development of new groundwater supplies, and municipal conservation.

12. Public Comments

- a. None.

13. Lauri Gillam adjourned at 1:12 p.m.