

# Region K WMS Committee Meeting

August 8, 2019



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## Agenda

1. Call to Order
2. Welcome and Introductions
3. Receive public comments
4. Approval of meeting minutes
5. Status update on water management strategy evaluation scope of work
6. Discussion of strategy water modeling options with respect to yield and environmental impacts
7. Presentation and discussion of draft Municipal Conservation strategy
8. Presentation and discussion of draft BS/EACD Edwards/Middle Trinity ASR and Saline Edwards ASR strategies
9. Presentation and discussion of draft Rainwater Harvesting strategy
10. Update and discussion of draft Expand Use of Local Groundwater and Development of New Groundwater strategies
11. Update and discussion of draft Irrigation Conservation strategies

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## Agenda

12. **Update and discussion of draft Reuse strategies**
13. **New / Other Business**
14. **Schedule next meeting**
15. **Public Comments**
16. **Adjourn**

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## **STATUS UPDATE OF WATER MANAGEMENT STRATEGY EVALUATIONS**

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5. Status Update on Strategy Evaluations					
Strategy	WUG	Strategy Type	New, Update, or Limited Update	Date Started	Status
Drought Management	All municipal WUGs and Irrigation with needs	Drought Management	New	7-Mar-19	Municipal under RWPG review; Irrigation not started
Advanced Water Conservation	Municipal utilities other than City of Austin	Conservation	New	7-Mar-19	ready for Committee review
Aquifer Storage and Recovery	Manville WSC	Aquifer Storage and Recovery	New		No longer requesting - no other project sponsors
BS/EACD – Edwards/Middle Trinity ASR	Buda, Sunset Valley	Aquifer Storage and Recovery	Update	5/15/2019	ready for Committee review
BS/EACD – Saline Edwards ASR	Buda, Hays County-Other	Aquifer Storage and Recovery and Desalination	Update	5/15/2019	ready for Committee review
East Lake Buchanan Project	Burnet County-Other	Surface water infrastructure	Limited Update	4/16/2019	under RWPG review
Buena Vista Regional Project	Burnet County WUGs (County-Other and potential others)	Surface water infrastructure	Limited Update	4/16/2019	under RWPG review
Marble Falls Regional Project	Marble Falls, Burnet County-Other, other potential WUGs	Surface water infrastructure	Update	4/16/2019	under RWPG review
City of Austin Conservation	Austin	Conservation	Update	4/22/2019	under RWPG review
City of Austin Onsite Rainwater and Storm Water Harvesting	Austin	Rainwater harvesting	Update	4/22/2019	under RWPG review
Capture Local Inflows to Lady Bird Lake	Austin	Other surface water	Limited Update	4/17/2019	under RWPG review
Lake Austin Operations	Austin	Drought Management	Limited Update	4/17/2019	under RWPG review
Reduced Lake Evaporation	Austin, potentially others with a reservoir	Other	Update / New	4/17/2019	Austin - under RWPG review; others not identified yet
STP Nuclear Operating Company (STPNOC) Alternate Canal Delivery	Steam-Electric (Matagorda Co.)	Other surface water	Limited Update	4/18/2019	under RWPG review
STPNOC Brackish Surface Water Blending	Steam-Electric (Matagorda Co.)	Other surface water	Limited Update	4/18/2019	under RWPG review
City of Austin Off-Channel Reservoir and Evaporation Suppression	Austin	Off-Channel Reservoir	New	5/1/2019	under RWPG review
Rainwater Harvesting	Municipal utilities other than City of Austin	Other surface water	New	7/1/2019	ready for Committee review
Reuse (Indirect Potable Reuse through Lady Bird Lake)	Austin	Indirect Potable Reuse	Update	4/30/2019	under RWPG review
City of Austin ASR	Austin	Aquifer Storage and Recovery	Update	5/1/2019	under RWPG review

