Region K WMS Committee Meeting

October 31, 2019

AECOM

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Agenda

1. Call to Order
2. Welcome and Introductions
3. Receive public comments
4. Approval of meeting minutes

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Agenda Item 5

STATUS UPDATE OF WATER MANAGEMENT STRATEGY EVALUATIONS

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5. Status Update on Strategy Evaluations

Strategy	WUG	Strategy Type	Date Presented	Please Return Comments by:	Status
Advanced Water Conservation	Municipal utilities other than City of Austin	Conservation	10/9/2019	11/4/2019	under RWPG review
BS/EACD – Edwards/Middle Trinity ASR	Buda, Sunset Valley	Aquifer Storage and Recovery	10/9/2019	11/4/2019	under RWPG review
BS/EACD – Saline Edwards ASR	Buda, Hays County-Other	Aquifer Storage and Recovery and Desalination	10/9/2019	11/4/2019	under RWPG review
Buena Vista Regional Project	Burnet County WUGs (County-Other and potential others)	Surface water infrastructure	7/10/2019	11/4/2019	under RWPG review
Capture Local Inflows to Lady Bird Lake	Austin	Other surface water	7/10/2019	11/4/2019	under RWPG review
City of Austin ASR	Austin	Aquifer Storage and Recovery	7/10/2019	11/4/2019	under RWPG review
City of Austin Conservation	Austin	Conservation	7/10/2019	11/4/2019	under RWPG review
City of Austin Off-Channel Reservoir and Evaporation Suppression	Austin	Off-Channel Reservoir	7/10/2019	11/4/2019	under RWPG review
City of Austin Onsite Rainwater and Storm Water Harvesting	Austin	Rainwater harvesting	7/10/2019	11/4/2019	under RWPG review
Development of New Groundwater Supplies	Multiple	Development of multiple aquifers	10/9/2019	11/4/2019	under RWPG review
Downstream Return Flows	LCRA	Other surface water	10/9/2019	11/4/2019	under RWPG review
Drought Management	All municipal WUGs and irrigation with needs	Drought Management	7/10/2019	11/4/2019	Municipal under RWPG review; Irrigation under committee review
East Lake Buchanan Project	Burnet County-Other	Surface water infrastructure	7/10/2019	11/4/2019	under RWPG review
Expand Use of Groundwater	Multiple	Expand use of existing GW supply sources	10/9/2019	11/4/2019	under RWPG review
Lake Austin Operations	Austin	Drought Management	7/10/2019	11/4/2019	under RWPG review
Marble Falls Regional Project	Marble Falls, Burnet County-Other, other potential WUGs	Surface water infrastructure	7/10/2019	11/4/2019	under RWPG review
Oceanwater Desalination	TBD	Seawater desalination	10/9/2019	11/4/2019	under RWPG review
Rainwater Harvesting	Municipal utilities other than City of Austin	Other surface water	10/9/2019	11/4/2019	under RWPG review
Reduced Lake Evaporation	Austin, potentially others with a reservoir	Other	7/10/2019	11/4/2019	Austin - under RWPG review; others not identified
Reuse (Direct Potable Reuse)	West Travis County PUA	Direct Potable Reuse	10/9/2019	11/4/2019	under RWPG review
	Dripping Springs WSC	Direct Potable Reuse	10/9/2019	11/4/2019	under RWPG review
	Buda	Direct Potable Reuse	10/9/2019	11/4/2019	under RWPG review
Reuse (Indirect Potable Reuse through Lady Bird Lake)	Austin	Indirect Potable Reuse	7/10/2019	11/4/2019	under RWPG review

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5. Status Update on Strategy Evaluations

