LCRA WATER MANAGEMENT PLAN

Participant Meeting

Sept. 6, 2018

ENERGY • WATER • COMMUNITY SERVICES

FOR DISCUSSION PURPOSES ONLY

Agenda

- Timeline
- Activities since July 12
- Review Aug. 10 WMP model
- Review comments received since last meeting
- Open discussion

Timeline

- May 21 – First participant meeting
- July 12 – Second participant meeting
- Sept. 6 – Third participant meeting
- Oct. 4 – Fourth participant meeting
- November – Fifth participant meeting
- December – WMP before LCRA Board for approval
- Early 2019 – Plan submitted to TCEQ

Recent Activities

- July meeting: Reviewed preliminary model assumptions and results
- July: Posted additional detail on model
  - Model input files
  - Environmental rules
- Early August: Minor model changes

Recent Activities

- Aug. 10: Posted updated model input and output, including additional output requested by environmental interests
- Late August: Posted Arbuckle Reservoir operations document
- August: Met with participant groups

Model Overview Recap

- Updated hydrology 1940-2016
- Included 2025 weather-varied demands
- Updated Austin return flows
- Added Pflugerville return flows
- Added upstream diversion locations for Garwood water right
- Included Arbuckle Reservoir

Model Overview Recap

- New interruptible stored water allocation limits (curtailment curves)
- 18-month Extraordinary Drought determination
- Wharton 107 cfs rule
- Nov. 1 evaluation date for environmental criteria
- Base-Dry trigger set to 1.8 million acre-feet of combined storage
- Bay releases limited to 50 percent of storable inflows after 25,000 acre-feet is released

First Season
Interruptible Stored Water Availability

First Season – Normal	
Combined Storage on March 1 (million acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1.0	0
1.0 to 1.3	107,100 to 178,000
Above 1.3	178,000
**Anytime cutoff if storage drops to or below 900,000 acre-feet.*	

First Season – Less Severe Drought	
Combined Storage on March 1 (million acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1.1	0
1.1 to 1.599	88,200 to 136,600
Above 1.6	N/A
**Anytime cutoff if storage drops to or below 950,000 acre-feet.*	

Second Season
Interruptible Stored Water Availability

Second Season – Normal	
Combined Storage on July 1 (million acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1.0	0
1.0 to 1.55	39,700 to 66,000
Above 1.55	66,000
**Anytime cutoff if storage drops to or below 900,000 acre-feet.*	

Second Season – Less Severe Drought	
Combined Storage on July 1 (million acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1.1	0
1.1 to 1.599	39,700 to 47,500
Above 1.6	N/A
**Anytime cutoff if storage drops to or below 950,000 acre-feet.*	

Operations to Meet Downstream Demands

- **Demands supplied:** firm, agricultural and environmental
- **Order of supply:**
  1. Downstream run-of-river
  2. Arbuckle Reservoir
  3. Upstream run-of-river
  4. Highland Lakes stored water
- **Arbuckle Reservoir filling sources:**
  - Downstream river flows under Gulf Coast water right
  - Highland Lakes “ordered-not-diverted” releases

Arbuckle Reservoir – Bay Operations

- Use Arbuckle Reservoir to meet bay inflow obligation based on storable inflows
- Include a bypass at Arbuckle Reservoir to help meet bay Threshold
- Help meet Threshold with releases from Arbuckle Reservoir

Updates to WAM Model Since July 12

- New WRAP executable – July 2018 version
- Updated Inks Lake area/capacity relationship
- Removed duplicate record used in the calculation of STP firm water backup

Model Results Recap

	July 12 WAM	Aug. 10 WAM
Minimum combined storage (acre-feet)	624,573	610,221
Percent of months storage is above 900,000 acre-feet	97 percent	97 percent

Model Results Recap

Water for agricultural irrigation:

	July 12 WAM	Aug. 10 WAM
	(years out of 77)	(years out of 77)
Full supply both 1st and 2nd season	51	51
Full supply 1st season	58	58
Curtailed 1st season	8	8
No stored water 1st season	11	11
Full supply second season	51	51
Curtailed 2nd season	12	12
No stored water second season	14	14

Model Results Recap

Attainment of instream flows at Wharton:

	July 12 WAM (percent)	Aug. 10 WAM (percent)
Base-Average	55	55
Base-Dry	76	76
Subsistence	99.6	99.5

Attainment of bay inflows:

	July 12 WAM (percent)	Aug. 10 WAM (percent)
MBHE 4	38	38
MBHE 3	43	43
MBHE 2	53	53
MBHE 1	68	68
Threshold	94	94

Comments Received Since July Meeting

- Requests for additional information/documentation
- Comments regarding model input and assumptions
- Other comments

Comments Received – Information Requests

- Provide additional documentation
- Clarify total amounts supplied to agricultural users
- Clarify how much water is supplied to agricultural users from specific sources

Comments Received – Information Requests

- Why is water for hydroelectric power not included as a demand?
- How are downstream losses accounted for?
- How is lost water from stored water releases accounted for?
- Request for model results showing lake elevations
- Request for information about Garwood
- Clarify proposed change to Extraordinary Drought criteria

Comments Received – Information Requests

- Request for model summary outputs for environmental indicators for 1950s drought period
- Provide information on Wharton instream flow compliance
- Provide an analysis of pulse flows under the 2015 WMP
- Provide information on proposed bay-rainfall relief

Comments Received – Input/Assumptions

- Austin direct reuse should be adjusted
- Austin return flow factor should vary in hot/dry versus normal years
- Recognize conservation efforts
- Model Decker Lake with a three-foot operating range
- Revisit assumptions for the distribution of water in lakes Buchanan and Travis

Comments Received – Input/Assumptions

- Support weather-varied approach for demands
- Request an increase in second crop reliability
- How will Arbuckle supply be accounted for in supply decisions?
- Maintain interruptible stored water levels from 2015 WMP but allow Arbuckle to be a substitute supply to customers

Comments Received – Input/Assumptions

- Use hot/dry year demands for all years
- Plan for year 2030
- Create an automatic adjustment in year 2025
- Increase minimum storage to 750,000 acre-feet
- Increase storage level for mandatory cutoff of interruptible agricultural supplies
- Impose criteria for a minimum amount of inflows in order for LCRA to supply water to agricultural uses

Comments Received – Input/Assumptions

- Alternate approach for Wharton criteria when combined storage is below 900,000 acre-feet
- Alternate approach to proposed rule limiting releases to no more than 50 percent of amount above 25,000 acre-feet per month
- Concern with adding a third evaluation date for environmental flow criteria

Other Comments Received

- How is rainfall/runoff report being used by LCRA for inflow prediction?
- How is LCRA considering gains and losses related to groundwater/surface water interaction?
- What action is LCRA taking to protect groundwater inflows to the Colorado River from being diminished as a result of pumping of aquifers?
- How is LCRA incorporating changes in land use and development that are contributing to reduced runoff?

Other Comments Received

- How is LCRA's water business compensated for water used to generate hydroelectric power?
- How much revenue does LCRA make from generation of hydroelectric power?
- How do LCRA decision makers handle the apparent conflict of interest between water needs and hydroelectricity?
- Concern about access to water in Highland Lakes for emergency use

OPEN DISCUSSION

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Next Steps

- Additional comments requested by Thursday, Sept. 13
  - Submit comments to **LCRAWMP@lcra.org**
- LCRA staff updating model
- Oct. 4 – Fourth participant meeting
  - Review revised model