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5. Status Update on Strategy Evaluations					
Strategy	WUG	Strategy Type	New, Update, or Limited Update	Date Started	Status
Advanced Water Conservation	Irrigation in Lower Basin	Conservation	New	7-Mar-19	in progress
Expand Use of Groundwater	Multiple	Expand use of existing GW supply sources	New	5/15/2019	in progress
Development of New Groundwater Supplies	Multiple	Development of multiple aquifers.	New	5/15/2019	in progress
Brackish Groundwater Desalination	Austin	Groundwater Development	New	5/13/2019	ready for internal review
Groundwater Importation – Hays County Pipeline	West Travis County PUA, Hays County-Other, and other potential WUGs	Groundwater Development	Update	8/1/2019	Coordinating with Region L
Groundwater Importation – Alliance Regional Water Authority Pipeline	Buda and potential other Hays County WUGs	Groundwater Development	Update to 2016 Plan HCPLUA Pipe Line Strategy	8/1/2019	Coordinating with Region L
City of Austin Blackwater and Greywater Reuse	Austin	Reuse	Update to 2016 Plan Other Reuse strategy with new component	4/22/2019	pending data from Austin
City of Austin Decentralized Direct Non-Potable Reuse	Austin	Reuse	Update to 2016 Plan Other Reuse strategy with new components	5/9/2019	pending data from Austin
Community-Scale Stormwater Harvesting	Austin	Other surface water	New	5/1/2019	pending data from Austin
Oceanwater Desalination	LCRA, possibly others	Seawater desalination	New	7/15/2019	in progress
Reuse (direct reuse)	Marble Falls	Reuse	Update	4/22/2019	in progress
	Horseshoe Bay	Reuse	Update	4/22/2019	in progress
	Buda	Reuse	Update	4/22/2019	in progress
	Burnet	Reuse	New	4/22/2019	in progress
	Blanco	Reuse	New	4/22/2019	in progress
	Dripping Springs WSC	Reuse	New	4/22/2019	in progress
	Fredericksburg	Reuse	New	4/22/2019	in progress
	Lago Vista	Reuse	New	4/22/2019	in progress
	Lakeway MUD	Reuse	New	4/22/2019	in progress
	Meadowlakes	Reuse	New	4/22/2019	in progress
	Travis County WCID 17	Reuse	New	4/22/2019	in progress
	West Travis County PUA	Reuse	New	4/22/2019	in progress
Reuse (Direct Potable Reuse)	West Travis County PUA	Direct Potable Reuse	New	5/2/2019	in progress
Downstream Return Flows	Buda	Direct Potable Reuse	Update	4/22/2019	in progress
LCRA - Prairie Site Off-Channel Reservoir	LCRA	Other surface water	Update	6/7/2019	ready for internal review
City of Wharton Water Supply Strategy	LCRA	New Major Reservoir	Update	6/25/2019	in progress
	Wharton	Reuse, Other surface water, Other	Update	6/10/2019	in progress

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## 5. Status Update on Strategy Evaluations