Strategy	WUG	Strategy Type	Date Presented	Please Return Comments by:	Status
Reuse (direct reuse)	Marble Falls	Reuse	10/9/2019	11/4/2019	under RWPG review
	Horseshoe Bay	Reuse	10/9/2019	11/4/2019	under RWPG review
	Buda	Reuse	10/9/2019	11/4/2019	under RWPG review
	Burnet	Reuse	10/9/2019	11/4/2019	under RWPG review
	Blanco	Reuse	10/9/2019	11/4/2019	under RWPG review
	Dripping Springs WSC	Reuse	10/9/2019	11/4/2019	under RWPG review
	Fredericksburg	Reuse	10/9/2019	11/4/2019	under RWPG review
	Lago Vista	Reuse	10/9/2019	11/4/2019	under RWPG review
	Lakeway MUD	Reuse	10/9/2019	11/4/2019	under RWPG review
	Meadow lakes	Reuse	10/9/2019	11/4/2019	under RWPG review
	Travis County WCID 17	Reuse	10/9/2019	11/4/2019	under RWPG review
	West Travis County PUA	Reuse	10/9/2019	11/4/2019	under RWPG review
STP Nuclear Operating Company (STPNOC) Alternate Canal Delivery	Steam-Electric (Matagorda Co.)	Other surface water	7/10/2019	11/4/2019	under RWPG review
STPNOC Brackish Surface Water Blending	Steam-Electric (Matagorda Co.)	Other surface water	7/10/2019	11/4/2019	under RWPG review
Groundwater Importation – Hays County Pipeline	West Travis County PUA, Hays County-Other, and other potential WUGs	Groundwater Development	10/3/2019	10/25/2019	Under committee review - still waiting on Region L for yield confirmation
Groundwater Importation – Alliance Regional Water Authority Pipeline	Buda and potential other Hays County WUGs	Groundwater Development	10/3/2019	10/25/2019	Under committee review - still waiting on Region L for total project costs and updated yields by decade
Brush Management	County-Other	Other WMS	10/3/2019	10/25/2019	Under committee review
Wharton Water Supply Strategy	Wharton	Groundwater Development	N/A	N/A	Ready for committee review
New Water Purchase Strategy	Need to determine	Other	N/A	11/4/2019	Ready for committee review
New Water Purchase Strategy Requiring Infrastructure	Need to determine	Other	N/A	11/4/2019	Ready for committee review
Water Purchase Amendments	Need to determine	Other	N/A	11/4/2019	Ready for committee review
Water Purchase Amendments Requiring Infrastructure	Need to determine	Other	N/A	11/4/2019	Ready for committee review
Advanced Water Conservation	Irrigation in Lower Basin	Conservation	N/A	11/4/2019	Ready for committee review
Reservoir Capacity Expansion	Llano, Goldthwaite	Other surface water	N/A	11/4/2019	Ready for committee review
Water Supply Infrastructure Development or Expansion	Bertram	Water Supply Infrastructure (Other WMS)	N/A	11/4/2019	Ready for committee review
Brackish Groundwater Desalination	LCRA	Groundwater Development	N/A	11/4/2019	Ready for committee review
Amendments to LCRA Water Management Plan	LCRA, Irrigation (interruptible water)	Other	N/A	10/25/2019	Ready for committee review

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5. Status Update on Strategy Evaluations

Strategy	WUG	Strategy Type	Date Presented	Please Return Comments by:	Status
Groundwater Importation – Carrizo-Wilcox to LCRA System	LCRA	Groundwater Development	N/A	11/4/2019	Ready for committee review
LCRA Baylor Creek Reservoir	LCRA	Off-Channel Reservoir	N/A	10/25/2019	Ready for committee review
Import Return Flows from Williamson County	LCRA	Other surface water	N/A	10/25/2019	Ready for committee review
LCRA groundwater expansion/development strategies	LCRA	Groundwater Development	N/A	10/25/2019	Ready for committee review
Supplement Bay and Estuary Inflows with Brackish Groundwater Thereby Replacing Demands on LCRA Highland Lakes Firm Yield	LCRA	Brackish Groundwater Development	N/A	10/25/2019	Ready for committee review
Aquifer Storage and Recovery	Manville WSC	Aquifer Storage and Recovery	N/A	N/A	No longer requesting - no other project sponsors

Strategy	WUG	Strategy Type	Please Return Comments by:	Status
Amendment to Existing Water Rights/Permits	LCRA, Goldthwaite	Other	11/4/2019	in progress
City of Austin Return Flows	Austin, Irrigation, Steam-Electric, LCRA	Other surface water	11/4/2019	in progress
City of Austin Centralized Direct Non-Potable Reuse	Austin	Reuse	11/4/2019	in progress
Enhanced Recharge and Conjunctive Use	LCRA	Other	11/4/2019	in progress
LCRA - Prairie Site Off-Channel Reservoir	LCRA	New Major Reservoir	11/4/2019	in progress
LCRA Aquifer Storage and Recovery (ASR) in Carrizo-Wilcox	LCRA	Aquifer Storage and Recovery	11/4/2019	in progress
LCRA - Mid-Basin Off-Channel Reservoir	LCRA	New Major Reservoir	11/4/2019	in progress
LCRA - Excess Flows Off-Channel Reservoir	LCRA	New Major Reservoir	11/4/2019	in progress
Brackish Groundwater Desalination	Austin	Groundwater Development	11/4/2019	Sent to Austin - Presenting to committee
City of Austin Blackwater and Greywater Reuse	Austin	Reuse	11/4/2019	Sent to Austin - Presenting to committee
City of Austin Decentralized Direct Non-Potable Reuse	Austin	Reuse	11/4/2019	Sent to Austin - Presenting to committee
Community-Scale Stormwater Harvesting	Austin	Other surface water	11/4/2019	Sent to Austin - Presenting to committee
New LCRA Contracts	Need to determine	Other	11/4/2019	Sent to LCRA - Presenting to committee
New LCRA Contracts Requiring Infrastructure	Need to determine	Other	11/4/2019	Sent to LCRA - Presenting to committee
LCRA Contract Amendments	Need to determine	Other	11/4/2019	Sent to LCRA - Presenting to committee
LCRA Contract Amendments Requiring Infrastructure	Need to determine	Other	11/4/2019	Sent to LCRA - Presenting to committee