Strategy	WUG	Strategy Type	New, Update, or Limited Update	Status
LCRA Aquifer Storage and Recovery (ASR) In Carrizo-Wilcox	New supply for LCRA	Aquifer Storage and Recovery	Update	not started
Brackish Groundwater Desalination	LCRA	Groundwater Development	New	not started
Groundwater Importation – Carrizo-Wilcox to LCRA System	New supply for LCRA	Groundwater Development	Update	not started
Brush Management	Marble Falls, Burnet County-Other, other potential WUGs	Other WMS	Limited Update	not started
Water Supply Infrastructure Development or Expansion	Any WUG with sufficient sw or gw contracts/permits, but lacking infrastructure to deliver the water	Water Supply Infrastructure (Other WMS)	New	not started
City of Austin Centralized Direct Non-Potable Reuse	Austin	Reuse	Update	not started
Reservoir Capacity Expansion	Llano, possibly others	Other surface water	New	not started
City of Austin Return Flows	Austin, Irrigation, Steam-Electric, LCRA	Other surface water	Update (requires modeling and coordination with Austin)	not started
New LCRA Contracts	Need to determine	Other	New	not started
New LCRA Contracts Requiring Infrastructure	Need to determine	Other	New	not started
LCRA Contract Amendments	Need to determine	Other	New	not started
LCRA Contract Amendments Requiring Infrastructure	Need to determine	Other	New	not started
New Water Purchase Strategy	Need to determine	Other	New	not started
New Water Purchase Strategy Requiring Infrastructure	Need to determine	Other	New	not started
Water Purchase Amendments	Need to determine	Other	New	not started
Water Purchase Amendments Requiring Infrastructure	Need to determine	Other	New	not started
Amendment to Existing Water Rights/Permits	LCRA, COA	Other	Update	not started
LCRA - Mid-Basin Off-Channel Reservoir	LCRA	New Major Reservoir	Update	not started
LCRA - Excess Flows Off-Channel Reservoir	LCRA	New Major Reservoir	Update	not started
LCRA Baylor Creek Reservoir	New supply for LCRA	Off-Channel Reservoir	Limited Update	not started
Supplement Bay and Estuary Inflows with Brackish Groundwater Thereby Replacing Demands on LCRA Highland Lakes Firm Yield	New supply for LCRA	Brackish Groundwater Development	Limited Update	not started
Amendments to LCRA Water Management Plan	LCRA, Irrigation (interruptible water)	Other	Update	not started
Import Return Flows from Williamson County	LCRA	Other surface water	Update	not started
Enhanced Recharge and Conjunctive Use	LCRA	Other	Update	not started
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# DISCUSSION OF STRATEGY WATER MODELING OPTIONS – YIELD AND ENVIRONMENTAL IMPACTS

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## 6. Discussion of strategy water modeling options

### ▼ Previous Discussion - July Region K meeting

- Strategies that may require WAM modeling
  - LCRA ASR in Carrizo-Wilcox
  - Austin Off-Channel Reservoir with Evaporation Suppressant
  - Reservoir Capacity Expansion (for Llano and possibly others)
  - Austin Return Flows
  - Austin ASR
  - LCRA New Contracts and Contract Amendments
  - Amendments to Existing Water Rights/Permits
  - LCRA Mid-Basin Off-Channel Reservoir
  - LCRA Prairie Site Off-Channel Reservoir
  - LCRA Excess Flows Off-Channel Reservoir
  - Amendments to LCRA Water Management Plan (Interruptible Water)
  - Import Return Flows from Williamson County
  - Enhanced Recharge and Conjunctive use

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## 6. Discussion of strategy water modeling options

### ▼ Previous Discussion - July Region K meeting

- Questions for WAM modeling (discussion)
  - Austin has done extensive modeling for their strategies as part of the Austin Water Forward Plan development. Do we need to do modeling as well with the Region K Cutoff Model for these?
  - Environmental Impacts
    - A number of strategies are diverted under existing water rights, although in some cases water right amendments will be needed.
    - TCEQ environmental flow standards are embedded in the modeling.
    - TWDB wants to see numerical quantitative impacts.
    - How do we show impacts?
      - » Negligible?
      - » Last cycle we stated that the impact was that the strategy allowed up to a certain amount of water to be diverted from the river that otherwise wouldn't have been.
      - » Positive impacts could be shown that water diverted during wetter times and stored means less water needs to be diverted during drier times.
      - » More detailed results showing changes to flow volumes during either DOR or non-drought years or both?

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## 6. Discussion of strategy water modeling options

### ▼ Additional discussion

- Environmental impacts
  - Salinity levels in Bay?
  - Other analysis (within scope)?
- Region K Cutoff Model – strategy version
  - Yields
  - Reservoir modeling – similar to Arbuckle where yield is based on increase to run-of-river water right availability?
- Last cycle
  - Did some modeling, but did not include most of it in the Plan. Stated quantitative impacts based on diversions from the river in non-drought years. A few strategies had the yields based on the TCEQ WAM with assumed junior water right status.
- Questions?

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# PRESENTATION AND DISCUSSION OF DRAFT MUNICIPAL CONSERVATION WATER STRATEGY EVALUATION

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## 7. Municipal Conservation

- ▼ Draft strategy evaluation write-up ready for committee review
  - Methodology
  - Table on outdoor watering restrictions included
    - Shown for information – in some cases, savings are greater than water savings assumed for strategy yield.
  - Conservation measures listed (ones with capital and non-capital costs)
  - Table showing water savings by WUG
  - Costs broken into multiple tables – Leak Detection and Repair, Advanced Metering Infrastructure, and Total Costs (includes non-capital measures)
  - Environmental impacts discussed.
  - May add language referencing HB 807 requirement in Plan.

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# PRESENTATION AND DISCUSSION OF DRAFT BS/EACD ASR WATER MANAGEMENT STRATEGY EVALUATIONS

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## 8. BS/EACD Edwards/Middle Trinity ASR

- ▼ Strategy to use water from the Edwards BFZ Aquifer and store it in the Middle Trinity Aquifer for later use.
  - Update to 2016 Plan strategy
  - Separate projects for Buda (Hays County) and Sunset Valley (Travis)
    - Buda has completed a feasibility study and expects to begin a pilot study in fall 2019. Facilities expected online in 2020.
    - Sunset Valley has requested keeping this strategy in the 2021 Plan, but has not moved forward with it. Assume online by 2030.
    - Infrastructure includes extraction wells from the Edwards BFZ Aquifer with transmission lines, new treatment facilities (minimal treatment), injection-extraction wells for the Middle Trinity Aquifer, and transmission pump stations and pipelines.
    - Yield: Buda – 150 AFY (2020); 600 AFY(2030-2070)  
Sunset Valley – 100 AFY (2030-2070)

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## 8. BS/EACD Edwards/Middle Trinity ASR

- ▼ Strategy to use water from the Edwards BFZ Aquifer and store it in the Middle Trinity Aquifer for later use.

### – Costs

WUG Name	County	River Basin	Total Facilities Cost	Total Construction Cost	Largest Annual Cost	Unit Cost (\$/ac-ft)
Buda	Hays	Colorado	\$6,475,000	\$9,086,000	\$781,000	\$1,302
Sunset Valley	Travis	Colorado	\$3,825,000	\$5,401,000	\$449,000	\$4,490

### – Environmental / Ag Impacts

- Environmental permitting needed; may remove water from the aquifer during non-drought years that otherwise wouldn't be removed. Negligible impacts during drought.
- Negligible impacts to agriculture and other natural resources

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## 8. BS/EACD Saline Edwards ASR

- ▼ Strategy to use water from the Edwards BFZ Aquifer and store it in the Saline Edwards Aquifer for later use. Recovered water will be blended with water directly from the Saline Edwards to increase yield.
  - Update to 2016 Plan strategy
  - Assumed joint project for Buda (Hays County) Hays County-Other
    - No real movement forward on this strategy at this time. Assume 2040 for project to come online.
    - ASR location assumed to be Texas Disposal Systems site in Creedmoor, TX.
    - Infrastructure includes extraction wells from the fresh Edwards BFZ Aquifer with transmission lines and pump station, new injection treatment facilities (minimal treatment), injection wells for the Saline Edwards Aquifer, extraction wells for the recovered water and from the Saline Zone water, desalination treatment facilities, concentrate injection wells in to the Saline Zone, and transmission pump stations and pipelines.
    - Yield: Buda – 800 AFY (2040-2070)  
Hays County-Other – 500 AFY (2040-2070)

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## 8. BS/EACD Saline Edwards ASR

- ▼ Strategy to use water from the Edwards BFZ Aquifer and store it in the Saline Edwards Aquifer for later use. Recovered water will be blended with water directly from the Saline Edwards to increase yield.