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Agenda Item 6

UPDATE TO DRAFT STRATEGIES BASED ON COMMITTEE COMMENTS

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6. Update to Draft Strategies Based on Committee Review

- Changes Based on Meeting Discussion October 3, 2019
  - Brush Management
    - No changes.
  - Mining Conservation
    - Followed up with Mitchell Sodek. Increased Burnet County yield from 1,000 ac-ft/yr to 1,300 ac-ft/yr.
  - Irrigation Drought Management
    - Revised strategy to include only groundwater users, as the LCRA WMP dictates water availability for surface water users and establishes curtailment during drought conditions.
  - Hays County Pipeline
    - Added cost of water, confirmed yield with Region L, removed language related to public input, and revised language in other impacts.
- Are these ready to move to RWPG review?

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6. Update to Draft Strategies Based on Committee Review

- Changes Based on RWPG comments.
  - BS/EACD Aquifer Storage and Recovery
    - Saline Edwards ASR
      - Only source is Saline Edwards – strategy no longer includes freshwater Edwards.
      - BS/EACD requested that the ASR wells be operated to mitigate peak demands (summer vs winter). ASR wells and treatment facilities were resized accordingly.
    - Edwards Middle Trinity ASR
      - WUGs added to the strategy, each with their own individual ASR projects: Hays, Hays County-Other, and Creedmoor-Maha WSC.

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Agenda Item 7

UPDATE AND DISCUSSION OF AUSTIN WATER MANAGEMENT STRATEGY EVALUATIONS

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7. Austin Strategy Evaluations

- Strategies with Austin comments ready for Committee review (to be discussed on agenda item #14)
  - Conservation
  - Lake Austin Operations
  - Austin IPR
  - Austin Capture local Inflows to LBL
  - Austin Off-Channel Reservoir
  - Austin Aquifer Storage and Recovery
- Strategies to present/pending review from Austin
  - Austin Brackish Groundwater Desalination
  - Austin Blackwater and Greywater Reuse
  - Austin Decentralized Direct Non-Potable Reuse + Community-Scale Stormwater Harvesting
  - Austin Onsite Rainwater and Storm Water Harvesting (combined two strategies)
  - Austin Centralized Direct Non-Potable Reuse
  - Austin Return Flows

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7. Austin Strategy Evaluations

- Austin Brackish Groundwater Desalination
  - Desalination of groundwater containing between 1,000 and 9,999 mg/L of total dissolved solids. Strategy is sourced from both the Trinity and the Saline Edwards aquifers.
  - Yield = 5,000 ac-ft/yr (online 2070)
  - Costs
    - Total Project Costs: $167,689,000
    - Annual Cost: $14,976,000
    - Unit Cost: $2,995/ac-ft
  - Notes
    - Revised based on AW comments. Received additional comments from AW 10/31.
    - Environmental permits will need to be obtained for the disposal of concentrate brine.
    - Additional studies will be needed to determine the impacts of the proposed extraction location on the surrounding groundwater table.

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7. Austin Strategy Evaluations

- Austin Blackwater and Greywater Reuse
  - Blackwater Reuse is the onsite capture and treatment of the wastewater stream generated from a building for onsite reuse via a dual (purple) pipe system to supply outdoor demands and non-potable indoor demand. Reuse of water from laundry, shower, and bath at the lot/unit scale can meet non-potable demands through greywater diversion and greywater treatment systems.
  - Yield = 1,447 – 9,290 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $55,605,000
    - Annual Cost: $51,105,000– high O&M costs based on Austin data
    - Unit Cost: $5,501/ac-ft
  - Notes
    - Strategy reduces the energy spent transmitting wastewater from the collection system to existing centralized wastewater treatment plants, but may result in an increase in sludge at the treatment plants.
    - No impact to agriculture.
    - Received comments from AW 10/30.