### – Costs

WUG Name	County	River Basin	Total Construction Cost	Total Capital Cost	Largest Annual Cost	Unit Cost (\$/ac-ft)
Buda	Hays	Colorado	\$12,399,000	\$17,166,500	\$2,102,100	\$2,629
County-Other	Hays	Colorado	\$7,762,000	\$10,746,500	\$1,315,900	\$2,629

### – Environmental / Ag Impacts

- Environmental permitting needed; may remove water from the aquifer during non-drought years that otherwise wouldn't be removed. Negligible impacts during drought. Desalination facilities require greater energy demands and produce more greenhouse gas emissions. Brine concentrate.
- Negligible impacts to agriculture and other natural resources

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# PRESENTATION AND DISCUSSION OF DRAFT RAINWATER HARVESTING STRATEGY EVALUATION

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## 9. Rainwater Harvesting

- ▼ Considered for municipal WUGs other than Austin.
  - Hays County-Other, Dripping Springs WSC, Hays (Hays County)
  - Sunset Valley (Travis County)
  - Strategy assumes that rebates will be provided to private homeowners who construct a rainwater harvesting system on their property to meet a portion of their water needs. Rebates are not assumed to cover the cost of the entire system.
  - Assumption that 10 percent of households will implement the strategy by 2030.
  - Uses 2011 rainfall to calculate water savings.
    - Small savings increasing over time with population growth. (less than 100 ac-ft/yr)
  - Costing looked at current rebate programs and made assumptions for the future.
    - Unit costs in Hays County ~ \$630/ac-ft
    - Unit cost for Sunset Valley ~ \$4,000/ac-ft
    - Project cost = facilities cost since it is a rebate program.
  - Environmental Considerations
    - Negligible due to small amounts, but in general, can reduce flooding by capturing runoff.

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Agenda Item 10

## **UPDATE AND DISCUSSION OF DRAFT EXPAND USE OF LOCAL GROUNDWATER AND DEVELOPMENT OF NEW GROUNDWATER STRATEGY EVALUATIONS**

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### **10. Expand Use of Local Groundwater**

- ▼ Expand Local Use of Groundwater involves pumping additional groundwater from an aquifer that the WUG is currently using as a source, either using the WUG's existing wells or drilling additional wells.
- ▼ Methodology:
  - Listed all WUGs with a demonstrated need (demand > supplies)
  - Identified all aquifers the WUG could access
    - If WUG currently uses aquifer, classified as "Expand Use of Local Groundwater"
    - If WUG does not draw from aquifer, classified as "Development of New Groundwater Supplies"
  - Individual Considerations:
    - Source water balance
    - Requested by WUG
    - Strategy listing in 2016 RWP
    - Other strategy options available to WUG

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## 10. Expand Use of Local Groundwater

- ▼ Similar to previous cycles, we break the strategy down by aquifer.
  - Carrizo-Wilcox
  - Edwards BFZ
  - Ellenburger-San Saba
  - Gulf Coast
  - Sparta
  - Trinity
  - Yegua-Jackson
- ▼ We then break each aquifer down by WUG, County, and Basin.
- ▼ We use the source balance (the difference between the MAG and the volume of water allocated for existing supplies) in order to not exceed the availability of each aquifer. No MAG Peak Factors have been used.

## 10. Expand Use of Local Groundwater

- ▼ In general, strategy volumes less than 100 ac-ft/yr are assumed to be within the additional pumping capacity of existing wells, and capital costs for new wells are not required.
  - Only increased energy cost is used for costing.
  - For irrigation in the Lower Basin, should different assumptions be made regarding whether a new well is needed, since strategy volume would be applied over many wells and many users across each county/basin?
    - Gulf Coast Aquifer strategy volumes range from 300 ac-ft/yr to 8,000 ac-ft/yr
  - For irrigation, should groundwater well strategies requiring capital costs come online in 2020 or wait until 2030?
- ▼ For strategy volumes requiring new well construction
  - # of wells determined using TWDB Costing Tool for the largest volume of water supplied.
  - Wells assumed to be same size, same elevation, 80% efficiency.
  - Peaking factor of two (2).
  - Assumptions of well capacity and depth were made by reviewing historical well data for wells located in proximity to each WUG.