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7. Austin Strategy Evaluations

- Austin Decentralized Non-Potable Reuse
  - Community-scale wastewater treatment plants treat and reuse wastewater in close proximity to the source of wastewater production; water is treated to non-potable quality, while discharging solids to the central wastewater collection and treatment system.
  - Yield = 1,398 – 16,678 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $13,124,000
    - Annual Cost: $12,304,000
    - Unit Cost: $738/ac-ft
  - Notes
    - Strategy reduces the energy spent transmitting wastewater from the collection system to existing centralized wastewater treatment plants, but may result in an increase in sludge at the treatment plants.
    - No impact to agriculture.
    - Received comments from AW 10/30.

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7. Austin Strategy Evaluations

- Austin Onsite Rainwater and Stormwater Harvesting + Community Scale Stormwater Harvesting
  - Lot-Scale Rainwater Harvesting involves the capture and storage of roof water to supply a range of onsite demands at the lot/building scale.
  - Community Scale Stormwater Harvesting involves the collection of stormwater runoff from urban areas for treatment and reuse at the community scale.
  - Yield
    - Onsite Rainwater and Stormwater Harvesting: 788 – 4,901 ac-ft/yr (online 2030)
    - Community Scale Stormwater Harvesting: 66 – 236 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $13,905,000
    - Annual Cost: $5,763,000
    - Unit Cost: $1,176/ac-ft

    Total Project Costs: $288,000
    Annual Cost: $127,000
    Unit Cost: $538/ac-ft
  - Notes
    - No impact to agriculture. Negligible impact to environment.
    - Received comments from AW 10/30.

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7. Austin Strategy Evaluations

Austin Strategy	2070 Yield	Original Draft - June 2019			Updated - October 2019			Change Description
		Facilities Cost	Total Project Cost	Unit Cost ($/acre-foot)	Facilities Cost	Total Project Cost	Unit Cost ($/acre-foot)	
Off-Channel Reservoir	25,000	$226,171,000	$343,931,000	$ 1,316	$226,171,000	$ 334,642,000	$ 1,018	Moved majority of facilities costs from "other" category to "reservoir" category. This caused change in debt service calculation.
ASR	15,800	$243,580,000	$363,910,000	$ 474	$248,350,000	$ 370,527,000	$ 2,234	Added cost of pilot project; changed yield from 60,000 AFY.
IPR	20,000	$ 61,101,000	$ 90,405,000	$ 318	$ 23,409,000	$ 35,839,000	$ 457	Moved some facilities costs from "other" category to various ("pump stations,"treatment facility," etc.); some facilities costs moved to Austin Reuse strategies; external O&M costs input into costing tool.
Capture Local Inflows to LBL	3,000	-	-	$ 213	-	-	$ 331	Updated external O&M costs. Yield changed from 1,000 AFY.

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Agenda Item 8

UPDATE AND DISCUSSION OF LCRA WATER MANAGEMENT STRATEGY EVALUATIONS

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8. LCRA Strategy Evaluations

- Strategies to present
  - LCRA Expand Groundwater in Bastrop County
  - LCRA Groundwater for Fayette Power Plant – on-site
  - LCRA Groundwater for Fayette Power Plant – off-site
  - LCRA Baylor Creek Reservoir
  - Alternative LCRA Supplement Environmental Flows with Brackish Groundwater
  - LCRA Import Return Flows from Williamson County
  - Alternative LCRA Brackish Groundwater Desalination
  - Alternative LCRA Groundwater Importation from Carrizo-Wilcox Aquifer
  - Amendments to LCRA Water Management Plan
  - LCRA Enhanced Municipal and Industrial Conservation
- Strategies in-progress (to be discussed on agenda item #13)
  - LCRA Mid-Basin Off-Channel Reservoir
  - LCRA Excess Flows Off-Channel Reservoir
  - LCRA Enhance Recharge and Conjunctive Use
  - LCRA Amendments to Existing Water Rights/Permits
  - LCRA Aquifer Storage and Recovery (ASR) in Carrizo-Wilcox
  - LCRA Prairie Conservation Reservoir

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8. LCRA Strategy Evaluations

- LCRA Expand Groundwater in Bastrop County
  - Obtain and develop additional groundwater from the Carrizo-Wilcox aquifer within the Lost Pines Groundwater Conservation District to meet future demands.
  - Yield = 30 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $331,000
    - Annual Cost: $25,000
    - Unit Cost: $833/ac-ft
  - Notes
    - Strategy would require one (1) 18 gpm water supply well and transmission piping.
    - No impact to environment/agriculture due to small yield.
    - The project is subject to requirements of the LCRA's Incidental Take Permit and Habitat Conservation Plan and associated requirements of the U.S. Fish and Wildlife Service.
    - Consultant is preparing alternative strategy for 25,000 yield.

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8. LCRA Strategy Evaluations

- LCRA Groundwater for Fayette Power Plant – on-site
  - Augment water provided to Fayette Power Project's cooling water reservoir by adding yield from the Gulf Coast Aquifer.
  - Yield = 40 ac-ft/yr (online 2040)
  - Costs
    - Total Project Costs: $342,000
    - Annual Cost: $27,000
    - Unit Cost: $675/ac-ft
  - Notes
    - Alternative strategy assumes that the volume of groundwater used would exceed the MAG.
      - Yield = 700 ac-ft/yr (online 2030)
      - Unit cost: $117/ac-ft
    - Negligible impact to environment/agriculture

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8. LCRA Strategy Evaluations

- LCRA Groundwater for Fayette Power Plant – off-site
  - Augment water provided to Fayette Power Project's cooling water reservoir by adding yield from the Carrizo-Wilcox Aquifer in northwestern Fayette County.
  - Yield = 2,500 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $33,618,000
    - Annual Cost: $3,142,000
    - Unit Cost: $1,257/ac-ft
  - Notes
    - This strategy could contribute to drawdown in the aquifer of up to 110 feet, relative to January 2000.
    - No impacts to agriculture anticipated

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8. LCRA Strategy Evaluations

- LCRA Baylor Creek Reservoir
  - Construct a new 48,390 ac-ft earthen dam reservoir in Fayette County adjacent to the Cedar Creek Reservoir (Lake Fayette) and the Fayette Power Project.
  - Yield = 18,000 ac-ft/yr (online 2040)
  - Costs
    - Total Project Costs: $219,883,000
    - Annual Cost: $16,333,000
    - Unit Cost: $907/ac-ft
  - Notes
    - The construction of the Baylor Creek Reservoir will lessen the need to send Highland Lakes' water to industrial customers near the coast and could improve agricultural water reliability and efficiency.
    - This project could potentially provide up to 18,000 ac-ft/yr of water for agriculture purposes during a drought year, depending on firm customer needs.

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8. LCRA Strategy Evaluations

- Alternative LCRA Supplement Environmental Flows with Brackish Groundwater
  - Deliver brackish groundwater to the Matagorda Bay Delta to offset required releases from the Highland Lakes.
  - Yield = 12,000 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $47,269,000
    - Annual Cost: $6,381,000
    - Unit Cost: $532/ac-ft
  - Notes
    - Modeling and potential pilot testing would be necessary to determine effects of incoming salinity and delivery location.
    - Instream flows would possibly be reduced by up to 12,000 ac-ft/yr as a result of not releasing stored water.

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8. LCRA Strategy Evaluations

- LCRA Import Return Flows from Williamson County
  - Import return flows (i.e. treated wastewater effluent) from entities in Williamson County that have contracts with LCRA for firm water from the Colorado River and for which exempt interbasin transfer permits have been issued allowing the water to be used in the Brazos River basin within Williamson County.
  - Yield = 5,460 – 25,000 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $75,734,000
    - Annual Cost: $6,080,000
    - Unit Cost: $243/ac-ft
  - Notes
    - To bring return flows from the Brazos River Basin to the Colorado River Basin, an interbasin transfer permit (IBT) will be required under Texas Water Code § 11.085.

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8. LCRA Strategy Evaluations

- Alternative LCRA Brackish Groundwater Desalination
  - Extraction of brackish groundwater from the Gulf Coast Aquifer in Matagorda County, treated to potable standards using reverse osmosis (RO), and delivered to the Bay City area for municipal and industrial use.
  - Yield = 22,400 ac-ft/yr (online 2040)
  - Costs
    - Total Project Costs: $229,006,000
    - Annual Cost: $31,199,000
    - Unit Cost: $1,393/ac-ft
  - Notes
    - Infrastructure required includes a 25 MGD RO treatment plant, transmission pipe, permeate line, an extraction wellfield and deep injection wellfield, a ground storage tank and a high service pump station.
    - Considerations include potential degradation of groundwater quality in the vicinity of the proposed wells, and the management of the RO waste and byproducts such as concentrated salt solution.