## 10. Expand Use of Local Groundwater

- ▼ WUGs with specific details regarding project will be identified and specifics will be documented. (Bertram, for example)
- ▼ Environmental impacts identify drawdown of aquifer relative to staying within the Desired Future Conditions, and what that drawdown is.
  - It is assumed that using water within the stated available yield should result in negligible impacts to springflows, but aquifer levels and springflows should be monitored.
- ▼ Generally, impacts to agriculture are negligible, based on staying within the MAG. Strategies providing supply to agriculture show a benefit to agriculture.
- ▼ Completing evaluations for Committee to consider.
- ▼ In some cases, a WUG may plan to use more water from the aquifer than the planning process shows as available. In order to recommend the strategy for the WUG, we use a smaller volume of water.
  - There is also the option to develop an alternative version of the strategy that uses more water than is available under the MAG.

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## 10. Development of New Groundwater

- ▼ Development of New Groundwater involves drilling wells to pump groundwater from an aquifer that the WUG is currently not using as a source.
- ▼ Same methodology as Expand Use of Local Groundwater:
  - Listed all WUGs with a demonstrated need (demand > supplies)
  - Identified all aquifers the WUG could access
    - If WUG currently uses aquifer, classified as "Expand Use of Local Groundwater"
    - If WUG does not draw from aquifer, classified as "Development of New Groundwater Supplies"
  - Individual Considerations:
    - Source water balance
    - Requested by WUG
    - Strategy listing in 2016 RWP
    - Other strategy options available to WUG

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## 10. Development of New Groundwater

- ▼ Similar to previous cycles, we break the strategy down by aquifer.
  - Ellenburger-San Saba
  - Gulf Coast
  - Hickory
  - Marble Falls
  - Trinity
  - Yegua-Jackson
- ▼ We then break each aquifer down by WUG, County, and Basin.
- ▼ We use the source balance (the difference between the MAG and the volume of water allocated for existing supplies) in order to not exceed the availability of each aquifer. No MAG Peak Factors have been used.

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## 10. Development of New Groundwater

- ▼ All require new well construction
  - # of wells determined using TWDB Costing Tool for the largest volume of water supplied.
  - Wells assumed to be same size, same elevation, 80% efficiency.
  - Peaking factor of two (2).
  - Assumptions of well capacity and depth were made by reviewing historical well data for wells located in proximity to each WUG.
  - Assumption of a new well site, 5 miles of transmission piping, and that WUG has existing available storage capacity
- ▼ WUGs with specific details regarding project will be identified and specifics will be documented.

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Agenda Item 11

# UPDATE AND DISCUSSION OF IRRIGATION CONSERVATION WATER MANAGEMENT STRATEGY EVALUATIONS

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## 11. Irrigation Conservation

Strategies	Considered in 2016?	Full, Limited or Initial Evaluation?
Tail Water Recovery	No	Full
Sprinkler Irrigation	Yes	Limited
Irrigation Operations Conveyance Improvements	Yes	Limited
Real-time Metering/Monitoring with SCADA	No	Initial
Drip Irrigation for Non-Rice Crops	No	Initial
On-Farm Conservation - Precision Land Leveling	Yes	Full
On-Farm Conservation - Multiple Field Inlets	Yes	Full
On-Farm Conservation - Reduced Levee Intervals	Yes	Full

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## 11. Irrigation Conservation

### ▼ Sources:

- National Agricultural Statistics Service (NASS) – 2017 Census of Agriculture (total cropland by county)
- NASS – 2017 Planted Acres (by county)
- Natural Resources Conservation Service (NRCS) – improved acres (by county)
- Irrigation Demand Memo for developing projections by Daniel Berglund and David Wheelock