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8. LCRA Strategy Evaluations

- Alternative LCRA Groundwater Importation from Carrizo-Wilcox Aquifer
  - Develops untreated groundwater from outside the Planning Area (at the Simsboro Formation of the Carrizo-Wilcox aquifer in northern Burleson County) and transporting the water to eastern Travis County.
  - Yield = 35,000 ac-ft/yr (online 2040)
  - Costs
    - Total Project Costs: $256,382,000
    - Annual Cost: $29,031,000
    - Unit Cost: $829/ac-ft
  - Notes
    - Infrastructure required includes 80 miles of 48-inch transmission pipeline, two booster pump stations, and a wellfield.
    - Production must conform to the water management plan and rules of the Post Oak Savannah GCD.
    - The Carrizo-Wilcox Aquifer has experienced significant water level declines in some areas due to use of the groundwater—up to 200 ft in the northeast part of Burleson County, according to TWDB Report 380

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8. LCRA Strategy Evaluations

- Amendments to LCRA Water Management Plan
  - LCRA will likely seek further amendments to its Water Management Plan to adjust the conditions under which it will provide water from lakes Buchanan and Travis to help meet demands for firm, interruptible agricultural, and environmental flows purposes.
  - Yield = 63,405 ac-ft/yr (online 2020) – 0 available by 2050
  - Costs
    - Capital expenditures for water supply purposes would not be required to implement this alternative since diversions would be made under existing water rights.
    - Unit Cost: $37-60/ac-ft
  - Notes
    - Actual availability of this supply from year to year, or by season, can vary greatly, largely as a function of drought conditions, lake levels, inflows into the lakes, and demands for firm water.

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8. LCRA Strategy Evaluations

- LCRA Enhanced Municipal and Industrial Conservation
  - Implementation of 2019 Water Conservation Plan that addresses water conservation practices for its firm water customers (municipal, industrial, power generation, and recreational).
  - Yield = 5,100 – 20,000 ac-ft/yr (online 2020)
  - Costs
    - Total Project Costs: $74,415,000
    - Annual Cost: $5,236,000
    - Unit Cost: $262/ac-ft
  - Notes
    - Conservation measures include regulations, financial incentives, and education for water efficiency.
    - Coordinating with LCRA on write-up.

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Agenda Item 9

UPDATE AND DISCUSSION OF WHARTON WATER SUPPLY EVALUATION

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9. Wharton Water Supply

- Requested from Wharton
  - Wharton believes that its proximity to the Houston urban area and the new I-69 corridor will increase its water demands during the next fifty years beyond those otherwise anticipated in regional water planning.
- Regional Water Supply Study for the City of Wharton and East Bernard
  - Published April 2017
  - Detailed three alternative supply sources to provide additional water: surface water, additional groundwater, and aquifer storage and recovery
  - The study recommended the use of additional groundwater; incorporated into Expand Use of Local Groundwater for Gulf Coast aquifer
- Strategy
  - Project Yield (2030): 3,000 ac-ft/yr
  - Total Project Costs: $9,100,000; Annual Cost: $817,000; Unit Cost: $272/ac-ft

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Agenda Item 10

UPDATE AND DISCUSSION OF CONTRACT/CONTRACT AMENDMENTS / WATER PURCHASE/WATER PURCHASE AMENDMENTS STRATEGY EVALUATIONS

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10. LCRA Contract Amendments with Infrastructure

- Contract amendments between WUGs and LCRA with infrastructure development.
  - Strategies online 2030
  - Full implementation could remove up to 11,500 ac-ft/yr from Highland Lakes by 2070
  - Implementation of new contracts/contract amendments could reduce available interruptible water for agricultural use and environmental flows.

WUG	Yield (ac-ft/yr)	Total Project Costs	Annual Cost	Unit Cost
Burnet	1,000 – 2,000	See Buena Vista Regional Project Strategy		
Marble Falls	4,000	See Marble Falls Regional Water System Strategy		
West Travis County PUA	2,400 – 5,500	$35,402,000	$4,300,000	$782

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10. LCRA Contract Amendments

- Water contract amendments between WUGs and LCRA.
  - Full implementation could remove up to 13,320 ac-ft/yr from Highland Lakes by 2070
  - Unit Cost: $145/ac-ft
  - West Travis County PUA LCRA Contract Amendment with Infrastructure includes infrastructure to accommodate Dripping Springs WSC, as WTCPUA currently treats and transports their water (*)

WUG	Online	Yield (ac-ft/yr)
Granite Shoals	2060	50 – 170
Horseshoe Bay	2040	400 – 800
Steam-Electric (COA)	2020	4,300
Dripping Springs WSC*	2050	1,000 – 2,000
Steam-Electric (STPNOC)	2020	8,300
Leander	2020	50 – 2,600
Pflugerville	2050	1,300 – 3,400
Travis County WCID Point Venture	2070	50

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10. LCRA New Contracts with Infrastructure

- New raw water contract between WUGs and LCRA with infrastructure development.

WUG	Year Online	Yield (ac-ft/yr)	Total Project Costs	Annual Cost	Unit Cost
Aqua WSC	2040	2,500 – 20,000	$132,037,000	$18,286,000	$914
Bastrop	2050	1,000 – 4,000	$26,407,000	$3,657,000	$914
Bastrop County WCID 2	2050	500 – 1,500	$9,903,000	$1,372,000	$914
Smithville	2070	700	$10,589,000	$1,373,000	$1,961
Burnet County-Other	2030	3,200 – 5,400	See Buena Vista Regional Project + East Lake Buchanan + Marble Falls Regional Water System Strategies		

  - Bastrop Regional Project delivers water from a single intake + water treatment plant
  - Full implementation could remove up to 31,600 ac-ft/yr from Highland Lakes by 2070

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10. LCRA New Contracts

- New raw water contract between WUGs and LCRA.
  - Strategies online 2040
  - Full implementation could remove up to 6,320 ac-ft/yr from Highland Lakes by 2070
  - Unit Cost: $145/ac-ft
  - Current wholesale customers currently receiving water from Austin need to contract with LCRA in the future. Austin will continue to treat and transport this water (*)

WUG	Yield (ac-ft/yr)
North Austin MUD 1*	770
Northtown MUD 1*	900 – 1,300
Rollingwood*	250
Sunset Valley	300
Travis County WCID 10*	2,300
Wells Branch MUD*	1,400

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10. New Water Purchase

- WUGs in the region purchase water from water providers other than the three Major Water Providers.
  - Hays, Hays County Mining, Windermere
  - Yield
    - Hays (purchase from Buda): 70 ac-ft/yr (2060); 140 ac-ft/yr (2070)
    - Hays County Mining (purchase from Buda reuse): 500 ac-ft/yr (2040)
    - Windermere (purchase from Blue Water): 2,016 ac-ft/yr (2030)
  - Costs
    - Assumed water is sold at retail cost, except for Hays infrastructure
    - Total Project Costs - Hays: $213,000
    - Annual Cost: Hays ($215,000), Hays County Mining ($798,335), Windermere ($2,351,758)
    - Unit Cost: Hays ($1,536/ac-ft), Hays County Mining ($1,597/ac-ft), Windermere ($1,167/ac-ft)
  - Notes
    - Negligible impact to environment/agriculture

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10. Water Purchase Amendments

- WUGs in the region purchase water from water providers other than the three Major Water Providers.
  - Barton Creek WSC, Creedmoor-Maha WSC, Travis County MUD 14
  - Yield
    - Barton Creek WSC (purchase from Travis County MUD 4): 90 ac-ft/yr (2020)
    - Creedmoor-Maha WSC (purchase from Aqua WSC): 335 ac-ft/yr (2040)
    - Travis County MUD 14 (purchase from Aqua WSC): 35 ac-ft/yr (2050)
  - Costs
    - Assumed water is sold at retail cost
    - Annual Cost: Barton Creek WSC ($146,633), Creedmoor-Maha WSC ($409,350), Travis County MUD 14 ($42,768)
    - Unit Cost: Barton Creek WSC ($1,629/ac-ft), Creedmoor-Maha WSC ($1,222/ac-ft), Travis County MUD 14 ($1,222/ac-ft)
  - Notes
    - Negligible impact to environment/agriculture

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Agenda Item 11

PRESENTATION AND DISCUSSION OF IRRIGATION CONSERVATION STRATEGY EVALUATIONS

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11. Irrigation Conservation

Strategies	Status
Tail Water Recovery	Draft write-up presented to committee; strategy not recommended.
Sprinkler Irrigation	Draft write-up presented to committee; cost + language update.
Drip Irrigation for Non-Rice Crops	Draft write-up presented to committee; no comments.
On-Farm Conservation	Draft write-up presented to committee; cost + language update.
Real-Time Monitoring	Draft write-up ready for committee.
Irrigation Operations Conveyance Improvements	Draft write-up ready for committee.