### ▼ Tail Water Recovery

- Capture, storage, and conveyance of a portion of the irrigation field return flows back into the irrigation system
- Status: preliminary strategy write-up (in review)
- Methodology/Assumptions:
  - Determined acreage of unimproved cropland in use per year
  - Assumed 5 percent of unimproved land in use will be improved with tail water recovery systems per decade
  - Savings rate (1.61 ac-ft/ac) and costing was assumed from the 2010 LCRA Water Supply for Agriculture report, a supplement to the LCRA Water Supply Resource Plan (WSRP)
- Savings up to 18,516 ac-ft/yr by 2070; Unit cost: \$482-\$485/ac-ft

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## 11. Irrigation Conservation

### ▼ Sprinkler Irrigation

- Application of sprinkler irrigation to rice as an alternative to flooding fields
- Status: preliminary strategy write-up (in review)
- Methodology/Assumptions:
  - Total acres rice farmed by county was taken from the 2017 Agriculture Projection Memo by David Wheelock and Daniel Berglund
  - Applied strategy to 2% of planted acres in 2020 up to 25% planted acres in 2050 and beyond
  - Assumed a water savings of 8 inches (0.67 ac-ft/ac) per acre applied
  - Costs were assumed using a study performed for Region A on water management strategies for reducing irrigation demand
- Savings up to 11,393 ac-ft/yr by 2070; Unit cost: \$120/ac-ft

### ▼ Irrigation Operations Conveyance Improvements

- Improvements to improve the efficiency of the water delivery canal system
- Status: preliminary strategy write-up (in progress)
- Further coordination with Stacy Pandey for potential savings/costs updates

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## 11. Irrigation Conservation

### ▼ Real-time Metering/Monitoring with SCADA

- A metering program, using a volumetric probe, to assess water use and improve irrigation efficiency
- Status: data collection
  - Texas Water Development Board grant of \$250,000 helps fund the metering program
  - Probes cost ~\$5,000 apiece
  - Metering program can generate more accurate estimates of water use
- Further coordination with Daniel Berglund necessary to provide initial evaluation to WMS committee

### ▼ Drip Irrigation for Non-Rice Crops

- Application of micro irrigation to the root zone of non-rice crops through low pressure, low volume devices
- Status: preliminary strategy write-up (in progress)
- Methodology/Assumptions:
  - Determined acreage non-rice cropland in use per year
  - Assumed strategy is applied to 5 percent of the non-rice cropland in use per year
  - Need to determine savings per acre applied (ac-ft/ac)
  - Assumed facilities cost of \$1,200 per acre per the 2004 Texas Water Development Board (TWDB) Report 362
- Also applied to Mills County

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## 11. Irrigation Conservation

### ▼ On-Farm Conservation

- Precision Land Leveling
  - Grading to a level field allows a more uniform shallow water depth across the field
  - Water use reduction: 25-30 percent; Rice production increase: 10-15 percent
- Multiple Field Inlets
  - Utilization of multiple field inlets for applying water to the individual cuts or land sections between levees
  - Allows shallow water application and a quick field drain time
- Reduced Levee Intervals
  - Reduction of the contour interval between levees from 0.2 feet to 0.15 feet to minimize the water depth
  - Estimated water savings: 0.3 ft/ac irrigated when used in conjunction with precision land leveling; 0.4 ft/ac irrigated when applied without precision leveling
- Assumptions:
  - Maximum potential acreage of water savings was taken from LCRA's 2010 Agricultural WSRP
    - 2020: 20,000 AFY – 2070: 50,000 AFY
  - The total estimated cost for the on-farm strategies recommended in the LCRA's 2010 Agricultural Water Supply Resource Plan is updated to September 2018 dollars and split between county-basins