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11. Irrigation Conservation – Irrigation Operations Conveyance Improvements

- LCRA improvements to the efficiency of the canal systems that deliver water to the individual irrigator.
  - Irrigation WUGs (Colorado, Matagorda, Mills, Wharton)
  - Yield = 40,592 ac-ft/yr (online 2020)
  - Costs
    - Based on TWDB Socioeconomic Impact Analysis of Unmet Needs from the 2016 Region K Water Plan (will be updated for 2021 plan when report is released)
    - Unit Cost: Colorado ($132/ac-ft), Matagorda ($193/ac-ft), Mills ($183/ac-ft), Wharton ($203/ac-ft)
  - Notes
    - Strategy results in a reduction of overall demand for water and will reduce the volume of diversions that will have to be dedicated to maintaining flow in canals. If fully implemented, impacts to streamflows and the bay are approximately 50% of the conservation savings, or up to 22,175 ac-ft/yr by 2070.

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11. Irrigation Conservation – Real Time Monitoring

- Installation of meters that automatically record and transfer flow data at 15-minute intervals.
  - Irrigation WUGs (Colorado, Matagorda, Mills, Wharton)
  - Yield = 20,509 ac-ft/yr (online 2020)
  - Costs
    - Assume 3,500 meters would be required to serve the area + meters average $6,000 each
    - Unit Cost: $132/ac-ft
  - Notes
    - Yield
      - In 2015, the Gulf Coast Water Authority (GCWA) received a $200,000 grant from the TWDB to implement project. From 2016 to 2018, this project estimated an annual 34 percent water savings rate.
      - Customers in LCRA irrigation divisions currently participate in volumetric billing, saving 0.3 ac-ft/ac.
    - Impacts to return flows would be negligible as this strategy's savings are based on demand reduction.
    - Generating a more accurate estimate of water use would reduce the water per acre required. During times of non-drought, this would allow farmers to increase production acres and grow more.

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Agenda Item 12

REMAINING DRAFT STRATEGY EVALUATIONS

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12. Remaining Draft Strategy Evaluations

- Goldthwaite Strategy Request
  - Water Right Permit Amendment and expansion of Goldthwaite's reservoir storage capacity cannot be recommended as a strategy, as the yield is 0 ac-ft/yr during drought of record
- Reservoir Capacity Expansion
  - During times of drought, Llano Water User Group (WUG) installs a flashboard system downstream along the Llano River Lake to raise the reservoir level above the fixed spillway crest level.
- Development of New Groundwater Supplies – Yegua-Jackson Aquifer
  - Smithville added to strategy to meet needs; costing re-evaluated for Fayette County land acquisition.

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12. Remaining Draft Strategy Evaluations

- Water Supply Infrastructure Development
  - Bertram plans to pump water from an inactive quarry filled with accumulated groundwater seepage from the Ellenburger-San Saba aquifer. The quarry was identified by the TCEQ to be an off-channel reservoir that does not require a water right permit.
  - Yield = 750 – 2,000 ac-ft/yr (online 2030)
  - Costs
    - Total Project Costs: $20,707,000
    - Annual Cost: $2,457,000
    - Unit Cost: $1,229/ac-ft
  - Notes
    - Additional pumping wells included in Expand Local Use of Groundwater
    - Infrastructure required for the surface water component of this project includes:
      - ~1.8 MGD raw water intake from quarry pit/reservoir, assumed to be located 50 feet deep;
      - ~1.8 MGD rated capacity water treatment plant
      - 7,470 linear feet of 16-inch transmission pipe

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Agenda Item 13

REMAINING STRATEGY EVALUATIONS IN PROGRESS

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13. Remaining Strategy Evaluations In Progress

- Hays County Groundwater Importation
  - Alliance Regional Water Authority Pipeline
- LCRA
  - LCRA Mid-Basin Off-Channel Reservoir
  - LCRA Excess Flows Off-Channel Reservoir
  - LCRA Enhance Recharge and Conjunctive Use
  - LCRA Amendments to Existing Water Rights/Permits
  - LCRA Aquifer Storage and Recovery (ASR) in Carrizo-Wilcox
  - LCRA Prairie Site Off-Channel Reservoir
- Austin
  - Austin Centralized Direct Non-Potable Reuse
  - Austin Return Flows

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Agenda Item 14

AUSTIN COMMENTS/EDITS TO STRATEGIES

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Agenda

15. New / Other Business
16. Schedule next meeting
17. Public Comments
18. Adjourn

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#. Agenda Name

- Strategy Name
  - Description
  - Yield = x ac-ft/yr (online 2040)
  - Costs
    - Total Project Costs: $x
    - Annual Cost: $x
    - Unit Cost: $x/ac-ft
  - Notes