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Agenda Item 12

## UPDATE AND DISCUSSION OF REUSE WATER MANAGEMENT STRATEGY EVALUATIONS

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### 12. Reuse

#### ▼ Direct Potable Reuse (3):

- Buda
  - Update from 2016 cycle
  - 2020 – 100 AFY; 2030 – 1,120 AFY; 2050 – 1,680 AFY
  - Infrastructure: effluent discharge line
  - Costing: analysis pending
- Dripping Springs WSC
  - New strategy requested by WUG
  - 2030 – 560 AFY
  - Infrastructure: treated effluent pipeline, WWTP expansion (250 GPM reclaimed water pump station, hydro-pneumatic tank, chlorination system, distribution pipelines)
  - Costing: analysis pending
- West Travis County PUA
  - New strategy requested by WUG
  - 2020 – 336 AFY
  - Infrastructure: analysis pending
  - Costing: analysis pending

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## 12. Reuse

### ▼ Direct Non-Potable Reuse (11):

- Blanco
  - New strategy requested by WUG
  - 2020 (assumed) – 91 AFY
  - Infrastructure: storage tanks, transmission lines
  - Costing: analysis pending
- Buda
  - Update from 2016 cycle
  - 2030 – 2,240 AFY
  - Infrastructure: effluent pump station additions, 3.75 miles of 24" PVC pipeline
  - Costing: update to September 2018 dollars ~\$7.6 million
- Dripping Springs WSC
  - New strategy requested by WUG
  - 2020 – 390 AFY; 2040 – 672 AFY
  - Infrastructure: treated effluent pipeline, WWTP expansion (250 GPM reclaimed water pump station, hydro-pneumatic tank, chlorination system, distribution pipelines)
  - Costing: analysis pending

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## 12. Reuse

### ▼ Direct Non-Potable Reuse (11):

- Fredericksburg
  - New strategy requested by WUG
  - 2020 – 2.15 AFY
  - Infrastructure: low pressure pump station, HDPE above-ground storage tank, stormwater pond expansion, 3 miles of 24" pipeline
  - Costing: ~\$4.7 million
- Horseshoe Bay
  - Update from 2016 cycle
  - 2020 – 154 AFY
  - Infrastructure: pumps at effluent pond, 5,500 feet of 12" main line with 2 bore crossings
  - Costing: ~\$4.5 million
- Lago Vista
  - New strategy requested by WUG
  - 2020 – 304 AFY; 2050 (assumed) – 673 AFY
  - Infrastructure: tanks, filtration systems, chlorination basins, pipe infrastructure
  - Costing: analysis pending

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## 12. Reuse

### ▼ Direct Non-Potable Reuse (11):

- Lakeway MUD
  - New strategy requested by WUG
  - 2020 – 96.9 AFY
  - Infrastructure: pipes, pump stations, storage tanks, WWTP treatment plant expansion
  - Costing: analysis pending
- Marble Falls
  - Update from 2016 cycle
  - 2020 – 11 AFY (assumed)
  - Infrastructure: WWTP expansion study in progress will include reclaimed water system
  - Costing: analysis pending
- Meadowlakes
  - New strategy requested by WUG
  - 2020 – 75 AFY
  - Infrastructure: none
  - Costing: none – agreement to purchase treated effluent from Marble Falls is pending

## 12. Reuse

### ▼ Direct Non-Potable Reuse (11):

- Travis County WCID 17
    - New strategy requested by WUG
    - 2020 – 510 AFY
    - Infrastructure: improvements to storage, pumping, and transmission
    - Costing: ~\$10.5 million
  - West Travis County PUA
    - New strategy requested by WUG
    - 2020 – 224 AFY
    - Infrastructure: 1-2 miles force main, drip irrigation system, storage tank, pump station, RO filter and membrane systems
    - Costing: ~\$4.0 million
- ▼ Reuse strategies were recommended in the 2016 cycle for Bastrop, Flatonia, Llano, and Pflugerville, but these WUGs expressed that they were currently not interested in moving forward in consideration .

## Agenda

- 13. New / Other Business
- 14. Schedule next meeting
- 15. Public Comments
- 16. Adjourn